

Global reach

Using IT and software to reduce
the risk and exposure for upstream
oil and gas

Part of the process

The rise of the process safety
engineer, and the importance
of the role

Look to the stars

The steps that companies
can take to see change
in their logistics

THIS ISSUE: State aid, national energy policy and EU governance



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the increasing complexity of oil and gas projects combined with the challenge of working at 'the network's edge' is creating the perfect storm for businesses"

As the oil and gas industry extends its global reach, companies are finding that more than ever before they are conducting E&P operations in diverse, geographically remote locations with a broad workforce that is often located outside of fast corporate networks and abundant bandwidth.

While operations in these environments are essential if we are to continue to meet the growing global demand for energy, what happens when companies and project members need to effectively share project information and data? It's a challenge that is becoming increasingly complex, particularly as regulations tighten post Macondo. If you miss out on vital health and safety, operation production, engineering or regulatory data because of poor network availability the repercussions could be enormous.

We recently spoke to Bob Legg of iOra, who explained how the increasing complexity of oil and gas projects combined with the challenge of working at 'the network's edge' is creating the perfect storm for businesses. "When this occurs you are left with distributed teams of workers that find they cannot access the data they require, thus compromising their operations, or finding that the data they do have access to is not the current version, which again can drive errors into corporate solutions," he states in our lead feature.

To operate successfully you need access to the correct data in the right place, and at the right time. If our ventures into hostile and extreme environments are to continue, and our projects are to become more complex, it's an area that can't be overlooked as the risks are just too great.

EDITOR MATT HIGH



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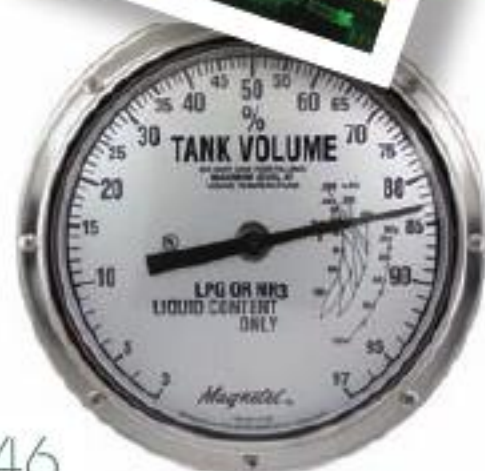


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Global reach

BOB LEGG DISCUSSES
USING IT AND SOFTWARE
TO REDUCE THE RISK AND
BUSINESS EXPOSURE FOR
THE UPSTREAM OIL AND GAS
INDUSTRY IN THE FACE OF
INCREASED REGULATIONS
AND PENALTIES

More than ever before the upstream oil and gas industry is conducting E&P operations in diverse, geographically remote locations with a broad workforce that is often located outside of fast corporate networks and abundant bandwidth. This makes it a complex and difficult challenge for companies and consortia members to share, use and access the right data and information that is relevant to operations, such as health and safety, operational production data, engineering information and regulatory documents.

Post Macondo the industry has experienced ongoing changes to regulations and operational procedures, with a new and more complex set of regulations that must be adhered to at all times, meaning that creating, maintaining and accessing the extensive information upon which to act and direct operations is more crucial than ever before for companies. This increased regulatory environment is designed to make businesses culpable across their entire supply chain, ensuring that they now have to show up-to-date documentation with an audible trail and maintain a 'single point of truth' across the consortia of an entire project.

However, with a substantial number of workers located outside of fast mainstream computer networks that makes sending, receiving and using data compromised, the key challenge for oil and gas companies is how do they ensure that their workforce and consortia members have direct and available access to critical information, and that documents and data get to and from remote locations without any problems in the face of increased regulations and penalties?

For businesses there are two key areas that pose the



biggest challenges in this respect, and which can leave teams working with no data or, equally as problematic, different or out of date data. These are the 'network edge', where bandwidth can drop away and networks can be intermittent, and the 'corporate edge', where networks connect to other consortia members who operate in a different manner. Negative outcomes can be experienced for companies when any critical systems, such as operational, risk management, health, safety, and environmental and quality systems hit either of these two areas. If this occurs then companies can experience serious and lasting consequences including increased risk of a major incident, financial penalties, operational downtime, and reputational impact on both the brand and the consortia members.

Below
Bob Legg
of IOra






Essentially, there is a growing need for rigour and increased governance in terms of how organisations interact with employees and consortia members. This comes in the face of the growing complexity of modern oil and gas exploration and the need to maintain production, where the sheer size and complexity of documentation and project information is combining with a changing regulatory environment to provide a unique and very demanding set of challenges for companies operating in the industry.

European Oil & Gas Magazine recently spoke with Bob Legg of iOra, a leading provider of patented replication technology that helps organisations with users who operate at the edge of the corporate network, or in remote or mobile locations to ensure that everyone has access to the latest

business critical information.

He elaborates on the challenges faced by businesses and why it is essential for companies to do all they can to minimise risk. 'The edge of the network' is defined by iOra as a breakdown of the expected norms of service levels for corporate and internet services whereby bandwidth is below that required and is unreliable; where latency can rise and make networks unusable; or where network links become totally unavailable," he explained. "It basically stops common solutions operating efficiently, and network applications rely on a constant network to be there. The oil and gas industry doesn't see itself as currently operating "outside of the corporate network" as corporate network connectivity of some form exists to nearly all of the locations of the oil and 

gas industry. It is rather a question of the quality of that link versus what it is being used for.

“Whilst network bandwidth is increasing markedly, so is the volume and complexity of the applications, the data, and the regulatory requirements that are required to successfully exploit resources that are harder and more costly to extract, whilst safeguarding health, safety and the environment,” he says. “Because network links are commonly not as good as those between offices the applications and data services that are available in remote locations are usually not as data rich and well connected as those to be found within the office environment.”

As Bob highlights, there are significant differences between the office environment, considered ‘mainstream’, and the network technology used at the edge of the network. “The advent of internet based technologies has fuelled exponential growth in computing power, data storage and network bandwidth over the last 20-plus years,” he says, “meaning that corporations in offices around the world now routinely have almost universal access to their data and applications regardless of location and provided that fast, high capacity networks are in place between those locations. This abundance of bandwidth has also enabled network intensive foundation solutions such as Microsoft’s SharePoint.

“On the other hand, the increased engineering complexity, consortia complexity and regulatory requirements found at the edge of the network means that companies are in a constant ‘race’ to catch up with the mainstream. Essentially, this is driven by the fact that at the edge bandwidth becomes constrained and latency times rise, resulting in the more recent generation of distributed internet solutions ceasing to function in a timely manner. When this occurs you are left with distributed teams of workers that find they cannot access the data they require, thus compromising their operations, or finding that the data they do have access to is not the current version, which again can drive errors into corporate solutions.”

This issue has been exacerbated by the current nature of the industry, with exploration and production taking place in more extreme and remote locations in uncharted or little-explored territories. Here there is little opportunity to extend or install standard copper, fibre or 3G/4G networks and as a result satellite networks are most commonly used for the transfer of data. Recent advances in satellite technology have improved bandwidth and ultimate reliability but there is still a significant difference between this and copper, fibre or 3G/4G networks, with Bob highlighting that satellite bandwidth is typically ten per cent at best of the fastest networks that would be found in leading cities, and network latency can be anywhere from 550 to 1500ms compared to 10-60ms for a fibre network. Conversely, satellite networks represent a considerably less cost-effective option for companies, and with the industry aiming to save costs and focusing on efficiency in every aspect of its operations the desire to ‘bring the mainstream’ to the edge of the network has never been greater.



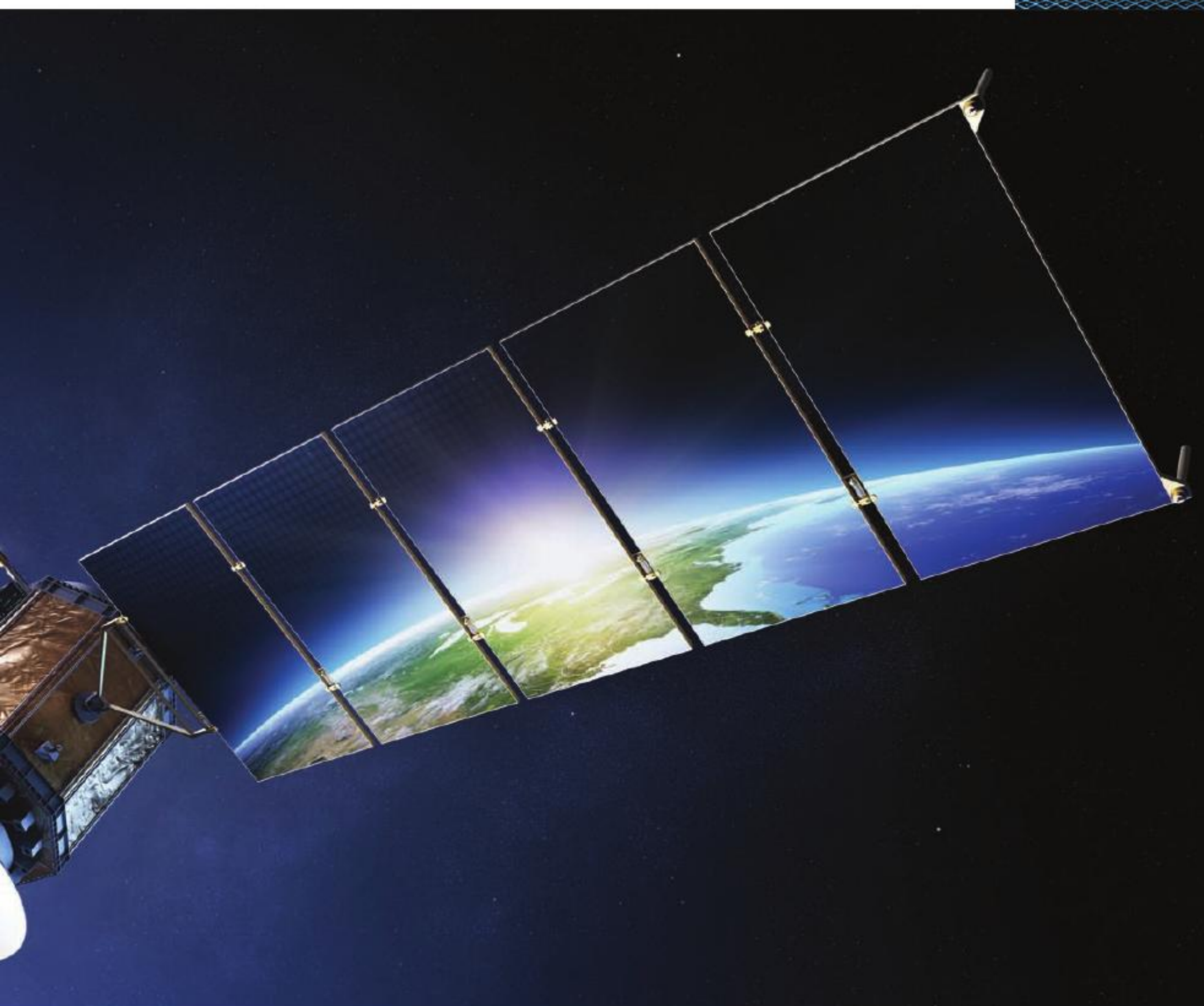
satellite bandwidth is typically ten per cent at best of the fastest networks that would be found in leading cities, and network latency can be anywhere from 550 to 1500ms compared to 10-60ms for a fibre network. Conversely, satellite networks represent a considerably less cost-effective option for companies, and with the industry aiming to save costs and focusing on efficiency in every aspect of its operations the desire to ‘bring the mainstream’ to the edge of the network has never been greater



Of course, this has far greater implications for business than simply being able to transfer and access data.

“Led by the actions of the US based Bureau of Safety & Environmental Enforcement (BSEE) and the Bureau of Ocean Energy Management (BOEM) the regulatory landscape for the oil and gas industry has changed rapidly in response to BP’s Gulf of Mexico Deepwater Horizon Macondo blowout of 2010, posing both opportunities and threats to upstream companies financially and with reputational repercussions,” Bob commented.

“In the industry several complexities have arisen to make these regulatory changes more complex and challenging. For example, today more than 70 per cent of the work for each exploration and production project is conducted not by the prime contractor, but by hundreds of independent contracting companies, who each bring their own set of technologies, expertise and labour to the project. Before the regulatory changes the regulators were only engaged with the prime contractor to ensure health, safety and environmental regulations were being met, whereas now they are engaging with the entire supply chain to ensure




compliance at every level.

“Naturally this can have profound implications for the recording and sharing of regulatory related data, as any breach that is found has the potential to both shut down operations with the possible revoking of licenses, and may lead to substantial fines with the associated loss of reputation. The challenges in terms of increasing complexity of application mix, the increasing in consortium numbers, and then the effects of the regulatory factors are a perfect storm in terms of having to make sure that the right data is there, in the right place and at the right time.”

Indeed, there are several examples of a tighter regulatory control across the industry recently, which accurately illustrate the importance of Bob's point. For example, five operators in the Gulf of Mexico were ordered to halt operations by 18th November this year as a result of missing the deadline for submitting a safety audit required by the regulator. The severity of this particular incident is demonstrated in the BSEE saying that it may take enforcement measures including civil penalties for each day of non-compliance if requirements aren't met.

Bob also highlights the BP whistleblower case, where a whistleblower within BP claimed that the company broke the law by not keeping key documents relating to the Atlantis production platform in the Gulf of Mexico, which were to be used as a complete record of drawings of the components used to build the platform. Whilst BP was cleared of the major allegations a number of lesser breaches were discovered during the investigation. “Processes such as location of equipment on the seabed for wellhead isolation, pumping, injection fluids, separators, storage, risers etc. are prime core assets,” says Bob, “and the increase in this complexity puts much greater pressure on accessing the right data across the entire project lifecycle, as well as across the consortia members from the design stage right through to decommissioning. Taken together it means that more people need to access more data at the network edge, the project lifecycle, across consortia members, and increasingly data flow for these types of regulatory purposes will need to be linked to the data flow for ‘as maintained data.’”

As already discussed, the knock-on effects of not having 

“

Having a richer and more complete set of data synchronised to this single point of truth at a remote field location can benefit many areas within the business, such as safety management systems, emergency response plans, well logging data, pipeline operations, engineering data, certificates, and training



the right data in the right place for companies can be severe. While the reputational impact of a major incident can cause lasting damage to a company's business, one of the largest challenges for oil and gas organisations is non-productive time, or NPT. When considering that drilling costs for offshore companies can range anywhere between \$100,000 through to \$1 million or more per day, and that the time spent on NPT can be in the region of 20 to 30 per cent of total time for offshore operations, the damage in costs is easily visible.

“Having the right data in the right place at the right time is central to reducing NPT,” Bob points out. “Accidents, equipment failures, longer than planned for maintenance cycles and failed regulatory inspections all contribute to extended NPT yet all can be reduced by improving this

facet of the business. For example, better control of planned maintenance cycles can be achieved through access to the latest ‘as maintained’ CAD/PLM/ERP data; accidents can be reduced through better training, procedures, best practices, access to the latest regulations and corporate SEMS/HSEQ data, and robust systems will enable operators to meet the demands of regulatory inspections.”

Of course, a modern oil and gas business is a vast, multinational organisation spread across continents. With the amount of information and data passing between various points it makes it even more important for the right people to have access to the right information, as Bob points out in the example of Macondo. “The situation was that various consortium members were unaware about the cementation and the well lining that ultimately enabled the blowout,”






he explained. "The type of tests carried out in these circumstances are audited and logged, and it appears to be the case that these tests didn't make their way to the right people at the right time. It's important to remember that they were there, they just weren't available to those that needed them."

In combating these issues, Bob believes it is vital for organisations to establish a 'single point of truth' whereby each data element occurs in one place only in order for everyone in a company to have ready access to the most recent documents. Essentially, it enables everyone within the company and consortia to be working on the same version of the 'truth' in order to keep mistakes, errors or omissions to a minimum.

Having a richer and more complete set of data synchronised to this single point of truth at a remote field

location can benefit many areas within the business, such as safety management systems, emergency response plans, well logging data, pipeline operations, engineering data, certificates, and training. iOra's solutions to the industry use data replication, compression and virtualization technologies to deliver that single point of truth and make it available for organisations remote locations at the network edge. "The key point is making sure that the key information is obtained by the key people, and to remember that they don't necessarily have to have access to everything either. At iOra we ensure efficiency of distribution by only replicating new or changed information from the single point of truth or corporate data to the remote field location and rather than replicating all data to every location, we enable only appropriate/required subsets of the corporate data to be replicated to each individual location.


This is undoubtedly an area that the industry must address, particularly as moving ahead exploration and production will continue in similarly hostile and extreme environments. "Looking ahead, positive developments for the industry include the very substantial increase in satellite bandwidth, and abundance of bandwidth which will continue to drive down prices," Bob comments. "This unfortunately is countered by the fact that the field locations today are the 'poor relation' when it comes to systems and data, which are becoming ever more complex as driven by technological advances and regulatory restrictions.

"The sharing of the 'single point of truth' of project data across complex supply chains with hundred of suppliers layered on top of this will be the holy grail, if we are able to establish it. The systems and network demands for the oil and gas industry will continue to be challenging for the foreseeable future. It's a journey that we are on, there won't be an endpoint but being able to manage the increasing complexity throughout the sector will be the guiding light for us," he concludes. 

iORA

Bob Legg has over 25 years' experience in the technology industry. A graduate in electronic engineering, Bob spent several years conducting marine seismic surveys with Geophysical Service International (GSI). Through R&D at Smith Industries, Bob was the lead engineer for the real time software from conception to successful flights trials for the aero engine controller in the Harrier jump jet. Career progressions with Digital Equipment and SGI led Bob through UK, European and Global account management roles for the major CAD, AEC and GIS partners, who were delivering solutions for the major infrastructure contractors to the oil and gas industries. Now with iOra, Bob focuses on the oil, gas and maritime markets using his experience and knowledge to directly relate to the challenges and opportunities facing this vital business sector as the pace of change quickens both in new technologies and regulations

For further information please visit:
iora.com



Part of the process

DAVID COMER ON THE RISE OF THE PROCESS
SAFETY ENGINEER, AND THE IMPORTANCE OF
THE ROLE IN OIL AND GAS OPERATIONS

Hydrocarbon production facilities and indeed the oil and gas arena as a whole have changed dramatically in recent years. The rising threat of IS in Syria and the Middle East has created challenges for firms pushing forward in these areas, while the discovery of new fields has led to an increase in activity across the whole arena. Perhaps one of the biggest changes is the shifting focus that operating companies are putting on safety processes. This has led to significant demand for process safety and risk management professionals who can provide crucial services to businesses. In fact, a study by TechNavio forecasts that the global process safety market will grow at a CAGR (Compound Growth Rate) of 11.28 per cent over the next two years. But why has there been such a sudden demand for these professionals?

Firstly, and as we're all aware, firms in the oil and gas sector are under increasing financial pressures. Industry costs are slowly falling, but not at the rate at which the price

of oil is. Uncertain demand has made it considerably more difficult for companies to plan forward investments and this is affecting their profitability. As a result of this financial uncertainty, firms have focused on personal injury rates at the expense of impending process safety issues, which has now led to a pressing need for professionals in this area.

Operating companies are also becoming increasingly aware of the effects of catastrophic events in terms of both environmental damage and public opinion and can't afford another tragedy like the Deepwater Horizon oil spill to occur. Energy production facilities, while stringently managed, obviously have the potential to do major damage should anything go wrong. And as the processes become more complex, the risks involved in managing larger capacity refineries and petrochemical production facilities have also naturally increased. While it's probably unlikely that we could see another Chernobyl or Ixtoc 1 in the near future, firms simply can't afford to take even the smallest of risks and have invested heavily in their safety systems.

Another factor contributing to the demand is the simple fact that there aren't that many of these specialists currently available in the market. Process safety is an exceptionally complex field, even for the energy market, and requires a fine balance of academic and theoretical understanding often combined with a more traditional knowledge of health and safety regulations. However, having the basics down isn't enough in the modern market and firms are also looking for individuals who can frame these skill sets with a working knowledge of operational performance and financial profitability. While the imperative for producers is safety, they also want to ensure that not much can get in the way of continuing to be financially successful.


Process safety systems also continue to develop in complexity and are no longer simply viewed as 'shutdown systems' that are triggered in the case of an emergency. New technologies such as the integration of control systems and intelligent safety field devices are constantly impacting the sector and changing the requirements for process safety specialists. Consequently, firms have struggled to find professionals with the right blend of experience, knowhow and awareness of technological developments, and have often had to rely on younger engineers who can be upskilled and trained in these roles. This obviously isn't an ideal approach, particularly for such a crucial position, and some companies have looked to tap into MSc students at universities to develop talent pipelines that can deliver a long-term solution to the problem. However, this doesn't solve the immediate issue and many of the major firms have had to cobble together their own solutions by training traditional and developing HSE professionals into the experts they need, which results in something of a hybrid-type engineer. Health and safety and process safety are two very different fields but with substantial training, development and education it is possible to mould professionals from the former arena into the latter.

The nature of the energy market also has a role to play in the rising demand for process safety engineers. The oil and gas industry is possibly the most globally mobile of any industry and talent can realistically expect to work in any oil producing country in the world, regardless of its safety record or current political climate. As developing nations look to invest more heavily in their energy infrastructure, it's hardly surprising that specialists in this field have become more in demand. Burgeoning energy producers such as Angola, Slovakia and Hungary, are unlikely to have a ready-made supply of talented process safety specialists who they can call upon, meaning the pre-existing talent pool will become even shallower. Despite the efforts of countries such as Germany to start a 'decentralised energy revolution', global energy consumption continues to rise with demand for risk experts growing at an exponential rate alongside it.

So what does someone considering the move into process safety have to consider? Firstly, it's not a role a professional is likely to fall into. As already mentioned, the field is exceptionally complex and entry requirements are restrictive

to say the least. Individuals choosing this career route will usually have a minimum of a master's degree combined with an in-depth knowledge of both maths and engineering. It's also highly likely that they'll possess some type of health and safety background as well as some front line experience and operational understanding of the field they will be working in. With such a blend of necessary skills, it's hardly surprising that there appears to be some significant shortages in this field.

With all of this in mind, the future may look prosperous for pre-existing process safety specialists. The eyes of the world are currently pressed on the energy sector and with some high-profile incidents that have resulted in a loss of life; plant and refinery safety systems will continue to grow in both size and complexity. The ongoing skills shortage has also meant these individuals are able to claim rates that are way above the market average. And it appears as if activity in the sector is only going to grow. The US is currently experiencing something of a mini energy revolution. The creation of new drilling techniques has propelled the nation to the forefront of the global natural gas market and this will surely only drive further demand for process safety specialists.

As already mentioned, many organisations are being pressed by growing financial constraints and are suffering as a consequence. With debts of \$170 billion, Brazilian state firm, Petrobras is currently the most indebted company in the world as a result of its overly ambitious drilling plans. The firm gambled on an ultra-deepwater project that's so far out into the Atlantic that the helicopters supplying oil rigs must be refuelled mid-flight and requires over seven thousand feet of drilling, way past the limitations of seismic imagery. And when the going gets tough for energy firms, they invariably bolster their risk and safety teams, meaning the future could be bright for the existing process safety engineers who are currently in the market. For employers, the challenge looks set to continue. While developing talent pipelines will aid the field in the long-term, not enough is currently being done to meet the demand for these niche experts, and organisations will feel the brunt of the shortage. 

ReTHINK ENERGY

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For further information please visit:
rethink-recruitment.com/energy

HOCHIKI EUROPE OBTAINS SIL2 APPROVAL ON FIRE DETECTION DEVICES

SIL approval is fast becoming a prerequisite in oil and gas markets all over the world, including Europe. Hochiki Europe has therefore introduced a comprehensive range of SIL approved products that have been certified to meet the strict requirements of Safety Integrity Level 2 (SIL2).

A number of major accidents, as well as the increasing use of electrical, electronic or programmable electronic systems to carry out safety functions, have raised awareness of designing safety systems to prevent failures, or to control them when they arise. In response to this, Hochiki Europe's range now meets the legislation outlined in the IEC 61508 Functional Safety of Electrical/Electronic/Programmable Electronic Safety-Related Systems standard.

A SIL rating applies to an entire system and is used to reduce risk and improve safety through a formalised and quantifiable methodology. It does this by measuring safety system performance and the probability of failure on demand – a value that indicates the likelihood of a system failing to respond to an emergency event. There are four integrity levels associated with SIL, in ratings 1-4. The higher the SIL level, the lower the probability of failure on demand and the better the performance of the safety system. In the vast majority of cases, however, as the SIL level increases, so does the complexity of the system.

Graham Lowe, sales director at Hochiki Europe, commented: "We work extensively with customers who operate in the oil and gas sector, so we understand the environment and issues faced if system failure occurs. Many of our customers now require SIL certified products to ensure the integrity of their life safety systems and the investment we have made in obtaining this approval is an indication of our commitment to helping them achieve this."

Hochiki Europe's SIL2 range includes; smoke sensors, multi-sensors, multi-heat sensors, manual call points, sounders and sounder beacons. Hochiki Europe also has a range of modules pending SIL approval.



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Our SIL 2 approved range of products has been independently assessed by the Engineering Safety Council and is considered capable for use in a SIL 2 low demand Safety Function with regard to random failure rates.



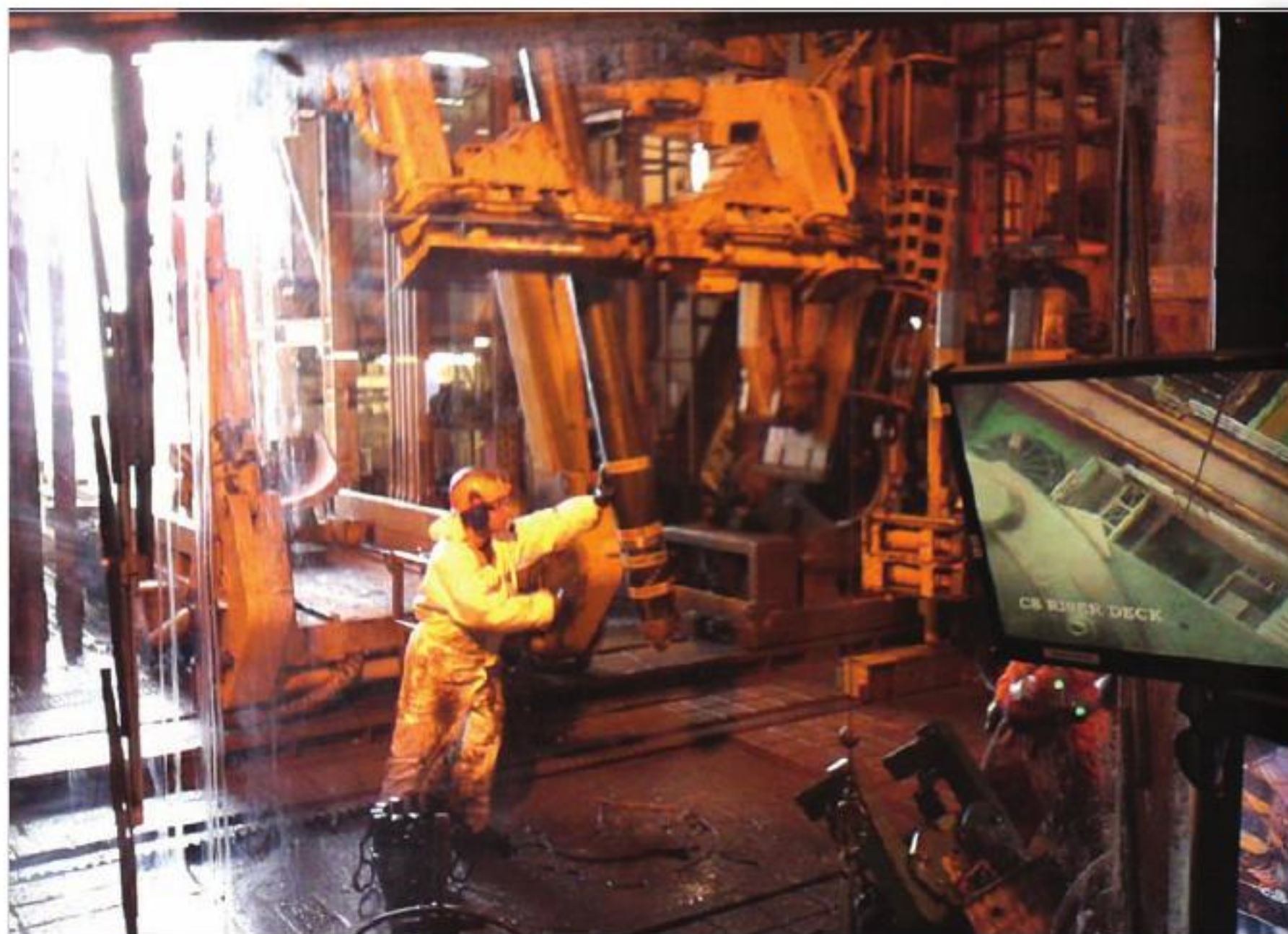
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Above: Deep Casing Tools' Turbocaser Express offshore deployment

Turbo power

Deep Casing Tools has announced the signing of a frame agreement with Statoil Petroleum AS. The contract covers the supply of Deep Casing Tools' revolutionary drillable casing and liner reamer technology, including its high-speed, drillable reaming system, the Turbocaser™ Express, already deployed by Statoil. The agreement applies to the Norwegian Continental Shelf and has a contract life of two years with three option periods of two years each.

Deep Casing Tools CEO Lance Davis said: "This very significant multi-year agreement cements the foundation of our Norwegian and North Sea business as we continue to build our track record.

"The opportunity in Norway, as in other arenas, is to provide solutions to some key industry drivers: risk reduction when running tubulars to total depth, reducing flat time and trouble zone costs, and improving well bore conditions for cement placement and integrity. In answer to growing industry demand, we have now supplied more than 200 tools globally."

Steady supply

Almost 60 per cent of the OEMs, design engineers, contractors and clients questioned in the Risk Census survey, conducted by Trelleborg's engineered products operation, stated that they believe their supply chain is becoming more risk averse due to higher demands placed on them.

Individuals were surveyed from civil engineering, oil and gas and mining industries to establish what they believe to be the main areas of supply chain risk in their industry. Trelleborg examined the responses in its Risk Census, to understand how businesses perceive supply chain risk and explore ways in which they can manage and minimise it successfully through supplier and product selection.

Ruud Bokhout, marketing director of Trelleborg's engineered products operation, says: "You could argue that supply chains as a whole are becoming more risk averse because they face many of the same problems across the board – subdued demand, reduced budgets, rising legislation, longer procurement cycles and so on. Managing large scale projects in these times of change will bring risk, but by having greater transparency in negotiations from the outset, proposals and solutions can be de-risked."

Further findings from the Risk Census show that 47 per cent of respondents think increasingly more complex and challenging projects are the main cause of risk, with 45 per cent admitting to fear of unexpected costs and charges as a result.



Above: Phillip Seago (left), from award sponsor Pasta Foods, presents John Willmott, general manager, Proserv Great Yarmouth

Cause for celebration

Proserv is celebrating after winning two prestigious awards in recognition of the firm's outstanding business success and engineering and manufacturing capabilities. It scooped Business of the Year and Great Engineering & Manufacturing Company of the Year at the Spirit of Enterprise Awards 2014 on 21st November, a high-profile awards ceremony celebrating excellence in business and enterprise in Great Yarmouth.

David Lamont, Proserv CEO, said: "We are very pleased to receive the two awards from Great Yarmouth Borough Council, a great testament to the talent, expertise and hard work of the entire Proserv global team, and especially the team based in Great Yarmouth, which is a leading centre for the development, design and manufacture of some of our key industry leading high technology products and services."

The awards recognise the outstanding year Proserv has enjoyed. During 2014 the company won multi-million pound contracts for work in both the Gulf of Mexico and Brazil with all manufacturing work for both deals being carried out at Proserv's Great Yarmouth facilities. This award win came just weeks after one of Proserv's promising young employees, Marnie Toal, won the Oil & Gas UK Award for Apprentice of the Year.

Energy policy for the future

RALF BOSCHECK, LUNDIN FAMILY PROFESSOR OF ECONOMICS & BUSINESS POLICY, IMD LAUSANNE, SWITZERLAND ON STATE AID, NATIONAL ENERGY POLICY AND EU GOVERNANCE



On 31st March 2014, in a report summarising the work of 772 scientists, the Intergovernmental Panel on Climate Change (IPCC) used its strongest language yet to call on world leaders to cut carbon emissions and avert dramatic disruptions of natural ecosystems and human life. Sure, the United Nations 2015 summit in Paris would debate joint mitigation actions, but mid-2014, there was no shared sense of urgency and it seemed that any nation's unilateral initiative could have been thwarted by global accords safeguarding the interests of others.

Already in 2013, the UK Energy Research Council (UKERC) had published a survey showing that the share of British citizens denying climate change almost quadrupled since 2005. Whatever the reasons, similar findings existed

elsewhere. Besides, key producers of greenhouse gases were revising their environmental obligations: in 2014, crisis-ridden Spain reduced its climate protection budget by 3.8 billion euros; Great Britain cut such spending by 3.1 billion euros.

The EU situation has been complicated by differences in national priorities, prior resource commitments and an emergent dissent about the location of relevant rule-making authority. Already in 2012, the EU Commission had begun to link Europe's allegedly fading competitiveness to the cost of environmental protection. Still, in June 2014, European member states remained split over how to proceed. A "Green Growth Group" of thirteen member states pressed for ambitious climate and energy policies to boost business confidence, policy influence, competitiveness and employment; conversely, the smaller, Central and Eastern



European Visegrad Group called on the EU not to pursue strong initiatives for fear of losing all of the above. But, as of July 2014, all member state governments must submit to new EU Guidelines on State Aid for Environmental Protection and Energy.

EU state aid policy – conceptual foundation, challenges and modernisation

In the absence of ‘market failures’, perfectly competitive spot markets deliver allocative, productive, and dynamic efficiency without any need for centralised, managerial, bureaucratic or political intervention. However, given imperfect competition, uncertainty, externalities or public goods, market prices may not convey optimal signals and it is preferable to complement the decentralised co-ordination of the invisible

hand by a range of more centrally located visible hands. So spot markets are backed and eventually superseded by long-term contracts, internal monitoring mechanisms, fiscal and regulatory arrangements, and national and international political control.

EU state aid policies operate at the crossroads of member state economic policy and regulation and transnational single market governance, to ensure that a nation’s state aid – that is the selective advancement of a particular beneficiary through the provision of state resources or some other economic advantage – is compatible with the Single European Market. This is typically assumed to be the case provided aid is relatively insignificant, (de minimis aid), or support helps to achieve desired outcomes that would not otherwise be attainable, and benefits outweigh any potential



adverse impact on competition and trade. The regulatory challenge is twofold: (1) assess the appropriateness and the redistributive and competitive impact of a scheme that is to mitigate market failures; (2) stipulate rules to guide the design or improvement of a given policy in ways that are administratively efficient and limit the costs of wrong decisions. In addition, a political concern needs to be addressed: where is one to draw the line between the EU's right to contest the welfare implications of a given intervention and the sovereign will of a nation that requires that very intervention to deliver on its policy pledge?

1: The 2014 EU guidelines on state aid for environmental protection and energy

As of 1st July 2014, a new state aid guideline, replacing the 2008 rule, sets out criteria for assessing new and pending notifiable state aid measures; it is accompanied by a new General Block Exemption Regulation (GBER) that specifies conditions for exempting environmental and energy aid measures. Over the next 12 months, member states are required to bring existing aid schemes in line with the new guidelines; as of 1st January 2016, support to new renewable energy installations should face up to market-tests.

The 2014 guidelines demand the compatibility of notifiable environmental and energy aid and aid schemes to be established by a "balancing test", which requires that the contribution towards an objective common interest

outweighs any negative effects on trade and competition, and that the principle of 'polluter pays' established by Article 191 TFEU is being observed. In the context of energy, the common objective is defined as a competitive, sustainable and secure energy system in a well-functioning EU energy market. To justify permission, the aid must be necessary to mitigate market-failures i.e. improve energy markets in ways that markets could not; be appropriate that is less anti-competitive than any alternative; incentive-based and efficient in the sense of 'only providing the necessary minimum support.'

The EU Commission favors a technology-neutral bidding process as the principal means for distributing support. But the neutrality of the market design may be questioned when evaluating total delivered generation costs including implicit subsidies provided to non-renewable fuels, the imposition of balancing responsibility on all generators in a system designed to accommodate centralised, large-scale continuous production, or the differential treatment of some biofuels (ex. food-crop based vs. biomass) and the conspicuous absence of nuclear power from the 2014 guideline. Having said this, the guidelines, on the other hand, allow for exemptions from competitive bidding for small scale, early stage developments and in case of proof that bidding would not be efficient. But there is no advice on when scale ought to be considered too small to pass a 'survivor test,' when a technology should be deemed mature, and how one would know whether

6000,0

A "Green Growth Group" of thirteen member states pressed for ambitious climate and energy policies to boost business confidence, policy influence, competitiveness and employment; conversely, the smaller, Central and Eastern European Visegrad Group called on the EU not to pursue strong initiatives for fear of losing all of the above

£ million
Income
PBT
BGI/BlackRock deal costs

CAGR (04-08)
Revenue 20%
PBT 15%

H1 09
Revenue
PBT

3000,0

2000,0

1,926

1,665

1,844

delivered so

competitive bidding would result in higher than necessary supports or low project realisation rates. Given such imprecision, analysts already commented that it should not be difficult to establish the compatibility of almost any support that violates market controls. Also, the guidelines do not limit any a priori reasoning to establish that a truly technology-neutral bidding process based on all-inclusive, lifetime costing would inevitably select renewables over any more polluting and less abundant fuel.

Also, the growth of intermittent power from renewable sources has highlighted the need to ensure sufficient generation capacity in an efficient way. For that reason, the guidelines advise member states to make use of all existing alternatives including demand-side management, electricity storage and trade via additional interconnection capacity. Further, capacity remuneration mechanisms (CRMs) should only incentivise available capacity from any technology or geographic source rather than the actual sales of electricity.

Lastly, to preserve the competitiveness of energy-intensive producers, the guidelines typically follow a sector-based approach when granting reductions or exemptions from renewable surcharges. Yet, given the diversity of producers within and across industries, Member States are permitted to grant reductions to undertakings with electricity bills accounting for more than 20 per cent of gross value added, and which are active in markets where trade with third countries accounts for more than four per cent of the EU market size.

To limit supports to what is “strictly necessary”, the guidelines require cuts to be only partial but nevertheless suggest that “85 per cent of all levies could benefit from a reduction.”

2: National energy policy & the EU governance: the case of Energiewende 2.0

Over the last fifty years, certainly since the entry of the Green party into the Bundestag in 1983, German governments have attempted in various ways to move the country towards becoming one of the world's most energy efficient, environmental friendly and competitive economies. All along, policy debates as well as regulatory and legislative reforms promoted renewable energy and pictured nuclear power as a potentially risky, transition technology. The required legislation to promote and finance renewable energy, grid expansion and energy efficiency measures – commonly labelled Energiewende – and its impact within and across German borders has since polarised and dogmatised policy debates and stifled the search for improvement. It has also raised competition and energy policy concerns within the EU Commission.

Based on the EEG (Erneuerbare Energien Gesetz), renewable energies receive differentiated subsidies based on generation technology, plant size and location. Expectedly, the guarantee of high returns fuelled investments, which in turn boosted the renewable surcharge per kilowatt hour that consumers have to pay.

Advocates of the Energiewende typically point to the  OXG





growth in the share of renewable generation, events of wholesale market price reductions, the outperformance of emissions targets and the potential for the so-called 'decentralised, decarbonisation in the hands of prosumers.' For them, the *Energiewende* presents an export model that offers the German economy a valuable first-mover advantage that more than justifies its initial costs. Opponents, conversely, point out that subsidies are applied to reversely discriminate, i.e. support technologies based on their lack of grid competitiveness. Also, in order to cover the balancing needs in an intermittent supply context, Germany not only has to expand grid and storage capacities but increase its use of hard coal and brown coal plants and thereby CO₂ emissions. So for them, the *Energiewende* is not only ecologically ineffective, but squanders vital resources and threatens the country's competitiveness. In between these extremes are those that more pragmatically attempt to establish principles to improve market designs and devise cost-effective responses to challenges to sustainability and supply security. It is in the latter fashion that the new CDU/SPD coalition government tries to present its revised *Energiewende* 2.0. The reform attempts to uphold the government's sustainability agenda while meeting domestic affordability requirements and the EU's competition policy concerns.

According to the amended EEG, the German Federal Government will continue to subsidise renewables, but with an expected price impact of merely 7 cents/kWh in 2017. For that reason, a review of exemptions for energy-intensive companies eliminated benefits for more than 400 recipients;

already self-generating industries will continue to be spared but newcomers will have to pay 50 per cent of the renewable surcharge. Also, the build-up of onshore wind is to be limited to 2500 MW per year; any additional capacity will reduce the level of guaranteed feed-in tariffs. As of 2017, market-based tendering will replace these subsidies for all new installations.

And yet, while key elements of the revised EEG seem to be anticipating the EU's 2014 State Aid Guidelines, a potential source of conflict between the Commission and Germany, but also other Member States, remains. Shortly after announcing the new EEG, the German government turned to the EU's General Court to challenge the Commission's decision of 12th December 2013 to open state aid investigations into the German Renewable Surcharge Reduction for energy-intensive companies and the green electricity privilege. In doing so, the German government met the time limit to challenge the Commission's decision. It arguably also set out to protect its *Energiewende* project in view of the unclear development of the EU's climate change agenda and the Commission's attempt to broaden its authority.

For one, at the time of issuing its 2014 Guidelines on State Aid for Environmental Protection and Energy, the EU appeared unable to agree on a climate change package to follow its 20-20-20 targets for 2020. For sure, the European Parliament, on 9th January 2014, had voted in favor of three binding 2030 goals for greenhouse gas emissions (40 per cent), renewables (30 per cent) and energy efficiency (40 per cent). But disagreements made it appear likely that only a 30 per cent or 40 per cent emissions target, but possibly no




The 2014 guidelines demand the compatibility of notifiable environmental and energy aid and aid schemes to be established by a "balancing test", which requires that the contribution towards an objective common interest outweighs any negative effects on trade and competition, and that the principle of 'polluter pays' established by Article 191 TFEU is being observed

renewable nor efficiency objective, would be achieved.

Facing dissenting groups of member states, the EU Commission in April 2014 had suggested that national governments draw up comprehensive national energy plans, covering all key target areas, and submit these to Brussels for approval. Throughout its history, the EU has often involved itself in the area of energy policy but the idea of a European energy policy had only been recognised as a concept in an informal European council meeting in October 2005, and had subsequently been dealt with in EU Green Papers and consultation processes. Also, even though the Treaty of Lisbon of 2007 covered issues related to energy supply and policy, energy policy competencies, for all practical purposes, had always remained at the level of member states and any joint activity in this area had always been based on voluntary co-operation. It is unsurprising therefore that even strongly pro-EU, Green-Growth Member States, like the Netherlands, rebutted Brussels' request for authority, calling it 'unconvincing'.

For Germany, however, Brussels' proposal is as unattractive as the EU's inability to agree on significant and binding renewable targets that may trigger a review of the ECJ decision. The legal action by the German government can therefore only be a first step to work for procedural and substantive consensus on the scope of EU competition rules and their impact on national energy policy commitments. This calls for more than a mere quick fix based on a "pragmatic course of action that would get rid of the system's most appalling deficiencies," What is needed is a substantive debate to refocus attention on fundamental concerns related

to the benefits of market co-ordination, the precedence of a nation's sovereign will, and the ability to protect a domestic policy consensus against free-riders inside and outside the EU. In particular, three questions would need to be answered:

- (1) How to benefit from market allocation when emissions trading in the absence of a central market co-ordinator is suffering from political distortions, and technology-neutrality in grid competitiveness is bared by the path dependence of system design and implicit fossil fuel subsidies?
- (2) How to recognise the limits of market allocation in furthering broader, politically legitimised, welfare goals?
- (3) How to ensure that polluting strategies that create an unjustified cost advantage and mock the principle of polluter pays trigger WTO compliant trade policy responses rather than appeasing state aid policies? 

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RALF BOSCHECK

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Keeping innovation innovative

PAUL JOHNSON ON WHY EXCITEMENT
IS THE KEY TO SUCCESSFUL INNOVATION
IN THE OIL AND GAS INDUSTRY



The global upstream oil and gas industry is a growing one. It spent \$1.3 trillion in 2012, and this is predicted to rise to over \$1.6 trillion by 2016. As a sector, oil and gas has a history of developing and implementing new ideas, which have often built upon many of the greatest breakthroughs in history. In the past few decades, for example, operating companies have been at the forefront of:

- ◆ Utilising computing power to enhance exploration with 3D and 4D seismic data
- ◆ Developing real-time communications to improve operations and reduce cost from downhole to remote offshore drilling
- ◆ Deploying GPS as an essential enabler for directional drilling and floating production positioning.

But even in a growing market, companies face ever-changing technical, environmental and safety challenges that can have a major impact on their ability to find and produce oil competitively. This means there is uncertainty: "There are considerable unknowns when it comes to oil and gas supplies in the medium to long-term." ('Fund managers divided over predictions of oil shortages', Financial Times 9th November 2014).

There is a constant need for new ideas, technologies, partnerships and business models to address challenging production environments and achieve higher production efficiencies. Integrated operations, improved recovery, monitoring of reservoir fluid movements and reducing costs

for drilling and completing rigs are just some of the options available which may attract attention from the investor and support improved production and operation in the future.

Operating companies take research and development very seriously, with industry leaders regularly appearing in Thomson Reuters' top 100 global innovators list. Much of this innovation will come from the supply chain, but the operator also has a significant role to play.

A considerable part of the industry's global upstream spend is focused on the development and introduction of new technology and ideas. Through our work we have found that innovation is planned and delivered in different ways due to the range of initiatives by major oil companies.

Nevertheless, one generally accepted principle is that success in innovation is not simply down to the measure of dollars spent, but how that investment is administered. Factors such as geography, service models and production challenges mean operators have different drivers and focus areas, while company history and culture can also influence the innovation process.

From our experience, we have seen variations in the decision process, degrees of risk-taking and levels of transformation, collaboration and participation in research. So, given these differences, how can each company ensure it's on a path to achieve top-dollar return? Evaluating effective innovation management methods in the major oil companies can act as a guide for organisations operating in the gas and oil sector to ensure the highest returns on technology investment. The most important, and often overlooked, aspect to implementing new ideas successfully is to make the process exciting

Keep innovation innovative

Open innovation (OI) is an approach that aims to enhance the quality of innovation outcomes through collaboration with a range of external partners – requiring partners to work together to share ideas and intellectual property. This is an exciting approach that typically provides a quicker time-to-market, but can also better identify new technologies, reduce costs and enable access to new markets. Most of the leading oil majors have embraced OI to help create an innovation culture and add a level of excitement to the development process.

To produce a winning innovation strategy, company leaders can follow the three steps outlined below.

1. Look within

Recognise the importance of encouraging and identifying innovative ideas from employees. Those closest to the challenge know the process best and are ideally placed to see new innovative solutions. Actively encourage ideas from staff and promote stronger employee buy-in. A great example of this is ENI's annual staff award – 'Recognition at Innovation ENI' – which identifies the best patented proposal in terms of potential impact to deliver innovation.

Meanwhile, BP's 'Future Leaders Programme' (FLP) nurtures the organisation's future leaders through support for development in downstream (refining and marketing) business, HR or information technology and services. BP says the FLP 'supports enthusiastic members who have new ideas and a fresh energy to keep the business ahead of competition'. These members regularly connect across countries through dedicated events, conferences and ongoing virtual meetings.

BP also has an internal awards programme, 'The Beacon Awards', which recognises and rewards innovative initiatives from employees around the world. To facilitate the process of submitting innovative ideas, and help identify potential winners, an online platform is provided. Around 6000 users have taken part in this initiative, which has become an important element of BP's innovation strategy.

2. No pain, no gain

Companies need a mix of game-changing and incremental innovation, with projects that carry varying degrees of risk – the greatest gain can often come from those willing to carry the greatest risk. Advancements needed in the next decade may need technologies that are not familiar, such as wider use of fibre optic monitoring, self-healing concrete, Iridium NEXT (satellite mobile communications), gamification and robosourcing – which all represent different levels of risk.

But how is an acceptable overall level of risk determined and which operators seem to do this well? The answer lies in providing a structure to establish an innovation project portfolio. Exxon's 'Process to Manage Innovation' establishes dedicated research teams that follow a stage-gate management system, from early idea generation to final deployment. They assess active topic areas and determine the


benefit/risk levels they should be investing in to deliver the most value. Similarly, BP's 'Active Portfolio Management' has led to divesting some of its investments (about \$38 billion by the end of 2013) to focus on other areas of strength. BP's objective is to create shareholder value by generating sustainable cash flow – enabling it to refocus and invest for the future.

3. Ask for help

When the solution is unavailable in-house, innovation may come from successful partnerships. Successful operators tend to have well-developed means to engage innovation partners from the supply chain and research communities. Having the right partners to ensure 'all bases are covered' is the best way to achieve the right outcomes. For example, Shell has built up links to encourage innovative ideas from:

- ◆ Hundreds of universities throughout the world (including MIT in the USA and Delft University in the Netherlands)
- ◆ Noted experts in the industry
- ◆ Partnerships with research investment
- ◆ B-basic, a biotechnology consortium
- ◆ Numerous research institutes, from generalist groups such as the Energy Technology Institute to specialists such as the Dutch Separation Technology Institute.

Statoil has fully embraced innovation from small and medium sized enterprises with Statoil Technology Invest (STI). This accelerates technological development and implementation through the provision of expert technical and financial guidance, as well as providing project or venture capital funding. To add a frisson of excitement, STI is managed by Statoil employees who bring experience in technological development, as well as a wide range of supportive skills to inspire colleagues.

These three steps are essential in making innovation exciting and effective. They provide a framework for successful innovation engagement and will give organisations the tools to bring knowledgeable people together to successfully engage with innovation. 

PA CONSULTING GROUP

Paul Johnson is an energy innovation specialist at PA Consulting Group, an employee-owned firm of over 2500 people that works with business and governments worldwide via its offices in North America, Europe, the Nordics, the Gulf and Asia Pacific. The company has worked with oil and gas clients for over 20 years across upstream, midstream, downstream and corporate functions of their organisations. Its expertise helps national and international companies, as well as service companies, improve efficiency and profitability.

For further information please visit:
paconsulting.com/industries/energy/oil-gas



Look to the stars

MATTHEW SMITH DISCUSSES
THE STEPS THAT COMPANIES
CAN TAKE TO SEE REAL CHANGE
IN OIL AND GAS LOGISTICS

There is a simple concept that consistently separates merely good performance in logistics from the exceptional – customer value. This is as true in the immensity of the oil and gas sector as any other. Many organisations striving to become exceptional set themselves metrics and deadlines, whereas what they really need is a consistent focus on customer value. But to achieve customer value it is necessary to drive digital integration and to establish solid business processes.

Oil and gas, as a highly technological industry, is ahead of the game in many aspects of its process management. After recent major pollution incidents, the oil and gas sector has learned some hard lessons about the importance of linking business to risk.

Now most supply chains are so automated that improvement is not about how many human beings are employed, but about removing the opportunity for mistakes and boosting quality. But from a digital and business

integration perspective, the industry and its hugely extensive logistics network has ground to make up. The problem is particularly acute in companies where those in charge of process do not have the ear of the boardroom.

What is first required is a change of culture. Take, for instance, the company that moved responsibility for process and risk from the IT department and integrated it into the business side. Process and risk moved from a silo-aligned IT function and became embedded as part of the business culture across the organisation, resulting in more reliable and more effective decisions.

Besides a transformation of culture, process also needs digital integration so it can be at the heart of the solution. Although oil and gas has had sensor networks for decades, feeding back a huge amount of data on drills, pumps, volumes, pressures, road, rail and shipping movements, it still lacks a full understanding of the connectedness of things.

This is about more than the “Internet of things”. It is



about gaining a complete and forensically detailed picture of how decisions taken in one department or unit will affect the rest of the organisation. This is very pertinent to oil and gas where there is a natural separation of concerns between upstream, midstream and downstream. More often than not, the integration is missing to allow full understanding of the impact of decisions made at different points in the chain.


A change implemented for cost or safety reasons in one area, for example, can inadvertently spread risk throughout the supply chain, with dramatic consequences when things go wrong.

But faced with the challenge of pushing forward digital innovation or rationalisation to improve process and decision-making, there is a powerful acronym that sums up what is required. This is “STARS”, which stands for Simplification, Transparency, Automation, Rationalisation and Standardisation. Anyone in oil and gas IT and logistics needs to look to the STARS, from an IT, business and human perspective.

Simplification

From an IT point of view, simplification is about lowering risk and cost by reducing the number of different ways that people do things. Simplification makes it easier for humans to interact with the underlying technology and reduces the number of potential mistakes.

Large monolithic IT systems and contracts need to be broken down into simpler more functional elements that can be managed in an integrated and governed way. From a human perspective, simplification is about having more relevant eyes on the problem and filtering out irrelevant information to boost the quality of decision-making. One authoritative estimate is that 80 per cent of information presented to users in the extended supply chain is not relevant to the person making the decision.

Human beings are very good at making decisions when presented with a small number of pertinent facts. However, when the same facts are presented in multiple ways, it becomes much harder to be decisive. Organisations need 



From an IT point of view, simplification is about lowering risk and cost by reducing the number of different ways that people do things. Simplification makes it easier for humans to interact with the underlying technology and reduces the number of potential mistakes

to provide decision-makers with a more end-to-end view so that they can clearly see the knock-on impacts of their choices on upstream and downstream process steps. All too often a five per cent saving in one area causes a ten per cent cost in another, meaning that overall the saving is really a cost for the whole supply chain.

Transparency

To ensure that the right calls are made at every turn, the oil and gas industry needs all relevant processes to become fully transparent. Transparency in this sector can already be found in individual “stovepipes” but across the supply chain it often remains relatively poor.

Long experience has taught that portfolio management tools provide a best-practice approach for operationalising the goal of transparency. Such technology will give those in charge a very “top-level” dashboard but it also allows them to follow the thread of information all the way down in order to obtain the answers they seek. We all know that the devil is in the detail; portfolio management lets you find it.

This detail allows portfolio management tools to pull together business requirements, strategy and financial data

and to link that up to the underlying IT technology, end-to-end. So in this way, the entire portfolio and all applications and processes can be subordinated to the business strategy and measured against key financial performance indicators – surely a critical success factor in achieving better decision-making through transparency.

This puts an end to finger pointing when an untoward incident occurs. It is apparent what exactly happened, where, when and what it is connected to. In other words, the curtain is lifted and nobody can hide.

Guesswork and gut feel also go out of the door because they are not acceptable, particularly in oil and gas, where the risks are so high. This level of transparency has the huge added benefit of reducing the cost of on-site audit – as an example; one of our customers has achieved a 75 per cent reduction by taking this approach.

Automation

Automation is what drives process improvement in logistics and this requires links to risk management and to digital information. Yet like oil, data needs to flow and to be refined if it is to be useful. This can only be achieved through a



digital integration strategy, but this should not be attempted at the project level – it needs to be strategic and company-wide. Integration in this context is all about achieving economy of scale and improving the flow of data to allow simplification and transparency. But without automation, this is much harder.

From the human side, automation removes the “grunt-work” around data, reduces errors and gives human beings the room to make better decisions.

Rationalisation

Rationalisation is about the continued removal of waste, many global organisations, for example, have 15 or 20 billing systems. Looking across a large oil or gas company, we often see many hundreds of duplications and all manner of variance in applications and business processes. Rationalisation is about agreeing strategically what the business does and what is required to meet its strategy.


It has to start with businesses using technology to document what their business goals and strategies are and how they link to the underlying technology they are using. This is particularly important in a technology-dominated

industry such as oil and gas. The method behind this approach is called Business Domain Decomposition and it is fundamentally a human perspective on a business.

Standardisation

Standardisation is about consistency in the parts and processes throughout the supply chain, whether it is the equipment that transports oil and gas or the IT systems that control its movement. The aim is for all parties and systems to talk a common language so that there is consistency from one end of the chain to the other. For many business leaders, standardisation is the only way to achieve cost-effective management.

From the human perspective, it is about reducing the number of moving parts to allow staff to control and manage risks as easily and as cost-effectively as they can. It is worth remembering Murphy's Law when looking at just how many moving parts there are in a full supply chain – less standardisation means the greater the chances of something going wrong.

In summary, an oil and gas business that follows the core concepts of STARS will be capable of moving quickly from average to exceptional, provided it achieves a change in culture around the importance of process, digital integration and customer value. The shift in company culture, however, can never be achieved by the beleaguered IT department, it always has to start in the boardroom. By its very definition, culture is about custom, heritage and habit - all attributes that are resistant to change. The great news is that there is a benevolent siren available to tame the resistance to change and one that we need to share through our C-Level community. How companies achieve this cultural change is our secret sauce. 

SOFTWARE AG

Matthew Smith is CTO UK & Nordics, Software AG. With a background in IT and business transformation stretching back nearly 20 years Matthew applies his proven business, analytical, process, team and customer skills to help businesses innovate, grow, achieve and maintain their success through business transformation and innovation. Starting two decades ago in military research as a published scientist and working in large transformational programmes ever since, Matthew delivers practical real-world advice and guidance on topics ranging from business discovery, solution design, business automation and transformation, board ready business case creation, governance and control, team staffing and business innovation.

Matthew specialises in bridging the gap between IT and business architecture and has extensive experience with integration, information management and process management. This experience extends across many vertical sectors.

For further information please visit:
softwareag.com/uk

Working the fields



Originally founded in 1987,

Serinus Energy has evolved from a petroleum business within the Canadian oil and gas industry into an international organisation, first securing proven and probable reserves in Ukraine in June 2010. In June 2013, the business completed the acquisition of Winstar Resources and subsequently undertook projects in Tunisia and Romania, which increased the 2P reserves to over 20 MMBoe, and production to nearly 5000 boe/d. Currently active in Tunisia, Ukraine and Romania, overall production has continued to grow to 5640 boe/d.

Despite much of that growth being attributable to developments in Ukraine, the recent security situation resulted in drilling activities halting for some time, resuming only in October. "Obviously, 2014 has been a difficult year for us in the region, but overall, that region has been a resounding success. Since acquiring our position in the area mid-2010, we have increased production over sevenfold, and 2P reserves threefold. The production and cash flow has covered all the capital invested as well as

repaying the initial \$45 million that we paid to acquire our interest, and this is after paying over \$115 million in royalties and income taxes to the Ukrainian government. Pending a resolution to the political situation there, we hope to grow the production and reserves even further," explains Timothy Elliott, the president and CEO.

At present however, the most active area is Tunisia, where the business has spent a substantial portion of the past year instituting





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Research and Technical Enterprise (RTE) Burova Technika is a leader in the market of petroleum services for the drilling and workover of oil and gas wells in Ukraine

According to Vitaliy Vitryk, director general of Burova Technika, the company's success is based on the study of the state-of-art-technologies and their subsequent application in its services. "Both the management and the engineers of Burova Technika focus on the most advanced solutions, equipment and tools, which helps clients to achieve both high drilling rates and quality completion and production," he explains.

The company's operations are divided into two main areas, with the first being the development of quality projects and technological programmes. These provide technical and economical substantiation for the application of high-performance drilling equipment, tools and solutions such as rigs, downhole motors, mud systems and solid control equipment, bit programmes, downhole systems for well path control (MWD), and downhole equipment for effective hydrocarbon production.

The company's second area of focus is in the control of the well construction process in accordance with the developed project documentation. This is carried out with maximum adherence to requirements, starting from the selection of equipment, materials and tools through to the provision of full circle services for drilling, casing and completion of wells.

As Vitaliy explains, this is a proven approach that has benefited Burova Technika's clients: "Positive feedback and the results of our services for well drilling for such companies as KUB-Gaz, Ukmafta, Zond, PPC and others have proved the wisdom of this approach and given us the confidence to shape our plans for further growth in the future. The evaluation of many years of our activities, especially in co-operation with joint venture companies that demand the highest quality works and high drilling rates for production wells, has allowed us to pinpoint the key areas of focus for the company in accordance with customer demands.

"This specialisation and focus is based around the concentration of our key interrelated services into one management cluster," he continues. "This has proven to be especially efficient for the realisation of projects on drilling and casing of horizontal wells, where co-ordinated teamwork between supervisors, directional drilling engineers, mud engineers, casing specialists, and the stable operation of drilling equipment is very important for a successful project.

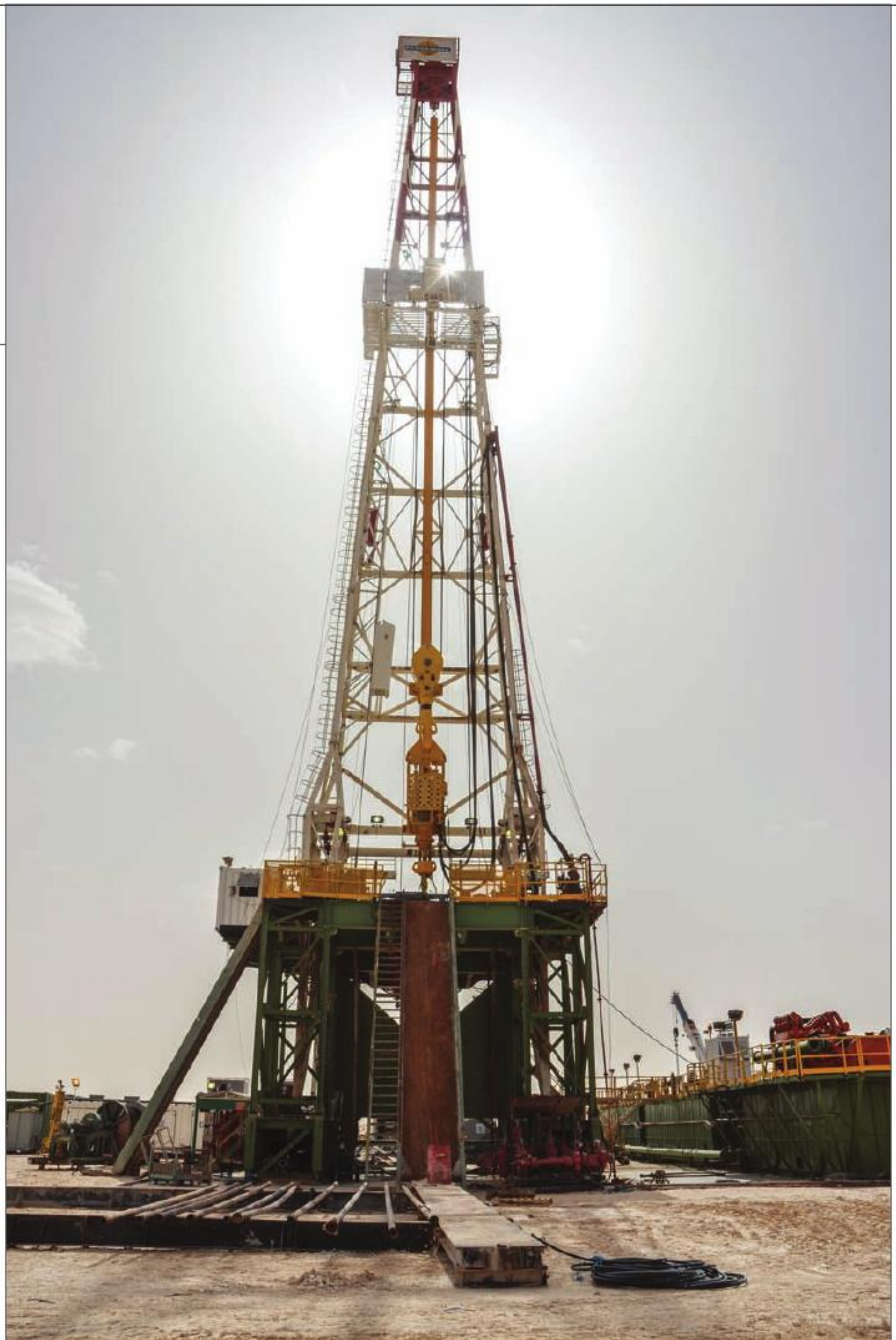
"This concept has ensured the successful realisation of many drilling and casing projects, in particular projects for horizontal and directional wells. For example, in the last two years alone 13 oil wells have been successfully drilled and put into production under the supervision and involvement of Burova Technika specialists."

One development of particular note for Burova Technika is a project being undertaken in Ukraine. "For the first time in Ukraine we have developed design and estimates, as well as realised a package of management, technical and technological solutions, for the cluster drilling of horizontal and directional wells (three-four wells) from separate well pads," Vitaliy comments, before concluding: "It is important that from the beginning of the project development we pay particular attention to choosing the best possible horizontal well path in the productive formation, as well as managing the layout and planning of movements of the drilling equipment on the site. Additionally, for deviated well path build up and its control we use the advanced BHA, which consists of a Wenzel downhole motor and MWD system with gamma ray sensor. The corresponding software we use allows the control of both the currently drilled well path and the location of bores that have previously been drilled in the same site so to avoid their collision. The use of quality muds enables both the efficient removal of cuttings from the well and trouble-free running of the production liner to the planned depth. Naturally, appropriate measures for environmental protection and drill waste disposal (which is particularly important when drilling several wells in the same site) always included into our scope of works."



“


The Sabria field in central Tunisia holds original 'oil-in place' independently estimated at 347 million barrels, of which less than one per cent has been recovered to date



operating and management procedures, and formulating a development plan. “Our first Tunisian well, Winstar-12bis, in the Sabria field, was spudded in mid-July, and we are currently completing it for extended testing and production. The rig is now beginning the move to the next location, Winstar-13, which we expect to spud in early December,” points out Mr. Elliott. In addition, the business has recently recompleted and stimulated two wells in the Devonian Ouan Kasa sandstone in the south of the country,

where results could lead to a significant appraisal and development programme.

The Sabria field in central Tunisia holds original 'oil-in place' independently estimated at 347 million barrels, of which less than one per cent has been recovered to date. “The key is to find the optimal methods to drill and complete these wells, and our two new wells will provide a lot of new data. Ultimately, this field could require 20 or more wells to fully exploit it.”

Recently, Serinus shot 203 km² of new 3D 



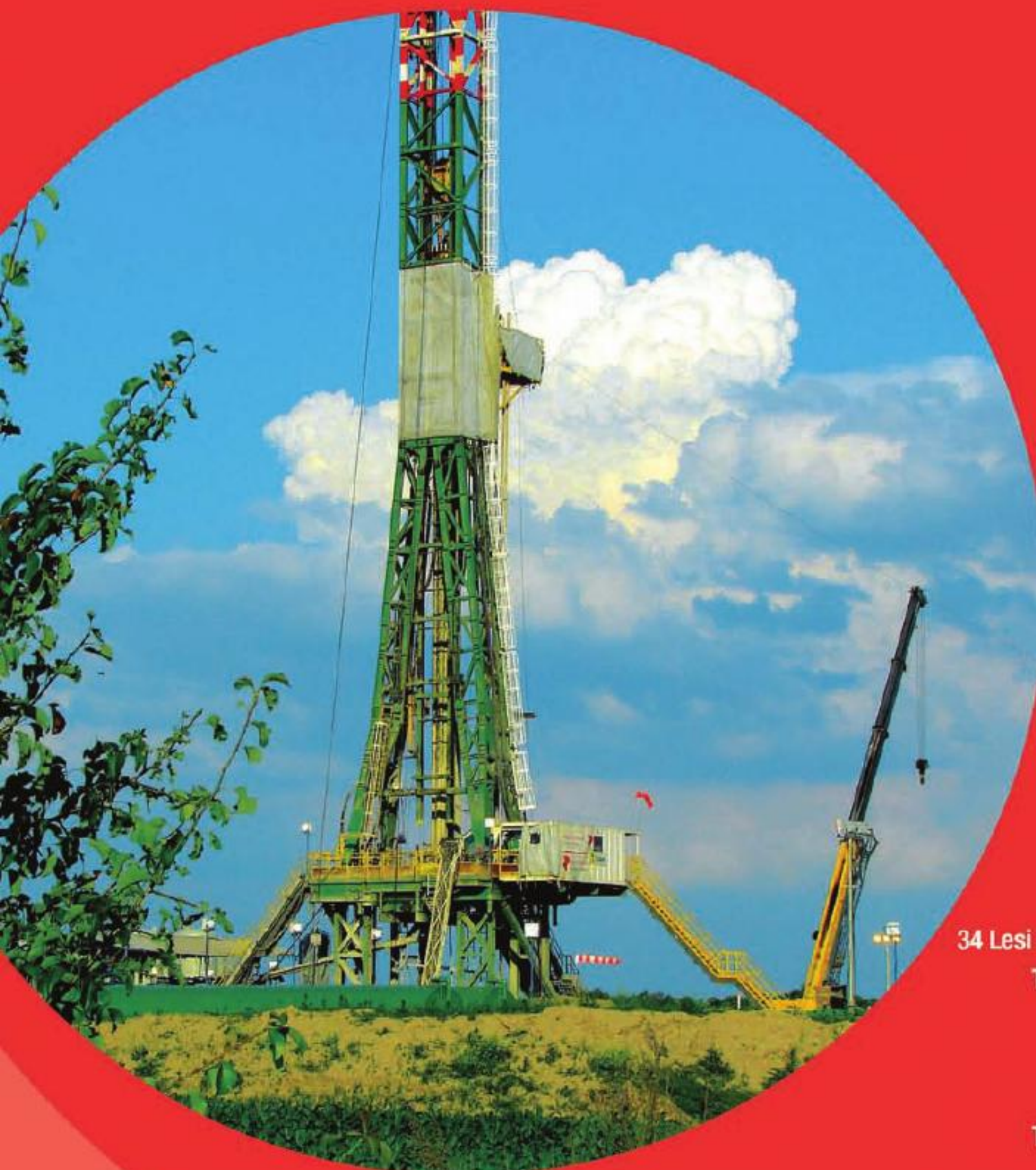
Local knowledge Global expertise

Burova Technika is a leading Ukrainian service company providing services during drilling and workover operations of oil and gas wells on Ukrainian fields.



Over 13 years, in our role as a primary contractor, we have drilled 16 horizontal and directional wells, 5 sidetracks using whipstock assembly and prepared more than 150,000 m³ of drilling mud and special fluids for well completion and workover projects.

In 2014 Burova technika successfully drilled 7 horizontal well using mud motor and PDC bit.



Telemetry system

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We have also just begun a two well drilling programme in Romania targeting shallow gas. Both those wells are expected to be drilled and cased by mid-December, and completion and testing undertaken during Q1 2015



seismic over the Sanhar concession, where a single well has produced over 400 MBbl of oil to date and is still going strong. Older and sparse 2D data hints at there being additional structures there, which the Company hopes to better define and exploit.

"We have also just begun a two well drilling programme in Romania targeting shallow gas. Both those wells are expected to be drilled and cased by mid-December, and completion and testing undertaken during Q1 2015. The upcoming weeks and months will provide us with a lot of answers regarding our new assets," highlights Mr. Elliott. Romania is in fact the second most active area for the business, which has recently completed a 180 km² 3D seismic programme, augmenting an inventory of leads and prospects in the country.

Heavily covered in recent months has been the topic of oil price, and for Serinus Energy

the biggest impact has been felt in Tunisia, where 75 per cent of the company's production is oil, although as Mr. Elliott explains: "That still only represents about 16 per cent of our overall corporate production, so the effect of the



recent drop in oil prices is somewhat muted. Most of our gas production is in Ukraine, where prices are generally set off of the Russian import market. Therefore, the larger issue for us at the moment is the continuing troubles in Ukraine. While we halted drilling during Q3 due to security concerns, we are back drilling now, and production has continued mostly uninterrupted. The secondary effect of the situation is that the Ukrainian government has been forced to pass certain regulations to mitigate the financial effects of the crisis in the short term, including 





imposing restrictions on foreign exchange, but we are hopeful that a political settlement can be reached, and these policies can be redirected toward encouraging longer term growth."

The ability to bring in modern management and technology into developing countries has been greatly beneficial to the growth of the business, but ancillary to that is the access

to potential deal flow and ability to identify suitable properties. Whilst immediate focus is on the completion of the current drilling programmes in Tunisia and Romania, the company fully recognises the importance of operations in Ukraine and in advance of political developments has already planned five locations, including the current well drilling.

"Development potential of our current properties is significant, and we could keep busy for the next several years in drilling them. However, with our core competency of bringing expertise and capital to underdeveloped assets, we continually look for new acquisitions. Complementary properties in the countries in which we already operate would be ideal, but other countries in Eastern Europe and Middle East/North Africa would obviously make sense as well. With success in Romania, and a potential acquisition, we could envisage four main operating theatres in several years, giving us more geographical and commodity diversity," concludes Mr. Elliott. 

BEST OILFIELD SERVICES

BEST Oilfield Services was founded in 2003 by Mr. Souheil ESSAIDI and delivers mud logging services for oil and gas companies in Tunisia (Winstar, Circle Oil, Perenco, TPS/OMV, Primoil, Storm, Dualex.). It is a 100 per cent Tunisian Company and has its regional office and warehouse in Tunis Sfax and Libya. BEST Oilfield Services has extensive experience of working in North Africa, and its management and field engineers are highly experienced and university graduated. BEST has been awarded the HSE certification of OHSAS 18001 and ISO 9001 by TUV Rheinland. BEST developed its own mud logging software DAPS, which is based on ORACLE database management system.

Serinus Energy
serinusenergy.com

Services
International exploration
and production



BEST Oilfield Services

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www.best.com.tn

Our Services include:

- Mud Logging "SLS", H2S and Geological Services
- WellSite Geologist Services
- Cold Cutting Services
- Wellhead equipment Sales and Maintenance

ISO 9001:2008 & OHSAS 18001:2007 Certified by "TUV Rheinland"



Strategic developments



Established in 1977 in Texas, US, oilfield engineering equipment design and manufacturing firm Delta Corporation originally supplied wellheads, valves and X-Mas trees to clients in the US and Mexico. Over the next decade, the company enhanced its operational activity through the provision of a comprehensive range of after sales services, including installation, maintenance, remanufacturing and spare parts. Having developed a successful presence in the US, the company began supplying equipment to Columbia and Trinidad & Tobago as well as other South American countries in the late 1980s.

Proving its commitment to quality, safety and efficiency in the work place, Delta succeeded in acquiring accreditations including API 61, 16A, 6D and ISO 9001:2008 in the early 1990s. Relied upon to deliver competence in the design and production of customised wellheads and valves, the company also provides stringent field-testing of equipment thanks to its sophisticated, state-of-the-art technological machines that are run by highly competent and dedicated engineers.


Continuing its growth strategy, the company took advantage of opportunities in the Middle East and began supplying to Qatar, Oman, Kuwait and KSA in 1995; a move that led to further expansion into locations such as UAE, Bahrain, Iraq, Egypt, Syria, Yemen, Libya and Morocco as well as the establishment of a Delta facility in Qatar in 1996. The facility boasts full in-house capability to support both regional and international oil and gas producers and extracting contractors in managing complete on-site pressure flow operations.

Discussing the company's facilities, Wael Lofty, marketing executive at Delta Corporation begins: "Delta's facility in the US is capable of producing different types of wellheads and X-Mas trees that cover high pressure rating equipment up

to 10K psi and 15K psi; all raw materials are secured from US/European regions only, while the final products are being proudly produced in the US to support Delta's global supply. Since its establishment, the facility in Qatar has succeeded in walking on the same track as its mother company. Furthermore, it gives us a competitive edge in the market, because we are the only firm in the Middle East designing and manufacturing wellhead, X-Mas tress and valves; we are also in very close proximity to the oil and gas regions in this region."



After a decade of strengthening its presence in its core areas of operation, Delta acted on opportunities for growth in both Asia and Africa and expanded into countries like Nigeria, India, Turkmenistan and Kazakhstan in 2007. Today, Delta is the only global firm to offer innovative designs, cutting edge manufacturing, workshop and field support services for wellhead equipment, actuators, valves and flow control products. Despite being a leader in its field of operations, the company continues to broaden its scope, eager to deliver the best possible solutions to a global client base that includes oil majors and blue chip organisations such as Shell, BP, Baker Hughes and ADCO.

With a reputation for excellence and its 

“

With a reputation for excellence and its manufacturing capacity resulting in \$60 million per annum, Delta is in constant demand for its superior products that are produced to the best quality standards in an environment wholly focused on health, safety and efficiency

arefco

AT THE FOREFRONT OF SEALING TECHNOLOGIES

Arefco Special Products Limited is part of the UTEX Industries Inc. family of sealing solution providers. Based in Ashington, Northumberland, Arefco Special Products Ltd has been at the forefront of sealing technologies for over 3 decades and leads the market in the design, development and manufacture of components from a broad spectrum of advanced elastomeric, plastic and metallic materials; including specialist bonded solutions where reliability, quality, endurance in harsh environments are the key drivers for supplier selection.

Arefco Special Products Limited is part of the UTEX Industries Inc. family of sealing solution providers

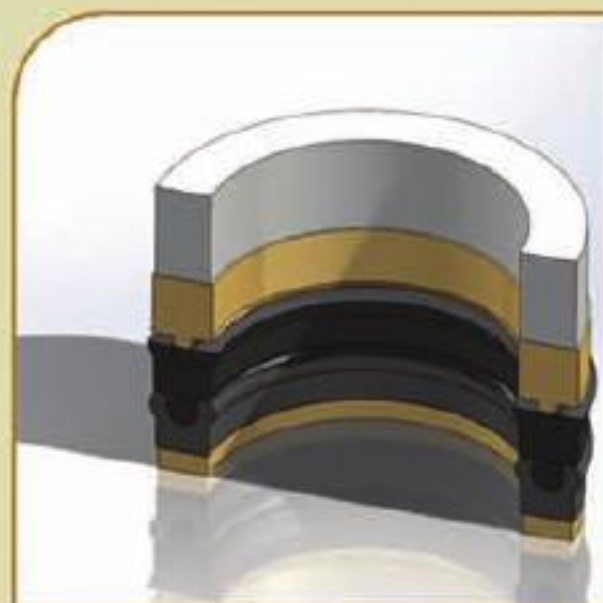
Arefco Special Products Ltd signature technologies for Wellhead (X-Mas tree) applications include, GS-seals, FS-seals, P-seals, Metal End Cap seals (MEC), Fabric Reinforced seals, Stem Packing sets and Hybrid HPHT GS-seals.



Hybrid HPHT GS-seal



Metal End Cap seal



Stem Packing set



P-seal



GS-seal



FS-seal



Fabric Reinforced seal

As a sealing solution provider, part sizing is not a limiting factor, in addition to manufacturing parts in industry recognised geometries, Arefco also manufacture parts in non-standard sizing to give the customer the best possible opportunity to achieve seal life extension and improved performance.

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Tel: +44 (0)1670 819513 | www.arefco.co.uk



UTEX INDUSTRIES, INC.

manufacturing capacity resulting in \$60 million per annum, Delta is in constant demand for its superior products that are produced to the best quality standards in an environment wholly focused on health, safety and efficiency. Indeed, to meet the stringent demands of its impressive customer base, the company's 5000 sqm manufacturing workshop's modern workshop includes more than 40 machines such as CNC machines that can carry out all types of precision operations and large CNC horizontal boring machines; it also has two test machine benches that are capable of covering up to ten test bays with the capability to perform hydrostatic testing for up to 15000 psi, and gas/nitrogen testing up to 20,000 psi. Moreover, the assembly and testing area also comprises of a horizontal bench for testing all valves and equipment up to 16 inches with a computerised chart, as well as another bench for pressure relief valves. Furthermore, the company is qualified to produce high sour service products for material class equipment FF and HH with specialised coating, while its raw materials are of the highest quality and conform to API standards.

Moving forward, the innovative firm remains focused on delivering high quality products to a growing global market and as such it recently participated in the biggest and largest ADIPEC exhibition ever. Based in Abu Dhabi, the exhibition includes over 2000 companies displaying thousands of oil and gas products, more than 60,000 oil and gas professionals and key sellers and buyers from 98 countries in the Middle East, Africa and Asia. A major networking opportunity, ADIPEC is also an opportunity to launch new product developments, as Wael notes: "ADIPEC is the biggest exhibition and conference for the oil and gas industry in the Middle East, Africa and Asia. We have participated in supporting the event on a big scale and we had the chance to communicate with major companies in the region; we have also had the opportunity to introduce new technologies and capabilities."

Focused on markets such as Saudia Arabia, Kuwait and Iraq over the coming years, Delta has the manufacturing expertise and reputation for excellence to flourish in an industry that continues to offer opportunities for growth. 



Despite being a leader in its field of operations, the company continues to broaden its scope, eager to deliver the best possible solutions to a global client base that includes oil majors and blue chip organisations

Delta Corporation
deltacr.com

Services
Wellhead equipment
manufacturer

AREFCO

Arefco Special Products Ltd (part of Utex Industries Inc family of sealing solution providers) is proud to be involved with the Delta Corporation in Doha.

Arefco has been at the forefront of sealing technologies for over three decades and specialises in the design and manufacture of components from a broad spectrum of advanced elastomeric, thermoplastic and metallic materials; including specialist bonded solutions where reliability, quality, and endurance in harsh environments are key drivers for supplier selection.

Acquired by UTEX Industries Inc. in 2011, Arefco is a SME with the financial backing of a \$240m global sealing systems provider. Since becoming a member of the UTEX family, Arefco has established a robust commercial, operational and production infrastructure facilitating a global approach to its markets, providing a cohesive and collaborative relationship with its customers and supporting large multi-element projects. With a pro-active customer focused culture at its core, Arefco excels in recommending and providing solutions to complex and challenging application conditions; to succeed in this endeavour, it continues to push the boundaries of sealing technology in both materials and engineering application.

Arefco has a long-term partnership with the Delta Corporation that spans over 15 years. This has now developed as both companies have expanded into a partnership for seal design in Elastomeric and Thermoplastic products which encompasses material selection, testing regime (API, ISO & Norsok) through to production of parts.

Arefco's signature sealing technologies for Wellhead and Xmas tree applications include GS-seals, FS-seals, P-seals, Metal End Cap seals (MEC), Fabric reinforced seals, Stem Packings and HPHT GS-seals. Its next generation HPHT GS-seal (patent pending) is a technology step change and is a hybrid technology that has completed over 12 months of extensive third party testing. Tested in water, ambient to 30,000psi, in Nitrogen, 120C to 180C at 20,000psi.

arefco



UTEX INDUSTRIES, INC.

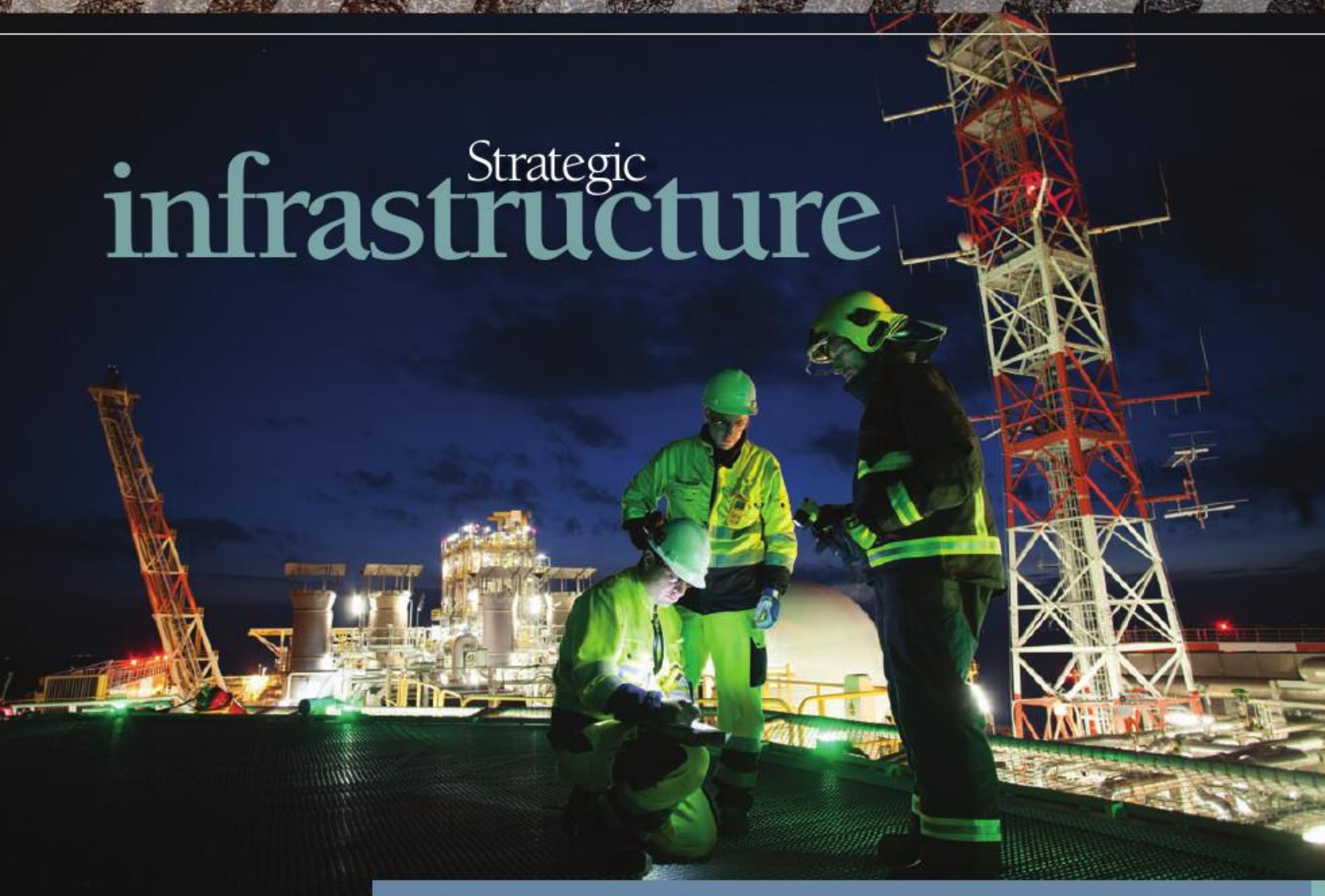


**Deliver operational excellence and innovative services
as a strategic asset for the European gas market.
This is our job. This is Adriatic LNG.**

Located 15 kilometers off the Veneto coastline (Italy), the Adriatic LNG Terminal is helping to diversify gas supply sources and make Italian and European energy markets more secure and reliable. With a regasification capacity of 8 billion cubic meters of natural gas per year, now the Terminal is also offering ancillary services of temporary storage and flexibility to our current and new customers.

Adriatic LNG continues to be at the forefront of the European gas market.

Strategic infrastructure



The Adriatic LNG Terminal is a strategic infrastructure for Italy and Europe in the global natural gas supply chain. Natural gas meets more than one third of Italy's energy demand and is considered as a key resource for a more sustainable future due to its high efficiency and versatility, the wide availability of natural gas reserves and because it is the less carbon-intensive of the major energy sources. In 2013 Italy consumed 70.1 billion cubic meters of gas, 89 per cent of which was imported by pipelines or Liquefied Natural Gas (LNG) carriers.

Adriatic LNG built and operates the terminal located about 15 kilometres off the Veneto coastline of the North Adriatic Sea in Italy that provides more than ten per cent of the overall gas domestic demand since 2009, and most of the LNG supplies in the last years.

Adriatic LNG is a joint venture owned by Qatar Petroleum, ExxonMobil and Edison and is now a solid cog in the Italian industrial wheel, with approximately 125 employees located in the headquarters of Milan, the Shore Base in Porto Viro (Rovigo) and the offshore terminal.

The terminal, a unique infrastructure in the world, won the 2010 Platts Global Energy Award – an international award for technological and strategic excellence. It has a regasification capacity of eight billion cubic meters/year and in 2013, 64 per cent of it was used, compared

to an average use of European terminals that is three times lower (22 per cent), in a highly competitive environment characterised by a prolonged economic recession and weak energy demand at a European level.

Overcoming the need for a direct link with gas production areas through pipelines, the regasification terminal has allowed Italy to increase its sources of energy supplies, importing LNG from five countries: mainly from Qatar but also from Egypt, Trinidad and Tobago, Guinea and Norway.

The terminal started up in September 2009, after a long and complex authorisation process and a construction and commissioning phase that mainly took place at the Campamento basin near Algeciras, in southern Spain. Its compliance with the highest safety and environmental standards, as evinced by the over 20 million hours of labour employed in the creation of this structure, has earned the industrial hub of Campamento a prestigious Spanish recognition: the Prever Safety Award.

Such an ambitious project could not have been achieved without the contribution of professional knowhow from around the globe, now reflected in the daily management of the terminal's operations.

And of course, the terminal owes much of its success to the sound relationships established





with the local communities and authorities, marked by fairness, openness, collaboration, and continuous dialogue.

With more than 350 LNG carriers that have arrived to the terminal and more than 29 billion cubic meters of gas sent to the domestic pipeline network up to November 2014, the Adriatic LNG terminal has played a strategic role for Italy, contributing to the security of the domestic energy system, especially in situations of international crisis, such as the interruption of supplies from Transigas and from Libya.

"We are a sound company that looks at the future with confidence", says Elizabeth Westcott, Adriatic LNG managing director. "While always putting safety first, we aim to consolidate



our position at national and European levels, ensuring the integrity and reliability of our facilities in an environmentally responsible way. Thanks to our ability to combine operational excellence and environmental sustainability, we are committed to providing innovative and reliable services that can respond to market challenges and help the Italian gas system to increase competitiveness and security."

A gateway for energy in Italy and Europe
80 per cent of the regasification capacity of the Adriatic LNG Terminal - about 6.4 billion cubic meters a year, equivalent to about 73 LNG carriers from Qatar based on a supply contract with RasGas - has been allocated by Adriatic LNG To Edison for a period of 25 years (until 2034).

Of the remaining 20 per cent available to other operators, about 1.6 billion cubic meters a year, 12 per cent - equivalent to 12 LNG carriers a year - has been allocated to another gas operator for a period of ten years (until 2019).

The remaining capacity currently available, amounting to about 600 million cubic meters a year and corresponding to six LNG carriers a year, is sold on the market by means of capacity subscription procedures (on an annual, monthly or spot basis).

This energy travels the seven seas free of any physical link between the producer and the

consumer, reaching the Italian shores through the Adriatic LNG Terminal. The terminal thus provides abundant clean energy, fostering internationalisation and bridging the gap between the regional macroareas that produce LNG and the European gas market.

Recently Adriatic LNG has started providing innovative services that can create added value for its customers and increase the competitiveness and security of the European gas system. The regasification terminal can, in fact, offer:

- ◆ Flexibility of service: the possibility to increase or decrease every day the quantities of gas to be redelivered through two different sessions that can be used by terminal customers to balance either their portfolio or the balancing system operated by Snam Rete Gas
- ◆ Temporary storage: the possibility to temporarily store a quantity of LNG for a certain period and to redeliver it at a later stage, when the gas has a higher value for the customer

The design

Designed around a large concrete structure that houses two LNG tanks, a regasification plant and facilities for the mooring and unloading of LNG vessels, the terminal is 375 metres in length and 115 metres wide; the main deck is 18 metres above sea level, with the top of the flare tower reaching 87 metres above sea level.

Made up of 90,000 cubic metres of cement and 30,000 tonnes of steel reinforcement, the GBS was created at the Campamento construction site in Southern Spain. The LNG storage tanks, located inside the GBS, each boasting a capacity of 125,000 cubic metres, are made of steel and nine per cent nickel to ensure cold temperature performance. Designed using ExxonMobil's patented modular technology, the LNG storage tanks were constructed in South Korea at one of the biggest shipyards in the world. Due to the sheer weight and size of the tanks, each one was designed in three modular parts before they were shipped to the Campamento construction site. Through the utilisation of custom-designed systems, the tanks were installed in the GBS before they were connected to each other as well as the regasification plant through innovative welding techniques.


Located on top of the GBS is the terminal's regasification plant, which consists of four LNG open-rack vaporizers that operate via the natural heat of sea water, two cryogenic compressors, an

energy recovery LNG vaporizer that reuses heat from the gas turbines, four pumps that are used to lift the LNG from the tanks, and five send-out pumps that send the gas through the vaporizers and into the external pipeline. In addition, the plant has a range of auxiliary facilities; these include gas turbine-powered electricity generators and the terminal's electrical control centre.

Meanwhile, the terminal's berthing and unloading facilities includes the 'mooring dolphins'; constructed in the Arsenale shipyard,



Venice, the structures weigh 9000 tonnes each and have been designed to accommodate a wide range of different sized LNG carriers safely. Once constructed, the two structures were towed from Venice to the Adriatic Sea before they were placed on the sea floor on east and west ends of the GBS and connected to the terminal via steel walkways. Moreover, the terminal has installed specially designed loading arms for offloading carriers; these transfer the LNG from the vessel to the pipes, which then carry the LNG onto the terminal storage.

To ensure safe and efficient operations, the operating and maintenance personnel on the Adriatic LNG terminal are on hand 24/7 and thus require comfortable living quarters. To meet this requirement, the specially designed personnel module can house up to 60 members of staff and contains living and sleeping quarters, as well as the terminal's state-of-the-art control room. It is here that operators can use highly advanced technologies such as control communication, video cameras and radar systems to monitor all areas of the terminal's operating cycle in its entirety. Moreover, the terminal crew's living quarters includes a fully staffed kitchen, a laundry, heliport and medicinal facilities. There are also a number of communal areas for personnel to relax. 



Made up of 90,000 cubic metres of cement and 30,000 tonnes of steel reinforcement, the GBS was created at the Campamento construction site in Southern Spain. The LNG storage tanks, located inside the GBS, each boasting a capacity of 125,000 cubic metres, are made of steel and nine per cent nickel to ensure cold temperature performance

**Adriatic
LNG Terminal**
adriatic.it

**Services
LNG Terminal**



The sound of success

Above
Portagauge

Below
Portascanner



Since its inception in 1987, Coltraco Ultrasonics has been an industry leader in the design and manufacture of ultrasonic measuring devices with applications within a broad base of primary markets comprised of fire safety, defence, shipping and vessel management, offshore oil and gas platforms and installations, power generation as well as energy distribution utility companies and distribution sub-stations. Furthermore Coltraco is present within several industry sectors in rail, mining, steel and aluminium, banking, telecommunications, data centres, automobile manufacturing, pharmaceutical sectors, high rise buildings, server rooms and switching gear rooms, where most of these applications are now protected by expensive FM-200 or NOVEC 1230 fire

systems. Many of these systems are ideally suited for Coltraco Ultrasonics' Portalevel liquid level indicator, demonstrating the company's lead in the niche field of non-invasive, portable and ultrasonic liquid level measurement and contents monitoring for clean agent fire suppression systems.

Today Coltraco Ultrasonics is the OEM of the Portalevel and Portascanner technologies, which it has manufactured for over 20 years. To date the company has supplied more than 15,000 units to clients in 104 countries, which has proven to be the driving force in propelling the business to becoming the leading manufacturer that it is today, with a specialised portfolio of 14 systems and products.

Within the oil and gas sector Coltraco Ultrasonics has supplied many of the industry's leading operators. Its Portalevel series of products and systems have been successfully deployed in both onshore and offshore applications including most of the North Sea's 160 platforms in both the UK and Norwegian sectors. At sea Coltraco Ultrasonics units are present aboard most types of vessels including gas carriers, bulk carriers, oil tankers, chemical and product carriers. Furthermore Portalevel MAX Marine products are also applied within other maritime sectors including ferries, cruise ships and defence, where the company has delivered large amounts of equipment to the fleets of the US Navy, Royal Navy and various Commonwealth and European navies.

The manufactured products provided by Coltraco Ultrasonics include the UL-approved Portalevel MAX 8th generation portable ultrasonic liquid level indicator, which was developed over the course of two years to ensure that the unit provides the quickest and simplest method for identifying the contents of CO₂, FM200, NOVEC 1230, FE-13, FE-25 & FE-36, Halon and a variety of similar liquid gaseous fire suppression agents, as well as most oil and water based substances. Additionally, the Portalevel Standard 7th generation portable ultrasonic level indicator provides the ideal ultrasonic solution for land-based applications in identifying cylinder content of CO₂, FM200, NOVEC 1230 and a variety of similar clean agent suppressant systems.

These units are vital in monitoring and maintaining substance levels in a host of safety critical fire protection systems that might otherwise suffer from diminished levels due to accidental discharge or slow seepage of contents.

The Portalevel Standard and Portalevel MAX are supported by the Portalevel Datalogger, which represents the world's first ultrasonic level indicator that is capable of recording, storing and downloading readings. This provides operators with a simple, efficient and cost-effective solution for collecting and storing up to 1000 cylinders worth of readings for evidential work. Again, this unit is capable of operating with a wide range of high value fire extinguishing agents.

As Coltraco Ultrasonics approached its 25th anniversary it was proud to unveil its Permalevel Multiplex fixed fire suppression system monitoring system with remote monitoring capability and with integrated data recording. The system allows the continuous monitoring of fixed gaseous fire suppression systems 24 hours a day, seven days a week, every day of the year from any location on the planet. This offers clients peace of mind that no accidental discharge or leakage goes unnoticed, and it is compatible with any existing alarm system and central control station in order to relay current status and alert any change in level, making the system ideal for high value assets and hazardous environments.

"Permalevel Multiplex is the world's first ultrasonic fixed contents monitoring system for clean agent suppression systems used in offshore oil and gas installations to safeguard this critical infrastructure from accidental discharge or slow leakage of these pressurised systems," says Coltraco Ultrasonics CEO, Carl Hunter. "It contains a datalogger so that all measurements are recoded and three layers of remote monitoring; in the cylinder room, integrated into the alarm system and a remote monitoring capability so that the whole system's contents can be monitored from a central monitoring point. Business continuity values of an offshore oil and gas installation, which itself can be up to \$2 billion, often exceed \$500,000 per day. It is to aid this essential business continuity that we designed this system."


Coltraco Ultrasonics is also able to support the business continuity of high-value offshore assets through the provision of its Portaguage III ultrasonic thickness gauge and its ultrasonic watertight integrity test indicator, Portascanner. Often oil and gas installations operate within harsh marine environments where corrosion and metal fatigue are constant threats, particularly to the aging infrastructure found in the North Sea oil fields. The Portaguage III, launched in March 2013, provides an incredibly robust, reliable and accurate solution to the vast majority of

thickness gauging requirements including the corrosion testing of any metal.

Additionally the Portascanner II ultrasonic watertight integrity test indicator is capable of inspecting any watertight, airtight or weather tight seals for areas of leaking or reduced compression in the seal, particularly in watertight compartment doors and multiple cable transit areas. This is a vital consideration in offshore and subsea installations where leaks can lead to the damage or destruction of equipment housed within the legs of offshore platforms or even the capsizing of structures.

As such, the combined portfolio of Coltraco Ultrasonics represents a comprehensive package of high-quality and safety critical systems for the offshore oil and gas sector.

As the market leader in ultrasonic measuring devices, exporting 95 per cent of its output to 104 countries, Coltraco Ultrasonics is present in markets all over the globe and has earned a trusted reputation for quality and integrity. Indeed, the company offers a uniform pricing policy for all of its clients regardless of their location, so that customers can order from Coltraco Ultrasonics in complete confidence that they will receive the highest level of quality at a fair price.

As the business grows, it will continue to rely on the support of both its clients and its partners within the scientific community, as Carl concludes: "Coltraco Ultrasonics has a commitment to science and we are proud to support British graduate and postgraduate physicists and mathematicians. We have received an incredible level of support from the British research community, particularly from UK universities. We aim to design and manufacture the most mathematically accurate products and systems in our fields of ultrasonic measurement and monitoring. Science is our underlying basis to provide the offshore oil and gas industry with the best equipment in our fields of clean agent fire suppression system monitoring, watertight integrity testing of W/T compartment doors, and Cable Transit Areas." 

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Above
Watertight doors

Coltraco Ultrasonics
coltraco.co.uk

Services
Ultrasonic design
and manufacture

Above
Lifting and positioning
solutions

Right
Oil and gas precision
machining cell

Below
Subsea bevel gearbox



Fully loaded

Power Jacks, a British design and manufacturing company, specialises in electro-mechanical lifting, positioning and load monitoring equipment. Trading under the well-known brand name Power Jacks since 1987, its engineering heritage traces back to 1903, with the core product range of the business today including screw jacks, linear actuators, gearboxes and roller screws. Trading comfortably for a number of decades, in 2002 the company had generated enough power to complete the acquisition of its largest UK competitors. Blending its ancestral past with recent acquisitions, the business incorporates brands such as Consolidated Pneumatic, Premag, Precision Actuation Systems (PAS), Fortune Engineering, Neeter Drive and Youngs Lifting.

Acquiring both intellectual property as well as factories, Power Jacks soon entered a phase of its existence where accelerated growth became a matter of course. In light of an ever-increasing demand on a global scale, in 2009 it opened an office in Shanghai, and at present has local representation in 27 countries. At the same time, plans were being drawn to build a new modern factory and headquarters in the UK. The move into the new premises was completed in 2011, and whilst the last four years have been rewarding for the business, importantly they have been of great benefit to the vast number of customers it serves. Focused on the continued

development of the business, technology, and the resources, Bruce Hamper, marketing director reveals the latest trends and drives taking the business to new heights: "This year we have made significant investments, including a £1 million boost into new machine tools. Since 2011 we have invested a lot into infrastructure, but this represents the latest push in the advancement of technology within the business."

The investment follows the growing global



demand for its products and services across the oil and gas sector. Growth within the machining services aspect of the business is vital in the maintenance of the reputation it has built as a master in design and manufacture. "The new machines boost our capabilities in a range of services that include standard milling, turning, gear cutting, thread grinding, thread whirling

and thread rolling. We have created a specialised cell for the oil and gas sector based around three very capable and flexible machines," highlights Bruce. The cell consists of three high specification Doosan machines with features that include a vertical turning centre, capable of performing 2.0m by 1.6m work and up to a capacity of ten tonnes, a large CNC lathe with capacity for 3.25m work piece lengths and a diameter up to 0.75m and a vertical machining centre capable of up to 1.0m by 0.6m work.

"All the machines are fitted with Renishaw tool and component probing capability and specifically set up for oil and gas machining requirements. The cell has a capability of running for around 16,000 hours in a year, and if required, 24 hours a day, developing products such as tubing hangers, caps, valve bodies and stroke bodies. The capability of our machining, combined with the extent of our knowledge gained through manufacturing products for a long time, holds us in a powerful position for the demand ahead," explains Bruce.

Currently exporting to 80 countries worldwide, the ratio between export and domestic holds an equal footing and Power Jacks products can be used anywhere within the oil and gas sector, whether it be offshore, marine or subsea. The core business can be broken down into eight segments; screw jacks, electric linear actuators, bevel gear boxes, jacking systems, lead screws, machining services, design support and the newly established load monitoring interests. In a recent press release from the business, it announced the introduction of a load monitoring division. Operational for only eight weeks at time of writing, the added ability to offer load monitoring solutions will bolster its standing in the oil and gas sector a great deal. With a comprehensive range of standard load cell products it also offers a bespoke, custom load cell design service, as well as hire, repair and calibration options.

"From compressive load cells and under the hook load links, line monitors for monitoring tension speed and position to data logging, and hand held telemetry systems, load pins and load pin shackles, the expansion of what we have been able to offer has increased significantly and has also enabled us to integrate load monitoring devices into our standard products, further boosting the position. Cross fertilisation within the product range plays a key role in developing products. Underpinning all of that is an excellent engineering team, with a great amount of

knowledge. We don't just sell standard products, we sell an engineered solution, customised around the client's application," says Bruce.

The range of precision screw jacks and electro-mechanical actuators can offer a better solution for jacking or linear motion than hydraulics, with the advantage of improved performance and safety at lower costs while offering a simpler, easier to control and more environmentally friendly solution. "We see good growth potential ahead with a significant shift in the desire to move from hydraulic technology into electro-mechanical technology. This is where we can replace items such as hydraulic



cylinders with our screw jack and our linear actuator products, due to the greater degree of control now possible. Not only are they cleaner, but they can be more efficient and cost effective too," points out Bruce. The absence of hydraulic fluid eliminates the risk of leaking hazardous substances into the sea, and ultimately polluting the environment, as well ruling out factors that affect the equipment performance such as contaminated hydraulic fluid.

As Power Jacks targets the period of growth expected, the drive behind developments in the oil and gas segment will dominate much of its focus. "We will be present at the Subsea Expo 2015 exhibition in Aberdeen in February and the SPE Offshore Europe later in the year, really adding to the momentum of the business within the market segment. Reflecting the increased demand we significantly increased the oil and gas skill set, ready for the growth in the business," announces Bruce, concluding: "Adding to the product range, through this strengthened team, we will be looking to develop new products for the sector and for each sub sector within it. Over the next few months there will be new products and services being launched." 

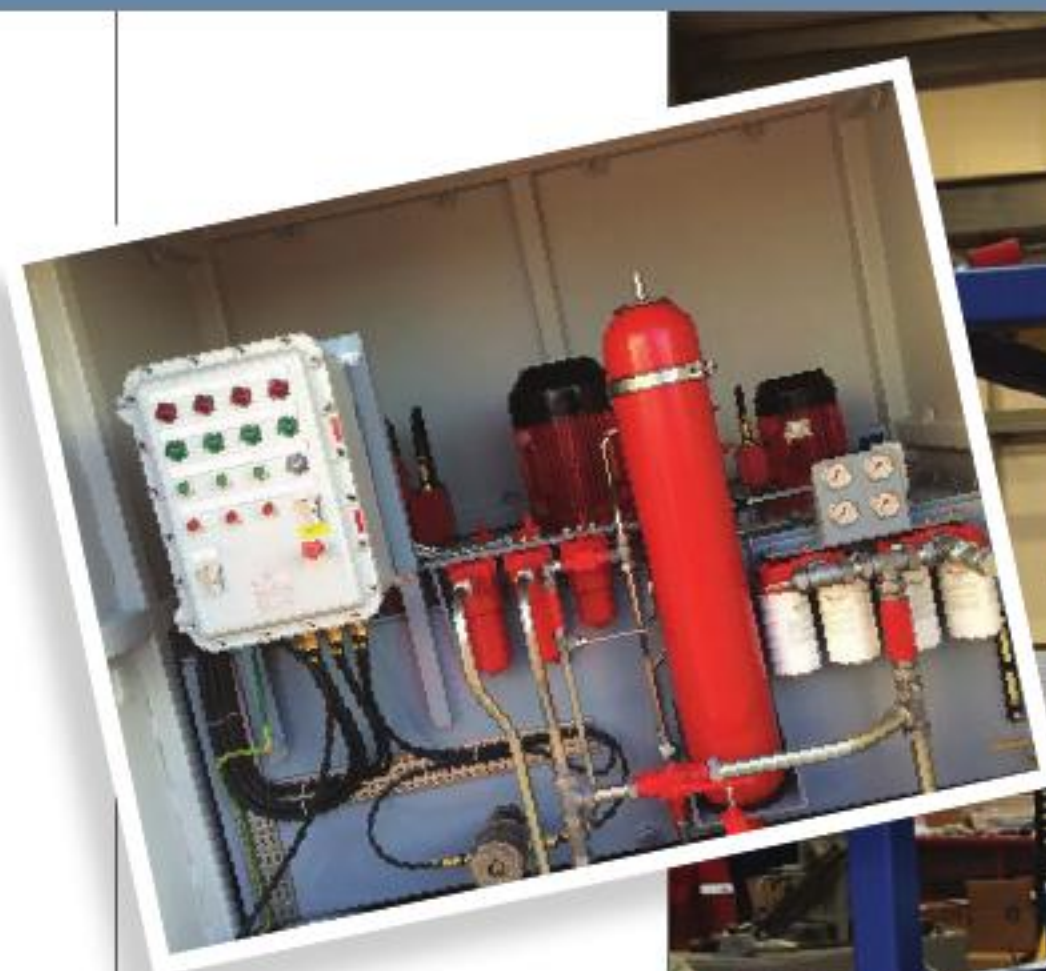
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We will be present at the Subsea Expo 2015 exhibition in Aberdeen in February and the SPE Offshore Europe later in the year, really adding to the momentum of the business within the market segment

Above
Subsea screw jack

Power Jacks
powerjacks.com

Services
Electro-mechanical
equipment design
and manufacture



Exceptional results

Founded in 1999, ITC Hydraulics Services Ltd (ITC) was established to provide onsite hydraulic services to the offshore, subsea, agricultural, mobile and industrial sectors. ITC has grown steadily since its inception, rapidly moving into a new workshop facility near Oldmeldrum, Aberdeenshire in 2002. By 2012 its continued growth meant that the company had outgrown the premises, therefore ITC further expanded its workshop and office so that today the business is contained within a 6000 sq ft, purpose built facility that allows the business to re-enforce its established reputation as a leading supplier of high quality hydraulic solutions.

"The new ITC facility has enabled us to grow significantly over the past two years, increasing our turnover from £750,000 to £1.5 million within the space of a year, with expected turnover in excess of £2 million projected for the next financial year," reveals managing director, Ian Clark. "This has also allowed us to

increase staff levels. Increased workshop space and overhead crane facilities have made our process much more efficient and allowed ITC to take on larger projects, which we could not accommodate in the past, as well as resulting in a much more efficient and safer workflow."

Today ITC continues to specialise in the design, manufacture and supply of all types of hydraulic equipment, components and accessories to a diverse cross section of industries. Within the oil and gas industry the company is a leading name in the manufacture of bespoke equipment for various offshore applications including pipe-handling equipment, blowout preventer (BOP) control systems, rig skidding and BOP equipment. Further to its manufacturing capability ITC maintains a proven track record in the refurbishment of equipment such as drilling equipment, ROV handling equipment, winches and deck cranes. This broad base of manufacturing and



refurbishment expertise has enabled ITC to ensure full order books throughout 2014 and into 2015, as Ian elaborates: "ITC has recently been awarded a number of refurbishment contracts from a number of market leading offshore service companies, which will take the company well into 2015. We also have a number of new build manufacturing jobs, due to begin in the New Year."


Indeed throughout 2014 ITC won several contracts at a significant combined value, demonstrating the company's trusted market reputation. "With the award of in excess of £1 million in contracts earlier this year we have been able to highlight the confidence that major players within the oil and gas sector place in ITC," Ian says. "The awarded contracts were from three different clients and included the refurbishment and commission of equipment offshore and the building of 14 offshore hydraulic power units for safe area use. We are proud of the repeat business that we receive from our clients as word of mouth goes a long way."

As the company continues to win new contracts, so too does it win new customers within the UK and further afield. While the majority of its current projects are located within Aberdeen and the North Sea region, increasingly the company is seeing demand for its products around the world. "The offshore market has been extremely busy this year and 2015 looks to be no different," Ian observes. "We have seen an increase in our involvement in projects overseas and predict a further increase over the next few years. We are delighted that our customers come back to us time and time again as this demonstrates our strong relationship with our clients old and new and their trust in ITC."

A further advantage for ITC, with benefits for both itself and its clients, is its position as a distributor of Amca products as Ian explains: "ITC is proud to be the sole Scottish distributor of Amca products including proportional, high pressure/high flow direction valves that are ideal for harsh marine environments as they include no aluminium components. Our customers are very satisfied with the product and we aim to build, test and deliver standard spec valves from stock with a quick turnaround. These can also be supplied with ATEX compliant electrical control."

"In fact, as our client needs change we have constantly added to our products and services, including investing heavily in new rental equipment," Ian says. "This includes ATEX zone 2 flushing units with pulse flow, capable of providing up to 600 litres per minute, and safe

area and zoned electric driven hydraulic power units from 7.5kw to 75kw. We have an ongoing build programme for the manufacture of new rental equipment with a range of other products to be ready for the start of 2015. We've also started our own electric department enabling us to design and build our own electrical control panels in house."

With a broad base of loyal clients and strong order books to take it into 2015, ITC is in a strong position to capitalise on its current momentum and continue to increase its turnover for the coming financial year, continuing its tradition of high quality performance, as Ian concludes: "The company's success is demonstrated throughout the business – from impressive turnover figures and glowing customer feedback through to continuous repeat business and orders as well as its high level of staff retention. ITC has performed exceptionally well financially, having achieved year-on-year increases since it was first established. Over the course of the next three years the company is targeting around 300 per cent growth in turnover." 



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Rochester Gauges started as Rochester Manufacturing in 1913, becoming a subsidiary of American Standard of New York, developing gauges for the burgeoning Liquefied Petroleum Gas (LPG) industry of the late 1920's and early 1930's. The largest distributor of these gauges at the time was a company out of Dallas, Texas, Gas Equipment Co. In 1958, Gas Equipment purchased the product line of LPG gauges and moved it to Texas and formed Rochester Gauges, Inc. of Texas. The company grew quickly and soon purchased other product lines from Rochester Manufacturing including products for the oil and gas industry. In the mid 1960's, with plans to expand the business overseas, the owners met Dr. Emerich Kroch of Kroch Equipment. Dr. Kroch had an engineering business similar to Gas Equipment and the two companies created a joint venture, Rochester Gauges International.

"Today we manufacture liquid level gauging and sensing devices for uses that include level indication, level switches, and temperature indicators. These products are used primarily in tanks and vessels that contain various petroleum based products from storage tanks and transports for L.P. gas and crude oil to gasoline and diesel tanks for cars, trucks, boats, airplanes, farm and construction equipment," says Cedric Jottard, general manager. Its wide range of products with a robust and stable design, coupled with a strong engineering team, means that Rochester can supply tank gauging solutions from cylinders to large storage

tanks ranging from diameters of eight inches up to 17 feet, including domestic tanks, LPG delivery trucks and trailers. With electronic sensors and receivers, which can be easily retrofitted on existing gauges, Rochester also provides products for telemetry or automated applications, providing the opportunity to keep a local direct reading with an extra resistive current or voltage output.

Through successful targeting of a customer base that ranges from OEMs manufacturing the tanks and containers to the companies that build the equipment the tanks are used on, Rochester Gauges has established a global network of sales and manufacturing sites. Historically working in Europe and the US region, the company recently established a sales office in China in response to the growing demand from industry in Asia. "From this office we are better positioned to provide our customers in the region with the service that they have come to expect," Cedric points out. Further adding to that increase in workload, the business has been actively working with distributors in the Middle East, establishing supply solutions that will benefit the ever-growing customer base.

Recognised for building quality, accurate and reliable products, the business has always noted that the workforce it employs defines its reputation. Reiterating this point, Cedric highlights: "The first strength of our business, which we always talk about is our people. We strive to employ the best, and we feel this leads to our success. Rochester has a very good name

in the industries it serves and while we are a smaller company compared to others in the industry, we feel we can react faster to customers' needs." With a clear commitment to its future through its focus on the vision, mission, engagement and quality, the enthusiastic, dynamic and positive company, manufactures using the most advanced engineering techniques. Beyond manufacturing, it maintains quality control through a detailed selection of raw materials. Working hand in hand with customers the business understands their needs and is able to address them in the most effective and beneficial way.

"Across the whole company we are expanding with new creative product technologies for new industries," announces Cedric. The business regularly attends trade shows and exhibitions that bring together European and global LPG leaders, buyers and suppliers to discuss the latest opportunities and challenges facing the sector. As technology forms an ever-advancing aspect of the whole

industry, Rochester Gauges is determined to stay ahead of the game introducing the latest products, services and innovations. "Although the market in Europe is currently sluggish it is showing promise. In light of this, we are looking to increase our market share at the present. The economy is of course one of the big challenges at the moment, but as this stabilises and begins to show signs of growth throughout Europe we feel confident that our business will grow as well," he explains.

The development of the company into its position today has not just been through an amalgamation of two separate histories, but a united effort to succeed within the challenging sector. The history of Rochester Gauges is fundamentally an inseparable part of the LPG industry. "Over the next 12 months Rochester will be introducing new products that offer a creative advantage over our competitors, but looking further ahead, our longer term focus will be on establishing our brand with new customers," concludes Cedric. 



Recognised for building quality, accurate and reliable products, the business has always noted that the workforce it employs defines its reputation



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SLB HIGHTECH

SLB HIGHTECH is a Dutch sheet metalworking company specialised in made-to-measure products for discerning industries. Commissioned by Conbit, it manufactured the aluminium components for a flare tip handling kit; a critical piece of equipment that allows future flare tip replacements with a system that is available in the operator's warehouse. Naturally SLB HIGHTECH took care of the welding work in accordance with EN 3834-2, material certificates are available and all processes are verifiable and controllable.



Established in 1993 as a local structural engineering company, Conbit has since grown into a leading name with unique competence in high-level structural engineering and specialist lifting solutions. The company is headquartered in Eindhoven, where it employs around 45 members of staff that manage the execution of highly technical engineering and unique heavy lift projects around the world. Its Netherlands team is divided in structural engineers, draftsmen, project managers and supporting staff that embody the company's reputation as a committed, co-operative and highly approachable partner. "Structural engineering and specialist heavy lifting remain the main pillars of the business and are our main areas of focus," says sales manager, Bram van Oirschot. "We have in-house structural engineers as well as offshore crew in several teams that can handle specialist offshore lifting projects, and it is this unique combination of competencies that gives Conbit a competitive edge on the market."

Further to its main base within the Netherlands, Conbit maintains an office of

six supporting engineers in Slovakia and has recently invested in a new office in Aberdeen – Conbit UK Ltd. These businesses have allowed Conbit to grow successfully in a number of sectors and today the business is recognised for its expertise within the oil and gas, petrochemical, infrastructure, logistics, construction and telecom markets.

Conbit was last featured in *European Oil & Gas Magazine* during May 2014, and although the falling price of oil and the turbulent tides of the offshore energy sector have resulted in a slowdown in some of the world's markets, Conbit has remained highly active during the later half of the year, as Bram elaborates: "We have seen a growth in demand from clients in Asia and Africa and although the North Sea has been quiet, we have done some interesting projects including a lift for Centrica on the Grove platform where we installed a storage tank underneath the weather deck. This was a very interesting project because we carried out the engineering of the lift as well as the execution and we provided specialist equipment for the lift, which was successfully undertaken on the first attempt."

Below deck lifting

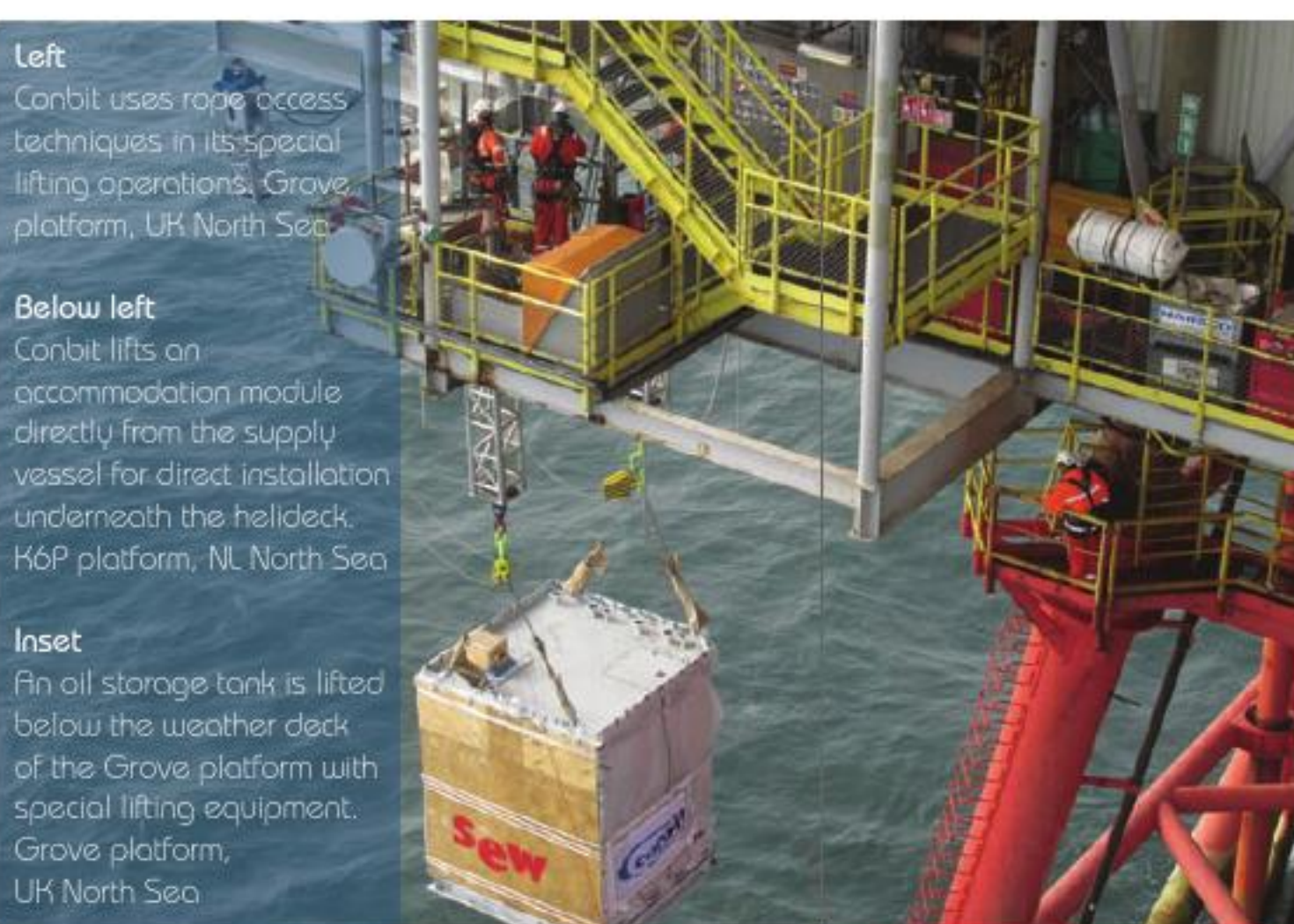
"The main challenge is always dealing with the weather constraints in the North Sea," he adds. "We can lift in conditions of up to around Beaufort force four wind speeds. In other markets such as Africa for example, there are logistical challenges in transporting specialist lifting equipment to some regions inside of Nigeria and Angola."

Indeed the often isolated and hard to reach nature of assets within the oil and gas industry make the sector an ideal base for the specialist structural engineering and lifting services provided by Conbit. As such the North Sea and its aging fleet of offshore rigs is increasingly an important market for the company, where it can offer clients a unique and highly sought after solution. "We are focused on specialist lifting on rigs in hard to reach areas, such as lifting below another deck. This is very difficult because it is not possible to use a crane or a heavy lifting barge in these areas, which is where we see the potential for our solutions. We supply temporary lifting solutions and specialist lifting equipment that allows us to carry out lifts with high-speed winches, aluminium lifting booms and finally after the lift is completed, we bring everything back to shore at the end of the project," Bram explains.

"We opened the Conbit UK office because we still see a lot of potential in the UK market and we want to commit to this by investing in a new office in the area," he elaborates. "We see a lot of potential in modifications to existing platforms, where there is limited space to install a new piece of equipment so it is often installed underneath the weather deck or under the helideck for example. Besides that the decommissioning market will emerge over the coming years, and that is where our structural engineering and specialist heavy lifting services come together quite nicely."

"The challenge over the next couple of years in the North Sea will be the decline in new projects so a lot of the activity will be in brownfield sites, where the industry will see a lot of improvements to existing platforms and work to extend their operational lifetime. The operational life of many North Sea rigs has passed, since often they are certified for a period of 25 years and to certify them for the next ten years will require extensive structural analysis. The aging of the platforms will be a challenge over the coming years as will keeping them economical to run."

As the trends with the oil and gas sector shift and change, Conbit will continue to operate as a leading presence within the industry. This is



Left
Conbit uses rope access techniques in its special lifting operations. Grove platform, UK North Sea

Below left
Conbit lifts an accommodation module directly from the supply vessel for direct installation underneath the helideck. K6P platform, NL North Sea

Inset
An oil storage tank is lifted below the weather deck of the Grove platform with special lifting equipment. Grove platform, UK North Sea

because its services are both vital and flexible in as much as they provide an effective solution to challenging lift operations that can be applied from construction and installation through to maintenance and finally decommissioning. As such, Conbit will remain a vital industry partner for years to come.

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Osborne Engineering Ltd (OEL Group) specialises in the manufacture and repair of all types of white metal and high-pressure components for rotating equipment. Recording a client base that encompasses both the UK/European power generation industries, as well as the oil and gas industries of the UK and Middle East, the business additionally holds contacts in Japan, India, Korea and Brazil alongside making inroads into the US market via its Houston facility. "Our global position adds flexibility and also provides a more cost effective supply route for our wide range of customers. We offer an expansive range of hydrodynamic thrust and journal bearings, alongside a full spectrum of engineering services that includes bearing performance prediction, 3D laser scanning and reverse engineering," says Tony Dale, group operations director.

"Using specialist software we can review how changing duty conditions can potentially impact on bearing life, a factor which is of growing importance. Subsequently we are able to recommend potential bearing upgrades or modifications to maximise life and minimise downtime," explains Mark Vizockie, design engineer. Having recently developed bespoke bearing software with a custom user interface, which drastically reduces time spent calculating and simulating multiple load angle cases, he adds: "This work has led to one client setting up their first supply framework agreement within OEL."



Specialising in bearing and fuel system repair, the recent opening of a self-contained rapid repair centre in Aberdeen ensures it is able to support global oil companies and key service providers operating in the UK offshore market. Commenting, Jim Malcolm, in charge of business development in Dyce, Aberdeen says: "We provide additional training resource and high speed data acquisition and analysis equipment for machine monitoring. The diverse and unique range of skills ensures we maintain high quality service support for a demanding 24/7 industry." Reflecting on the truly global nature of the company, UAE based group technical services director, Rahul Hazra, points out: "The 'British quality flag' is still well respected throughout the world, giving our group a stepping stone to success, with a reliable pedigree in the OEL brand. State-of-the-art training facilities in the UK and in Dubai allows us to draw from a wide range of instructional expertise, offering technical courses, health and safety, leadership and management and teaching qualifications to the oil and gas, power generation and other industries anywhere in the world." The expertise is further enhanced through collaboration with training specialists such as OEL-Apix Consulting, GSE Systems and The Faraday Centre Ltd.

OEL's Turbo Power Services division (TPS) has for three decades provided expertise in the supply, overhaul and upgrade of gas turbine auxiliary fuel system components, which enhances the services of the oil and gas, petrochemical and power generation divisions. Simon Withers, operations manager and senior engineer for TPS highlights: "As well as providing a repair service, TPS provides technical advice based upon extensive gas turbine ancillary knowledge. It is important for our customers to have involvement and technical support leading up to, throughout, and continuing after maintenance shut downs, to ensure minimal delay, and maximum reliability." From the facility in Aberdeen, gas turbine reliability problems can be investigated addressing the root cause analysis of component failures, directly tackling these issues and the associated down time through engineered solutions and upgrades. "Through strategic partnerships we can better serve both oil and gas turbine markets," he adds.

Crude oil prices drive forward the offshore market, with new products required when the market is buoyant and repaired products



when the market dips. The ability to offer both ensures OEL's customers may always be served. As the oil and gas industry faces the increasing challenge of ever depleting fields, the running conditions of some of the old equipment are changing significantly. "With a dwindling supply of gas, turbines are running increasing hours on liquid fuel oils. The turbine liquid fuel systems were mainly designed for use as a secondary backup fuel, but it is clear that more and more will become dependant on this as a primary fuel source. Maintenance teams are currently battling with carbon build up and coking issues associated with running on liquid fuel oils, particularly during change over between fuels. We recognise that providing technical support to the industry is paramount in helping the process and maintenance teams maintain maximum equipment up time. We are working on growing

this part of our business in order to provide this support," Simon explains.

Through constantly benchmarking and networking between sites OEL's flexibility and versatility is being noticed around the world. The comprehensive test facilities with gas and liquid fuel nozzle, liquid flow, pump, and flow divider test stands are unique, with all bespoke test rigs, designed and built in-house. "As we continue to promote our high quality engineering skills and innovation in partnership with our valued customers, our ability to react quickly, source and support obsolete spares, and take on new products gives us a competitive edge," points out Tony, concluding: "We want everyone to know the full extent of our services, as we are not just a white metal bearing supplier, and by constantly pushing the boundaries we aim to stay ahead of the game." 

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Strong roots



A. Taylor has developed a full turnkey service package that offers clients high quality solutions in precision fabrication, welding, machining and finishing, as well as rigorous inspection and fulfilling demanding documentation requirements

Founded in 1864 by Albert Taylor, A. Taylor & Son Ltd was established as a tinsmiths and sheet metal worker in Kirkstall, Leeds. 2014 marks the 150th anniversary of the company and coincides with one of the most significant events in its history, the relocation and commissioning of a new machining and assembly facility based in the former premises of H.Pontifex and Sons, a site steeped in history with roots dating back to 1796.

"To mark the occasion the company has joined forces with the Leeds Rugby Foundation, who through their Heritage Committee have their own celebrations to commemorate 150 years of Rugby in the city," explains director, David Minskip. "Leeds Rugby Foundation is a registered charity that delivers projects in the heart of the community, harnessing the power of sport to make a lasting, positive impact on individual's lives. As a charity the Foundation has an amazing opportunity to change lives through sport."

Today A. Taylor & Son continues in its proud tradition of delivering high integrity fabrications to a variety of industries, with a specialised focus on the oil and gas sector over the past 40 years. As such the company is regarded as one of the UK's leading sub-contract manufacturing engineers with a broad base of standard as well as bespoke solutions.

"With the general demise of the sub-contract sector throughout the UK over recent years the company has invested heavily in purchasing its own machine tools to create an impressive and diverse group of both conventional and CNC machines housed in a modern purpose-built machining facility," David says. "A. Taylor adopts a 'quality without compromise' attitude having held BS5750 and then ISO 9001 accreditation since 1992, and is supported by a highly skilled workforce with a wealth of experience in the most exacting of industries; every day peoples lives depend on the integrity of 'Taylormade' products."

Indeed the company has invested significantly in its equipment and facilities in recent years to ensure that it is able to guarantee the continued delivery of its highly acclaimed services. The purchase of the former H.Pontifex works was announced during November 2010 and A. Taylor wasted no time in beginning the daunting task of relocating its workshop to the new location. The phase of readying the site for use involved the construction of a 9000 sq ft extension to the new premises to house the company's largest machine tools, including a recently purchased floor borer. Over the following three years the buildings were gutted and re-fitted to create a modern, well-appointed facility to house a growing portfolio of machine tools. "To support the new site a decision was



made to move the company's head office to Pontifex and further land and offices were purchased in 2012 opposite the works," David reveals. "With Pontifex' fully operational staff finally relocated in January 2013."

While A. Taylor has significantly invested in its equipment and facilities, the company has also worked hard to ensure that it maintains long-lasting relationships with its clients and with its staff. A key advantage for the firm is that it enjoys a high retention rate amongst its employees, with 2014 seeing three long-serving members of staff celebrate 25 years' service, Tim Edgley purchasing expeditor, Les Foster plater and Alan Griffiths QA manager. This continues the company's tradition of cultivating long-term relationships and industry defining expertise.

A. Taylor has developed a full turnkey service package that offers clients high quality solutions in precision fabrication, welding, machining and finishing, as well as rigorous inspection and fulfilling demanding documentation requirements.


David adds: "As a company we accept quality is a given in this industry and our long history and reputation bears this out, but we are also passionate about continual improvement and we are making massive strides in adopting the best practices of our customers who are keen to partner us to mutual benefit."

"Over the past 18 months we have introduced many initiatives to improve our own performance and that of our supply chain to ensure we stay ahead of our competitors, and we are seeing the results of our hard work come to fruition. We have never been a company to rest on its laurels; on the contrary we have plenty more innovative solutions to implement whilst we begin to plan our next phase of expansion."

Within the oil and gas industry the company is able to supply critical components including deepwater production tools, ROV equipment, subsea control modules, shipping skips and

baskets, large guide base fabrications, protective structures, canopies and the largest overtrawable frame assemblies.

These specialist fabrications have applications all over the world and will remain in great demand as the global requirement for energy continues to rise. As such, A. Taylor is ready to meet the needs of the future market and expects further growth as it transitions into the coming years, as David concludes: "A. Taylor believes its future is in the hands of its employees - a highly skilled workforce who will not only maintain but also raise the standard set by previous incumbents."

"In 2013 the company opened its training academy to train tomorrow's young engineers and already boasts award-winning apprentices that are leading the way in industry. By increasing its scope and delivering a first class service the company is ideally positioned to take advantage and add further value therefore galvanising its position as a strategic partner to all its clients." 



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Top position

Above
Island Performer

Top right
Siem Moxie - aft view

Right
Siem Moxie - aft bridge

Far right
Siem Moxie - aft bridge PS


Below
Island Performer - aft bridge 1



Incorporated during 2002, Marine Technologies (MT) continues to distinguish itself as a market leader in vessel control and dynamic positioning systems (DPS). The business was founded as and continues to be a privately owned venture, created by a group of skilled engineers with several years of industry experience with DPS and control equipment. "At first the mission of the company was to produce and obtain a DP-2 classification, which was accomplished within the first one and a half years of the company's history," says managing director, Frode Klepshvik. "Our main office was established in Mandeville, Louisiana in 2002 as well as a small office in Norway. We have since added offices in Singapore – established in 2010 and Brazil, meaning that we are at present in practically every offshore market."

The company was last profiled in *European Oil & Gas Magazine* in February 2014 and since that time Marine Technologies has continued to maintain strong order books and develop its service offering. "For us the market has been relatively strong. We have had a good number of projects in Europe, Asia and the US so overall we have had a positive year with a broad base of projects. All in all 2014 has been a good year for MT," elaborates Frode.

"Our product portfolio has been increasing over the years and as previously mentioned we started with DPS and have since delivered a large number of these systems," he continues. "The company has then gone on to develop a unique integrated bridge system, which accommodates multiple user workstations integrating both own and third party applications."

Today MT has become a one-stop solution, which can serve both the offshore and commercial shipping industries. Its comprehensive range of products includes a number of cutting-edge vessel control systems and related services that are packed and delivered as type-approved solutions to meet a full range of IMO classes. This extensive range includes complete DP and joystick solutions provided by its Bridge Mate brand, as well as sophisticated bridge systems such as the MT Bridge Mate integrated bridge system (IBS), which meet DNV NAUT-AW class notation requirements for enhanced nautical safety including grounding avoidance system (GAS). The NAUT-AW class represents the most comprehensive bridge class notation in the industry today, confirming MT's reputation as a world-class provider of state-of-the-art vessel positioning and control solutions. 

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Marine Technologies has recently introduced a new addition to its C-Comm range of Ku band VSAT equipment. The MT-BB100 MKIII Ku band VSAT antenna is based on the field-proven technology of the BB90 and BB100 and improves on previous designs with a redesigned parabolic dish. Furthermore the MT-BB100 MKIII antenna is constructed with aluminium and carbon fibre, with a total unit weight of under 143 pounds (65kg). Thanks to its rigid construction and fast tracking algorithms, the MT-BB100 MKIII antenna maintains remarkable tracking performance at all times, defying ship vibrations and heavy sea conditions.

The company's regional bases coupled with its comprehensive product portfolio have made MT a highly regarded brand globally within both the maritime and oil and gas industries. MT has entered into a partnership with Maersk to deliver DPS training programmes to operators within the offshore sector, as Frode elaborates: "We are not primarily involved in delivering training sources, rather we supply equipment

look at the cost involved in the lifecycle of the systems we are able to keep this low through the high serviceability and the robust and reliable nature of the equipment. Of course we develop all of our systems across the same basic infrastructure, which also makes them more attractive in terms of installation and operation. We also support our clients with comprehensive after sales service."

Although market conditions within the oil and gas and maritime sectors are often unpredictable, Frode is confident that the company will continue to grow and maintain its market-leading position. "For sure there is some nervousness in the market at present with majors looking to lower their CAPEX, combined with the current low fuel prices," he says. "Certainly in some regions there is a concern of possible over-supply. However we believe there is a good potential for MT's products and services going forward and, while we are not the biggest player on the market we expect that we will have good growth over the coming years." 



The NAUT-AW class represents the most comprehensive bridge class notation in the industry today, confirming MT's reputation as a world-class provider of state-of-the-art vessel positioning and control solutions

Marine Technologies Pte
mtlc.us

Services
Vessel control
and positioning systems



to the trainers. In co-operation with Maersk we have established training centres in Svendborg (Denmark), Dubai and Singapore, all with MT equipment. Of course this is a good promotion of our equipment and it allows us to meet the requirements of our clients in terms of an increasing need for training.

"Technology wise we have a very robust and reliable solution for all applications, which is also highly user friendly in operation. If you

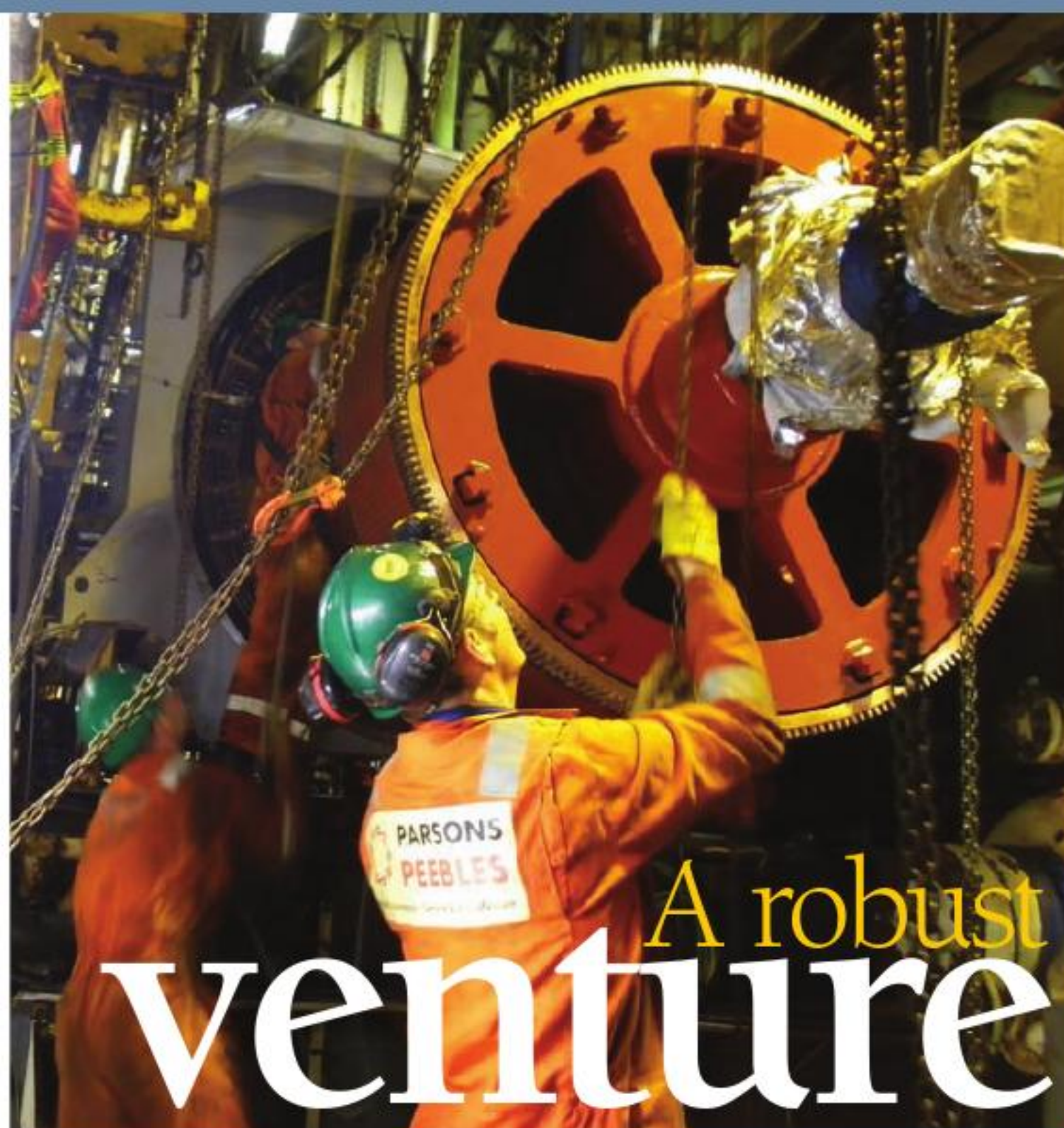


We represent MT in India, provide after sales service for their product line and offer the following tailor made solutions.

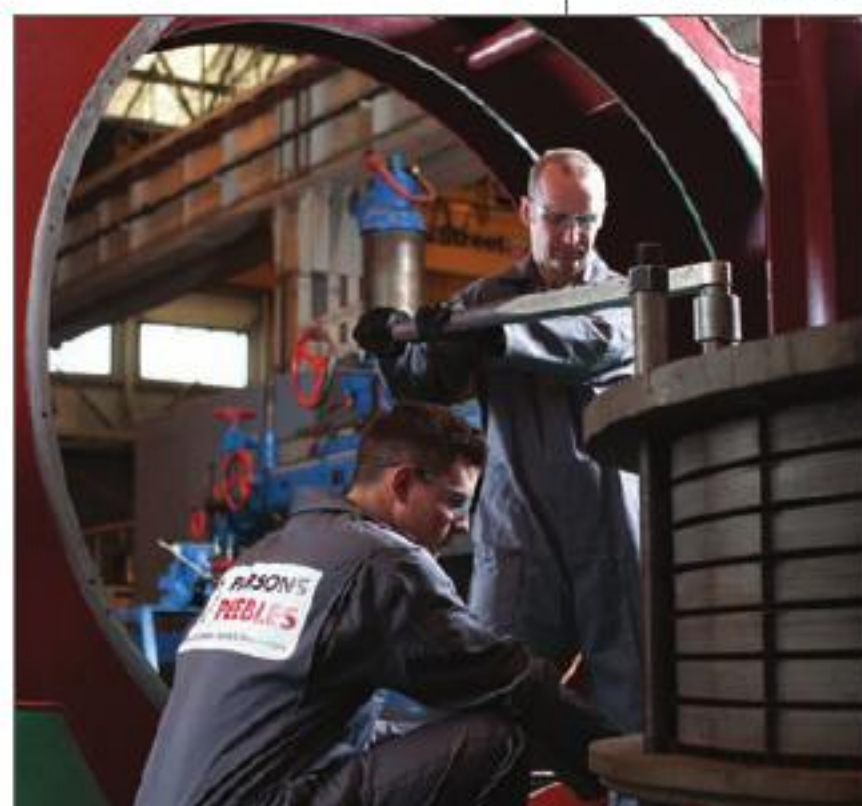
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- Design, manufacture, supply & installation of complete **thruster controls, switch boards, distribution panels** with class approvals.
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Above
Rotor replacement for a main
compressor drive on a main
production rig in the North Sea



Founded in 1898, Parsons Peebles has a proud history of motor and generator production stretching back for over 100 years. The company was purchased by Clyde Blowers Capital in January 2013 and following a period of significant investment, has continued to grow into a world leader in the service and manufacture of bespoke, 'non-catalogue' electrical machines. Throughout its history the company has been based in various locations near the east coast of Scotland and is today headquartered in the town of Rosyth, from where it produces and services machines for the oil and gas, power, mining and industrial sectors. "We specialise in electrical machines that are used in arduous environments and need to operate extremely reliably in mission critical applications," says marketing director Robin Tait. "We are in expansion mode at the moment focusing on more effectively servicing our large installed base by investing in new personnel and equipment. Within the North Sea we have machines running on most of the platforms and we're well placed

in Rosyth to ensure quick supply and service. We also have personnel covering our European customers and a new office in the Middle East."

One development that will be of interest to all clients of Parsons Peebles, particularly those operating within the North Sea, is the opening of the company's new storage facility, which allows clients to protect their investments by storing equipment in optimal conditions and therefore guard against damage and corrosion. "This storage facility is environmentally regulated and manned by our own specialist storage engineers. It just takes all of the hassle out of the storage of equipment and protects our customers' valuable assets. You could liken electrical machines to eggs - if you do not handle them correctly they break and if you do not store them correctly they go off." Robin explains.

"We have put together a campaign based on that theme to raise awareness of the importance of this issue. It is amazing how many contractors store equipment incorrectly. Many times we repair damage caused by equipment that has corroded due to lack of a shaft rotation regime or has bearing or coil damage due to a less than optimal storage process. These repairs are often expensive and come at the worst possible time, when a machine is required quickly to be put back into service," he continues. "So we have invested in a large facility that is ready to receive these machines and is ideally located for the offshore industry here in Scotland and further afield."

The 20,000 sq ft. storage facility enjoys ready access to major motorway links and with a lifting capacity of up to 50 tonnes, the safe and timely return of clients' assets is guaranteed. Customers' machines, documentation and associated components are ensured to be available on demand, along with a full range of spare parts, components and sub-assemblies, while the company's highly skilled experts follow a strict set of procedures that include pre-storage assessment and regular checks. Parsons Peebles can also full-load test motors to fully simulate site operating conditions to provide the ultimate insurance that a machine will work first time when installed in the field.

Increasingly within the oil and gas industry the maintenance of machines and equipment is becoming an important area of interest as the price of oil continues to fall and operators seek to lower their operating costs, as Robin elaborates: "Until recently the market was booming, but the falling price of oil is creating

a challenging market for everyone. However, this brings opportunities too because Parsons Peebles can reduce the total cost of keeping our customers' fleet of electrical machines running effectively. We have solutions from supply of simple parts to complete asset management. We also specialise in drop-in replacement machines. For example if an old machine fails we can supply a replacement that slots right into the same space profile and fits existing terminal box, bolting down and cooling connections. We can effectively supply the latest machine technology without the need for complex site modifications. We've got numerous examples where we've been able to engineer a solution even more quickly than a standard catalogue machine, but tailored to best suit the site and electrical infrastructure."

In response to growing demands, Parsons Peebles is also increasingly providing motor and generator rewinds at the customer installation. In difficult environments such as offshore platforms the time, logistics and costs associated with bringing back large pieces of equipment

makes "in-situ" repair and rewinds very attractive. Through its team of dedicated service technicians and project managers Parsons Peebles is able to replace and rewind motor and generator electrical stator coils, returning critical machines to service quickly and cost effectively. A key aspect of this service is the emergency response manufacture of coils from its UK based sister company, Preformed Windings.

As the business continues to grow, Parsons Peebles will also seek to increase its sales in new build machines. An important factor in this will be leveraging their supply chain and more effectively sourcing components whilst ensuring that its traditional high standards are maintained. "Up until now we have been focused on the after sales market and we are now significantly investing in making our new machines more competitive," Robin concludes. "We want to engage with new clients and our message to readers is let us quote you for your new machines – we're confident you'll be pleasantly surprised at the value of our offering." 

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Gartsherrie Engineering is a subcontract engineering business located in Coatbridge, Scotland. Accredited to ISO 9001, we manufacture stock and bespoke items for our customer base. These include oil and gas structures, subsea equipment, electric motor components and industrial parts. Our fully equipped factory includes coded fabrication and welding, CNC machining and final painting facilities. At Gartsherrie we understand the need for supplier/customer partnerships and we are privileged to have a long standing, preferred supplier relationship with Parson Peebles.

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Future fabrication



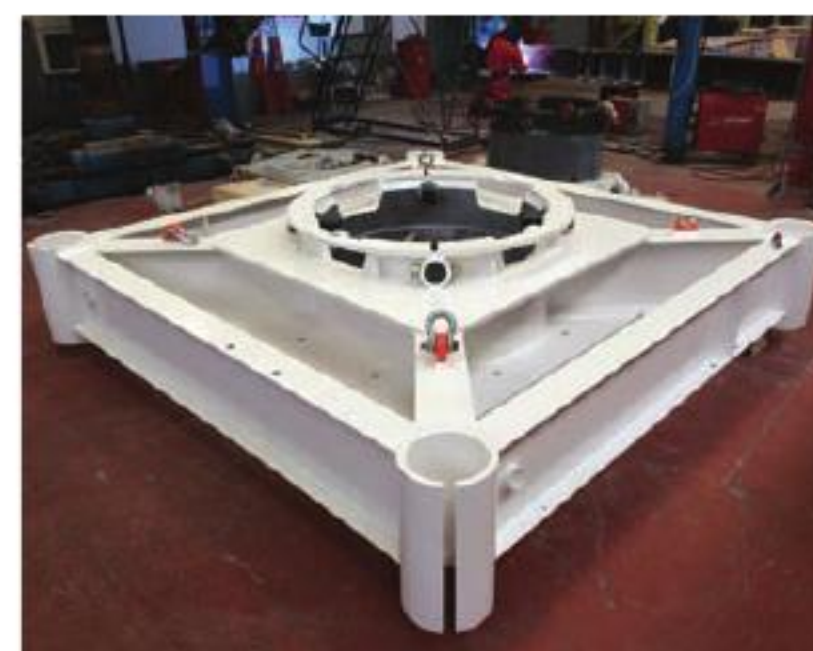
Founded in 1903, Francis Brown started its journey as a family-run business based in Stockton-on-Tees in the North East of England and today has developed into a leading fabrication solutions provider to a wide range of industrial markets worldwide.

The company remains in family ownership today and continues to grow with clients operating globally, principally within the oil and gas, subsea and renewables markets as well as its traditional home supporting the substantial chemical processing industry that has developed since the fragmentation of ICI's monolithic plants north and south of the River Tees. "It is a significant achievement for any organisation to remain independently in business as long as Francis Brown's has," says proposal manager, Ray Smith. The current managing director, Jamie Brown's great grandfather started the company as a small wire working business at the turn of the last century and successive generations have built on that to meet the challenges presented supplying fabrication expertise to the chemical, steel and the oil and gas industries that developed in the North East of England throughout the 1900's.

Francis Brown last appeared in *European Oil & Gas Magazine* in October 2013 and since that time the company has taken advantage of its diverse knowledge base and experience to adapt to the shifting needs of the markets that it serves. "Most markets operate in a cyclical fashion and it has been a benefit to us supporting several

key markets that the peaks and troughs of the industry sectors do not always coincide. One manifestation of this is in the supply of Launch and Recovery System assemblies, which constituted a significant percentage of our turnover in recent years, but we have seen a sharp decline in the last year or so with no detrimental effect to our overall sales as other markets have taken up the slack. In particular we have seen strong growth in the demand for fabrication of components for the subsea oil and gas industry and 'hardware' fabrications for the umbilicals industry. The majority of these products demand focused project management, top-level quality assurance and compliance with demanding material and manufacturing specifications," Ray highlights.

In addition to winning key orders for Newcastle based Technip Umbilicals for the





fabrication capacity by opening a new workshop fully segregated from the main carbon steel facilities for the welding of stainless steel and high alloys in clean conditions, totally minimising the risk of weld contamination," he continues. "We are seeing greater demand for stainless steel, duplex, super duplex and other nickel alloys and this will allow us to serve a greater part of this industry."

The moving of the stainless steel welding from the main fabrication shops will also make space for additional Submerged Arc Welding equipment, which the company is investing in to maximise its quality and cost effectiveness, particularly in the subsea and umbilicals sectors.

With a broad base of clients within a wide spectrum of industry sectors, Francis Brown is able to navigate the changing tides of the oil and gas industry and its other market sectors. With strong order books and exciting new developments coming in the near future, 2015 looks like being an interesting and exciting year for the company. 



Francis Brown has established itself as a proven industry player in the tidal energy sector of the renewables industry by supplying major fabrications for the highly publicised Atlantis Resources Meygen project

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Services
Industrial fabrications
and engineering

supply and fabrication of hardware for Total's Moho Nord and Egina projects, Francis Brown has established itself as a proven industry player in the tidal energy sector of the renewables industry by supplying major fabrications for the highly publicised Atlantis Resources Meygen project and the decidedly innovative SR2000 tidal wave turbines for, world leaders in that sphere, Scotrenewables Tidal Power. "Both projects have incredible potential with Meygen offering the phased deployment of a possible 400 turbines on the seabed of the Pentland Firth, whilst the 'levelised' low cost energy of the SR2000 floating turbine promises global appeal," says Ray.

Coinciding with the company's continued success, during 2015 Francis Brown will move into a new office building within the boundaries of its existing facility. "The decision to move into a new building will enable us to accommodate client and third party personnel who are ever more present as a consequence of the increasing commitment to quality and compliance," Ray comments.

"We also want to expand into the design field and these facilities will give us the ability to slot in a new element to the business in the shape of a design department. It is part of a long-term vision to improve the business by being able to offer a design option to our clients as well as giving us the ability to create our own bespoke products.

"Furthermore we are extending our



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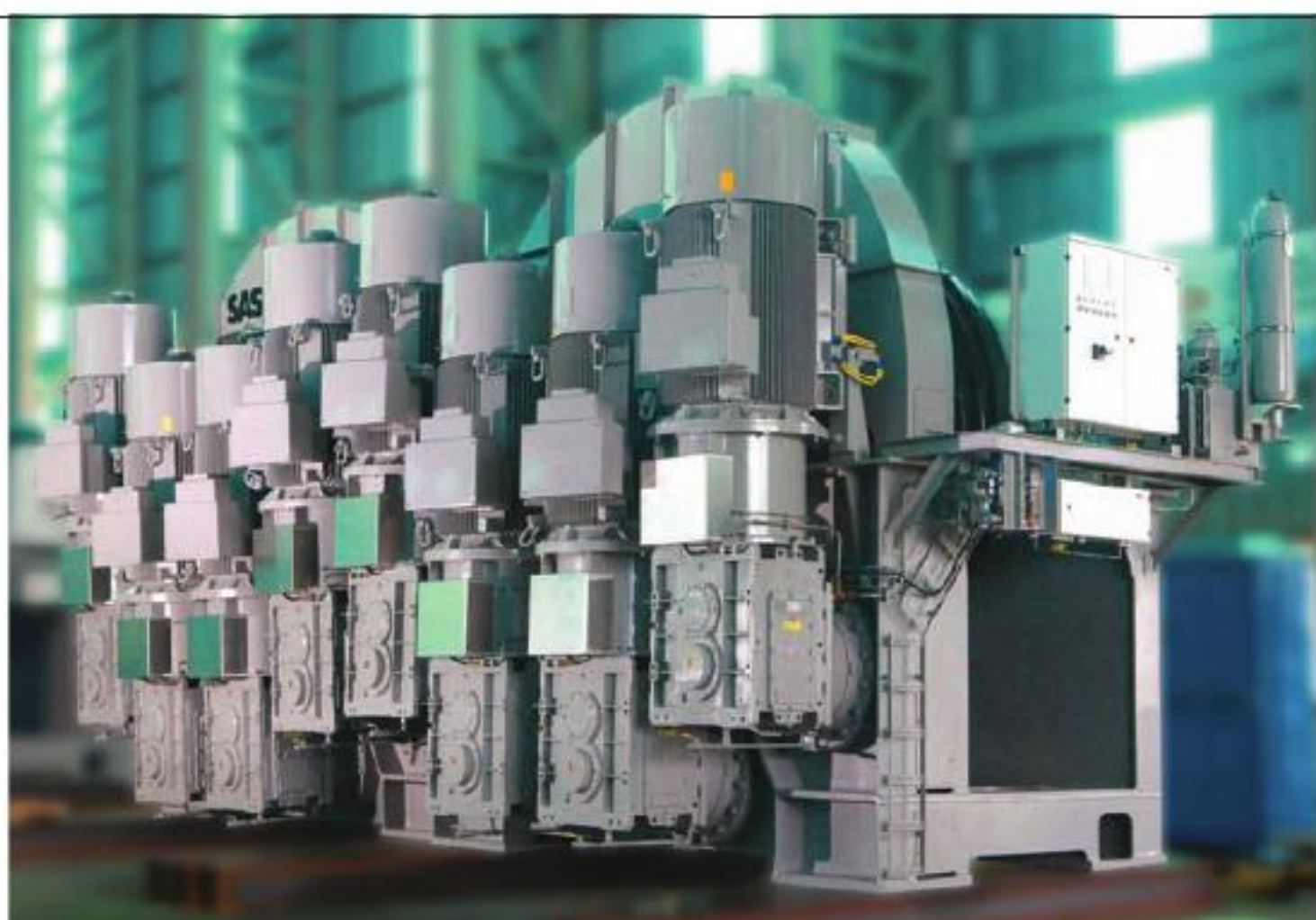


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Transmitting power

In the new Brevini headquarters, the whole production cycle of the planetary gearbox has been reconsidered and redesigned, with solutions aimed at guaranteeing production excellence. The stance is replicated throughout the group in efforts to maintain its image as a world-class manufacturer. In a history that dates back to the 1960s, the business has gained vital experience in the engineering and production of power transmissions, hydraulic based equipment, and winches. In 1979 the group established the Benelux division, which today manages a strategic combination of those three key interests.

Brevini Benelux, with its manufacturing site in the Netherlands, offers a complete product and knowledge portfolio with its equipment having been granted multiple patents, and the combination of its components and services has made the business a worldwide success. It was in 1995 that the fluid power division was incorporated into the group, offering a range that includes compact units, hydraulic valves, gear pumps and motors, axial piston pumps and motors and proportional valves. The scope of its offering is completed with a winches division, boasting a complete portfolio with respect to winch drives, including hydraulic, pneumatic, and electric options, available as standard design or customised. "It is through this division that we have our biggest export market, utilising our sister companies in surrounding countries with key contacts," begins Dennis van Arkel, sales and marketing manager. "The UK market is one

of particular interest, where our products are sold directly to offshore businesses or to rental organisations supplying the industry," he adds.

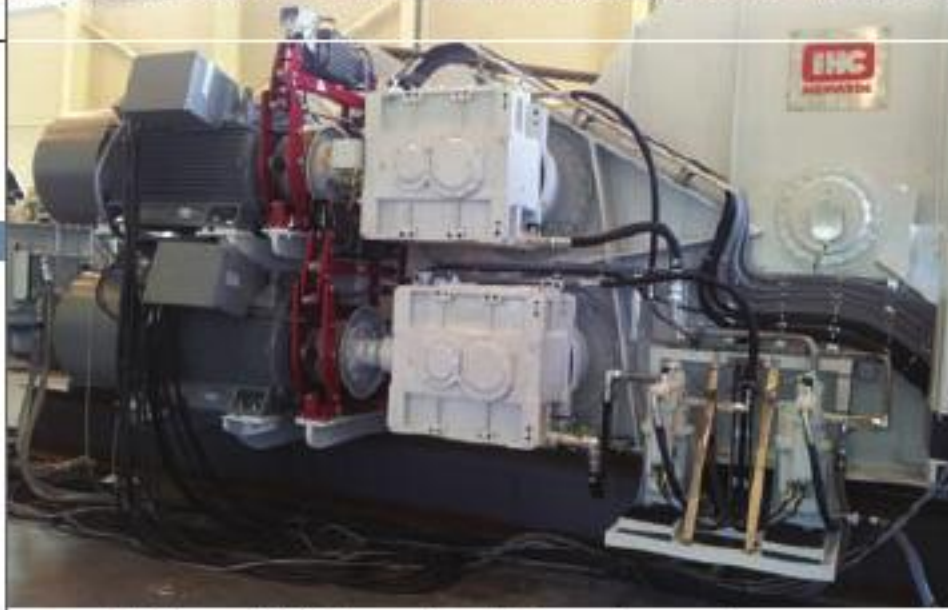
Whilst it is the compact and low maintenance planetary gearbox system that holds the key to the group's success, the recent drive into the winch market has seen the business launch one of its latest products, developed and built in conjunction with IHC Hytech. "The man-rider winch guarantees the highest level of reliability. We have had a high demand in requests relating to this product, and having developed specialist versions we are really starting to see results," highlights Dennis. The competitive and growing design is perfectly suited to the wind industry, which itself is a growing sector. Turbines that already utilise winches at the bottom and top sections to offload supply vessels and man power benefit greatly from the endurance, strength and safety of the winch.



"Not only is our product very compact but the double braking system is a necessity for a man rider system. The product advancement differentiates us from the competition, yet successfully maintains a cost advantage," Dennis points out. Importantly, as a manufacturer of the transmissions and the hydraulics, Brevini is able to take the majority of the specialised parts from its own production, saving vital time and expense that would be laid out outsourcing such items. "This is advantageous to ourselves and our customers. If there is ever an issue that needs addressing, they only need to make one call to solve the problem. We are one of the few companies that have all the disciplines in house," he explains.

Focused on continual product development to attract an evolving client base, he continues: "We have developed a new high power series of gearboxes used frequently for big tension winches, between 500 and 800 tonnes. The new series of right angle gearboxes for average and high power industrial applications, combines all the typical advantages of the output configurations of a planetary gearbox with the tried and tested,





reliable and high-quality right angle gearboxes. This solution is more efficient, quieter and more compact than a standard gearbox, with the combination increasing the internal power capacity." Through close working relationships with valued clients the business continues to successfully develop more powerful solutions, all based on the existing planetary systems.

"Product development and innovation is vital to survive in the market. You have to continuously innovate, increasing the capacity as well as the choice of materials. By working closely with universities and organisations we have been able to make substantial breakthroughs in material strength and component capability," says Dennis. Of course, the core of the products has been available for some time but it is only in recent years that the

advantages have really become clear. "There are always opportunities and the offshore market is a very interesting one for us. Oil price has inevitably affected some investments, but in principal the market is ongoing and moving to deeper waters and as it does so, clients require more advanced equipment.

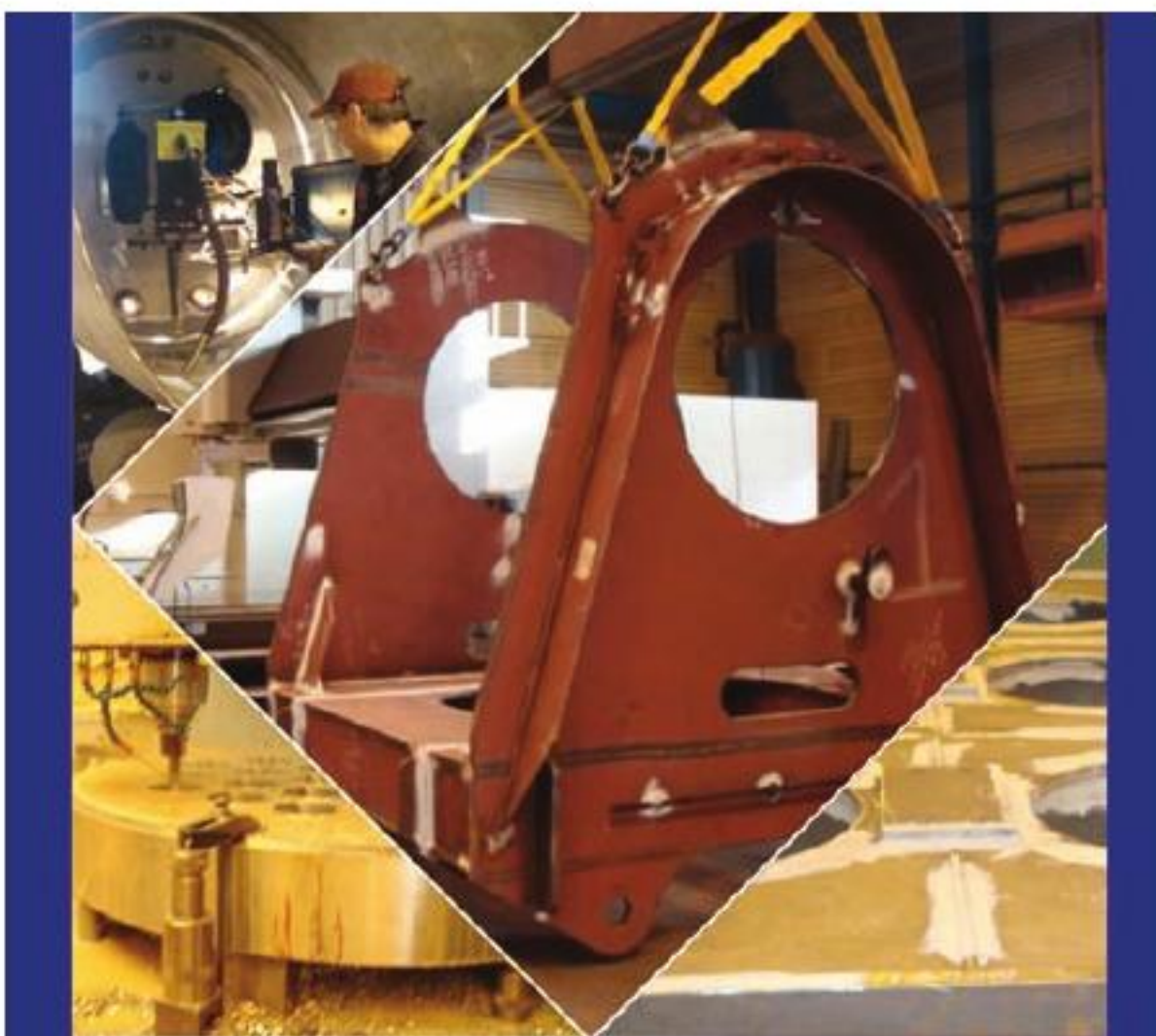
"In respect to that, we have a very strong focus on the special winch business as our clients begin operating in more complex environments. We see a lot of opportunities, especially with rental businesses, which purchase such equipment in bulk. There is also heavy demand from customers seeking customised solutions, so it is important for us to keep a degree of flexibility in our engineering so that we can fulfill that demand," he concludes. Through the patented portfolio and the innovation driving new combinations of already advanced equipment, the business is able to take advantage of its self nurtured position to continue to grow, in the knowledge that it brings a unique concept that has to be considered. 


“

The man-rider winch guarantees the highest level of reliability. We have had a high demand in requests relating to this product, and having developed specialist versions we are really starting to see results

Brevini Group - Benelux
brevini.nl

Services
Manufacturer of power transmission, hydraulics and winches





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KWANT CONTROLS

Kwant Controls is proud to be partner in the present generation of K-Master Control Units for the Kongsberg K-Master System. Joining at a later stage in the development process, Kwant Controls developed and produced K-Master Control Units for azimuth, tunnel thrusters, main propulsions and joysticks, optionally with electric shaft driven motors. Within the boundaries of the industrial design, given by Kongsberg, Kwant Controls engineered, prototyped and hosted the type approval proves successfully. With its long tradition in the design, engineering and assembly of a.o. control units, electric shaft systems and control panels, Kwant Controls is an excellent partner in the development and production of customised control equipment. Kwant Controls keeps on innovating its products and techniques and can now offer the latest generation of azimuth levers with integrated electronics.

Some advantages:

- ◆ The motor driver PCB has been incorporated in the unit so that less space is required underneath the panel;
- ◆ Output via CAN-BUS cable;
- ◆ Optional: 4-20 mA 0-10V output via a compact, additional module.



Quality in Command





Built on tradition

“

Today the business is a globally respected organisation serving key markets in the offshore, shipyard, and the energy exploration and production industries

Above
Bluewater Aoka Mizu

Right
Thermopylae House,
Aberdeen

This year Kongsberg, one of the world's leading providers of systems for merchant marine, subsea and offshore, is celebrating a milestone anniversary. For two centuries the business has been at the forefront of technology and innovation, transforming from a manufacturer of small arms to a leader in many technological fronts including marine, oil and gas, space and defence. “The company was originally founded in 1814 and is one of the oldest industrial concerns in Norway,” says Dave Shand, general manager offshore at Kongsberg Maritime in the UK. “This year we celebrated our 200th birthday, and we have reached this milestone by constantly developing through innovation.” Indeed, the history of Kongsberg is steeped in innovation, success and a strong vision for development, dating back to 20th March 1814 when Poul Steenstrup established Norway's first factory – Kongsberg Vapenfabrikk. Poul was a visionary who believed in industrial progress and technical understanding, combined with national pride and strong determination.

Innovation remained key to Kongsberg as the business continued to develop into the 20th century, being involved in a range of industries and technological developments, from manufacturing world-class rifles to the ground breaking dynamic positioning systems that the Kongsberg Maritime business division is world-renowned for today.

Kongsberg Maritime itself was established in 1992 to capitalise on Kongsberg's growing international business within the maritime dynamic positioning sector. Today the business is a globally respected organisation serving key markets in the offshore, shipyard, and the energy exploration and production industries. Kongsberg Maritime provides a plethora of services and solutions to these sectors; for example in field development it supports construction and offshore vessels with innovative solutions for operation and specialist applications, in production it offers automation systems and software to enhance output and minimise downtime, whereas for maritime transport and offshore vessel clients it offers a complete package of solutions such as navigation, automation, training and safety systems. [KONGSBERG](http://www.kongsberg-maritime.com)



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For more than a decade ISIC has been a trusted supplier of hardware solutions to the marine market. Our marine certified monitors and computers are widely used in automation as well as ECDIS and Radar applications throughout the world.

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WVT Industries nv

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WVT specialises in the manufacturing of industrial chemical cleaning products

WVT Industries is a rapidly growing company that specialises in the research and development, production and marketing of industrial chemical cleaning products.

WVT Industries product range includes more than 750 different formulations that are designed to suit the majority of industrial market sectors where manual and chemical cleaning are required.

WVT has the resources and technology to respond to customer requests by developing formulations to solve specific cleaning problems and this "tailor-made" aspect of the company's capabilities provides the company with a considerable market advantage.

WVT Industries attaches great importance to the environment and strives to reduce its impact by producing only biodegradable chemical cleaning products. WVT has invested substantial resources in the development of environmentally-friendly production processes and packing materials. The company's Research & Development department works on a "continuous improvement" policy which provides on-going development of new eco-friendly techniques and processes.






"We have several divisions which address the oil and gas industry, including Subsea and Offshore Divisions," says Dave. "In general we address all phases from exploration through production to transportation. One of our specific focuses is integrated control and safety systems for oil and gas floating fixed production installations. In conjunction with this activity we established a subsidiary, Kongsberg Maritime Engineering, which undertakes EPC contracts to deliver complete packages. We are one of the leading global providers of marine systems in the oil and gas industry, encompassing drill ships and rigs, LNG vessels, offshore support vessels, offshore survey and ROV support vessels."

Indeed, for the offshore sector the business provides a vast catalogue of products and services that encompasses bridge systems, camera systems, deck systems, engine room and automation systems, engineering, safety systems, simulators, sensors and transmitters, tank gauging and measurements. On a wider scale Kongsberg is even active in other areas of offshore energy through its Kongsberg Oil & Gas Technologies division, such as drilling

operations support, integrated operations, process simulation, and riser management.

"One of our main strengths is the 'Full Picture'," Dave highlights. "For example, in floating production we can utilise our strengths in marine with our experience in topside to realise a common solution for all control aspects of a production installation. In conjunction with our colleagues in Kongsberg Oil & Gas Technologies we can deliver a solution that includes dynamic process simulation and operator training systems. We have built up a strong customer focused MMO support team in the UK as part of our global support team, which works proactively with the customer to maximise the operation and productivity of their assets."

The company is globally renowned for its range of dynamic positioning systems, which have been developed to minimise fuel consumption and wear and tear on the propulsion equipment of a vessel. These can be used across a wide range of vessels such as drill ships, cable laying vessels, crane vessels, FPSOs, diving support vessels, floatels, and various other ships and vessels for a wide array of applications. Kongsberg's system can be provided as a standalone system or can be offered as part of an integrated system that communicates with other Kongsberg systems on board the vessel including the K-Chief (marine automation system) and the K-Thrust (thruster control system).

Kongsberg Maritime is also a leader in the development and production of subsea systems covering a broad scope of applications and technologies. This can range from acoustic communication and control, autonomous underwater vehicles (AUVs) through to environmental monitoring solutions, seabed mapping and underwater positioning systems. 



The company is globally renowned for its range of dynamic positioning systems, which have been developed to minimise fuel consumption and wear and tear on the propulsion equipment of a vessel

Above
Kongsberg process
automation control room

Left
K-Chief system



ISIC A/S

ISIC A/S is a leading manufacturer of ruggedised computer and monitor solutions designed for demanding environments. The main markets for ISIC A/S include marine, defense and industry. ISIC A/S is a significant supplier to Kongsberg Maritime, and through the years a strong business relationship has been built for mutual benefit. By sharing know-how and experiences, the two companies enjoy a trusting relationship with focus on developing innovative solutions and delivering beyond expectations on all parameters. ISIC A/S operates out of Denmark and is a part of Lagercrantz Group AB, registered at the Swedish stock exchange.

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The ability of Kongsberg to provide an entire suite of products for offshore, subsea and maritime operations ensures the company continually secures major contracts and significant projects. For example, since the business was last featured in *European Oil & Gas Magazine* in August 2013 it has been selected to supply safety, automation and lifecycle simulation technology for the Johan Sverdrup field development by Statoil. The business was awarded a Project Specific Agreement, including FEED, for the delivery of its safety and automation (SAS) systems in May 2014, and the deliveries will include Kongsberg Maritime's industry-proven SAS technology, which is applicable for process control, power distribution control, process shutdown, emergency shutdown and fire and gas systems. Ultimate delivery will also include the company's latest systems and technology for production, integration, presentation, simulation, training and operation.

The company has already installed a range of similar systems before on ten Statoil production platforms, illustrating the high levels of regard that Statoil holds the Kongsberg name, and this particular project will further strengthen Kongsberg's position as a leading supplier of automation and safety systems to the global offshore production market.

Also, more recently the business has won a significant contract from BW Offshore to provide all control systems for its new Premier Oil Catcher Field FPSO, which will operate in the UKCS. "This is a significant project for the Kongsberg Maritime business and for the UK business in particular as it builds on the current portfolio of ICSS installations, including Statoil Mariner," Dave highlights. "It continues our strong relationship with BW, which includes the BW Athena FPSO in the UK sector, and builds on Kongsberg's strengths in the FPSO market, including Bluewater Aoka Mizu, Hawene Brim and Maersk Gryphon Alpha in the UK sector with many more operating globally."

With such a strong history and an equally high reputation, there is little doubt that Kongsberg Maritime will remain the leading name in automation systems into the future, as Dave points out: "We are encouraged with the amount and quality of enquiries for our solutions given the current market, but we have technological differentiators that make our solutions attractive in a sector that looks to reduce lifecycle costs.

"We will continue to focus on the oil and


GUIDANCE MARINE

Guidance Marine, a division of Guidance Navigation Ltd is a leading international developer and supplier of position reference sensors for Dynamic Positioning (DP). The company's laser and radar CyScan, RadaScan and Mini RadaScan sensors can be integrated by all major DP manufacturers and are used on a daily basis by all OSV and PSV operators for DP1, DP2 and DP3 class vessels.

Kongsberg Maritime has recently renewed its contract with Guidance for the CyScan Mk4 laser system for the next three years, having considered it the only laser sensor of choice that comes with a three-year warranty thanks to its robust and reliable design. Guidance will continue to work together with Kongsberg in providing its customers with the best position reference sensor technology available on the market today. Guidance is proud to be a Kongsberg supplier as it only provides the best in class.

R. STAHL

R. STAHL, the leading supplier of electrical explosion protected components and systems, has a long lasting partnership with Kongsberg Maritime to extend their automation system's capabilities into hazardous locations. STAHL's Remote I/O for installation in Zone 1 or 2 is being extensively utilised in Kongsberg's projects on offshore production platforms, LNG tankers and FPSO vessels. A high level of integration is achieved by joint R&D activities of both companies.

gas market, encompassing production control systems and the subsea IRM market, where we have key technologies such as AUV and environmental monitoring systems. Our vision is to be a key provider of ICSS systems in the UK sector, building on our success in the Norwegian sector and what we have achieved to date in the UKCS," he concludes. 

Kongsberg Maritime
kongsberg.com

Services
Automation Systems

ATEA

Atea is the leading Nordic and Baltic supplier of IT infrastructure with approximately 6,500 employees. Atea is present in 82 cities in Norway, Sweden, Denmark, Finland, Lithuania, Latvia and Estonia.

Atea delivers IT products from leading vendors and assist its customers with specialist competencies within IT infrastructure services with its approximately 3,700 consultants and 7,500 technology certifications.

Kongsberg Maritime is a very important and demanding customer of Atea where our deliveries to Kongsberg Maritime includes IT-infrastructure and IT solutions worldwide. We have a strong and long relationship with Kongsberg Maritime and they are both rewarding and challenging doing business with,
says Tom Gjertsen, Regional Director in Atea.



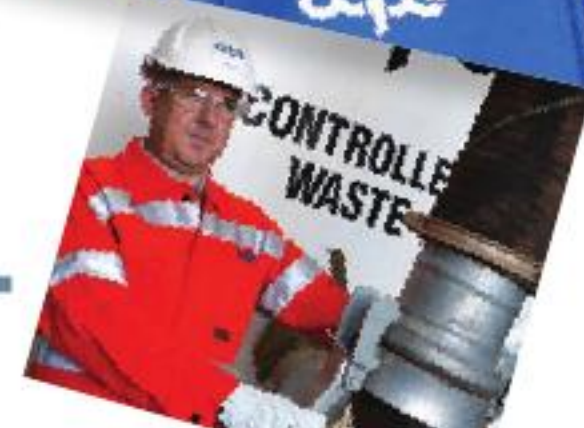
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Flying high



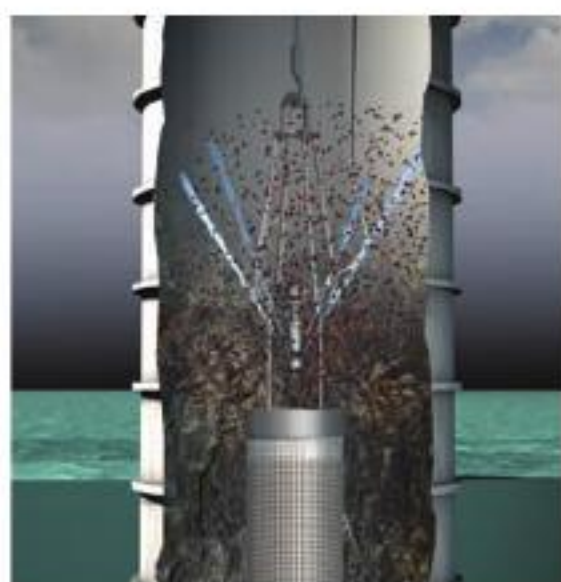
Since its inception in 1893, Middlesex based Cape Plc has developed a global presence with well established and reputed subsidiaries trading in the UK, Europe, CIS, North Africa, Qatar, Australia, Saudi Arabia, UAE, the Philippines, Singapore and Thailand. With its 18,000 competent and trained personnel operating across the globe, Cape Plc offers safe, reliable and intelligent solutions both on and offshore. Split into seven sectors, oil and gas onshore, oil and gas offshore, power generation, minerals and mining, chemical, steel, marine and other, the highly successful group trades on the main market of the London Stock Exchange and reported adjusted revenues of £697.1 million in the financial year ending 31st December 2013.

As part of Cape Plc, Cape Environmental Services (Cape ES) is a leading provider of onshore and offshore cleaning and decontamination services, having delivered pioneering solutions to its blue-chip client base within the oil and gas, heavy industry, petrochemical, manufacturing and pharmaceutical industries for four decades. A proud integrator of a broad range of innovative, environmentally friendly, industrial cleaning techniques since 1969, the company complements its high pressure water jetting, high airflow vacuum services and chemical

decontamination processes with waste management services and on-site waste handling capabilities; in addition, the company offers infrastructure monitoring and refurbishment.

Previously known as Cape DBI, Lovat MacGregor, business development manager of Cape ES states the company was rebranded in 2012 to strengthen its global appeal and ensure instant recognition across the markets it operates in: "The change was twofold, firstly to identify Cape ES as an environmentally sound contractor in heavy industrial cleaning and waste management, and secondly to distinguish between Cape Plc's traditional core industrial services of scaffolding, insulation, asbestos removal and painting."

As an independently trading division of Cape ES, itself a subsidiary of Cape Plc, Cape Environmental Services Offshore (Cape ESO) works in close partnership with clients such as Shell UK Limited, BP, Total, Apache NS, Maersk Oil, Nexan Inc and Daewoo Energy on innovative industrial cleaning and decontamination services for process pipework, tanks and vessels. To ensure ongoing success, the company is a staunch supporter of utilising the most state-of-the-art technology and providing regular training to its highly qualified and skilled personnel, which results in time and cost efficient solutions that reduce downtime and



boost overall production time. "Highly respected for its innovative solutions and exceptional safety and quality standards, Cape ESO has built an unrivalled reputation for its total integrated package delivery," says Lovat. "We are viewed throughout the industry as a pioneer in safe, environmentally sound industrial cleaning techniques, with our full suite of technical solutions a key differentiator against our competitors. We also provide a one-stop-shop service to clients and facilitate customer shift to fewer, better resourced suppliers deploying best practice in addition to focusing on minimising downtime and total job cost reduction."

An example of the company's commitment to innovation is its award winning Syphonvac system, which facilitates the online removal of sand from production vessels without needing to shutdown production or for confined space entry to the vessel by personnel. So far it has been operated without interruption on 14 platforms and 35 projects, notes Lovat: "Cape ESO has deployed Syphonvac for several leading international operators including BP, Shell UK E&P, Hess Ltd, Maersk Oil and Nexen Inc. BP engaged CES to install and operate the Syphonvac system to the LP Separator on the ETAP platform in the Eastern Trough Area of the UKCS North Sea. The ETAP has a crude oil production of 40,000 bopd. Cape ESO removed almost three tonnes of sand throughout the process, with the vessel remaining in full production for the duration of the procedure. Time saving achieved by this procedure was approximately 17 days in the turnaround period."

Setup of the Syphonvac is generally possible within 12 hours, compared to a seven to ten day full vessel shutdown preparation period to facilitate confined-space entry directly by personnel. The system is fully certified to ATEX standard, and is compact to allow for deployment in any global region, making it capable of export to the full international oil and gas exploration and production marketplace.

Fully committed to research and development, the company also recently worked in conjunction with Apache North Sea to create the new 'Torpedo' unit – an environmentally safe internal overboard caisson cleaning system that can operate below sea level to remove scale and marine growth from the caisson back to the platform deck where the debris can be disposed of. "From our experiences using the Torpedo system to capture debris we have collected between 0.5 - 1.0 tonne of scale and marine

growth during each internal caisson clean. This is material which pre the Torpedo innovation would have fallen to the seabed. By working in partnership with Apache North Sea, we have developed a safe, innovative and environmentally compatible system for undertaking caisson cleaning projects of any nature," says Lovat. The Torpedo system awarded a Commendation Award for Innovation by the EIC (Energy Industry Council) in October 2014.

With ongoing long-term contracts with BP, Shell UK Limited and WGPSN in the cold cutting segment of the business alone, the future looks positive for Cape Environmental Services despite market challenges, as Lovat concludes: "The next 12 months will be demanding as operators will look to cut costs, gain added value and strive to reduce/eliminate periods of production downtime. We will use our experience, reputation and innovative technology to focus on realising these operational targets for our clients and prospective clients." 



Highly respected for its innovative solutions and exceptional safety and quality standards, Cape ESO has built an unrivalled reputation for its total integrated package delivery

Cape Environmental Services Offshore

capeplc.com/services-and-sectors/our-specialist-services/cape-environmental-services.aspx

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A clean Sweep

PALFINGER MARINE

Palfinger Marine is the global leading manufacturer of highly reliable, innovative and customised marine, offshore and wind cranes, launch and recovery systems and boats. User-friendly application and functional design are the key benefits of the product's range. A worldwide service network including supply of spare parts ensures fast and professional on-site support. For the Koseq Compact 502 project a versatile, lightweight and easy to operate Palfinger Marine PK 12000 M foldable telescopic knuckle boom crane was selected to fit inside the smart designed Koseq containerised self-deploying sweeping arm system. The main characteristics of the crane are the 6.1 m outreach and 1300 kg lifting capacity during offshore conditions to carry the specially designed Koseq winch attached to the telescopic boom, which holds a rope to hoist and lower the sweeping arm. The Palfinger Marine PK 12000 M is integrated in the small but very effective compact hydraulic system, which consists of a diesel driven unit with incorporated tank.

As the transportation of oil increased in the 1960s and 70s, so too did the risk of major incidents where vast amounts of oil polluted the waters and coasts, causing damage to the environment, its inhabitants and operational capabilities across the globe. Due to the huge costs and efforts need to clean up oil, beaches and surrounding areas following a spill, the Dutch Ministry of Transport, Public Works and Water Management (Rijkswaterstaat) called for the development of a tool for the swift recovery of oil. Utilising its 40 years of expertise, Koseq BV took on the challenge and came up with a solution for the removal and recovery of large quantities of oil from the water surface; known as the Rigid Sweeping Arm, Koseq's product generated huge amounts of interest from the oil industry when it was launched and has since been used during some of the most recent major oil spill disasters.

"In the 1970's we started the development and production of the sweeping arm under the name of Doseq. Most systems were sold in the Netherlands, at a time when there wasn't much effort in export. That changed after the Prestige oil spill, near Spain in 2002; Spain had no means to recover oil offshore and hired 12 vessels from all over Europe with different types of oil spill equipment. Two vessels recovered together over

80 per cent of the total amount: the Arca and the Rijndelta, which were both equipped with our sweeping arms. Since then we have received enquiries from all over the world, which led to our decision to start Koseq," begins Tom Achterberg, engineering manager at Koseq BV.

Mainly used by governments or government related organisations that handle pollution issues, the Koseq sweeping arm was created to meet the aims of Rijkswaterstaat and TNO (Dutch Organization for Applied Scientific Research) for a product that mechanically recovers large amounts of spilled oil in a short time frame, operates effectively in rough seas and harsh weather conditions and offers complete reliability. Successfully meeting these requirements, the rigid sweeping arm is pulled beside a vessel and consists of two pontoons, which gives the arm its floating capacity and stability, even in rough seas. In addition, the product has a bridge piece to guide the oil to the oil collection chamber within it, the height of which is hydraulically adjustable to handle any thickness of oil layer.

Once collected, the oil/water mixture is pumped onboard through an oil transfer pump, which uses an impeller that combines the properties of a screw pump with those of a centrifugal pump. This integration ensures the pump is highly suitable for high viscous oils, while remaining less sensitive to debris. On board the vessel, the oil/water mixture is separated before the water is pumped overboard; this recovery continues until the tanks onboard are completely filled with oil.


On top of its rigid sweeping arm concept, the company also manufactured the compact sweeping arm and the v shaped victory oil sweeper, the latter of which is a rigid sweeping arm system to meet the needs of clients such as coast guards and ship owners that own smaller vessels. Consisting of a smaller arm when in folded mode, the victory oil sweeper gains length when unfolded, which thus makes the recovery of oil spills from rivers, estuaries, drilling rigs and offshore installations a possibility. Other advantages of this new product include an adjustable angle, which allows for choice between a large sweeping area or enhanced sweeping speed at a lower angle, and extra pumping capacity thanks to a second pump.

Committed to the ongoing improvement of its equipment and innovative developments, the company opened a new office in Ridderkerk, the

Netherlands in February 2014 and expanded its R&D department; a move that has resulted in the development of new products, as Tom notes: "The Compact 502 is now finished; it is based on a compact five sweeping arm, which is a smaller version of the big sweeping arm. Although our sweeping arm system works perfectly, it requires some adaptation from the vessel that it is installed on. The Compact 502 arm is mounted within a 20 feet ISO container size frame, together with a crane, diesel driven power pack and an operator unit. This is a complete unit, easy to transport and install, with everything you need to recover oil; the only item that has to be found on board the vessel is storage for the recovered oil."

Since it introduced and demonstrated the Compact 502 to the market in Vlaardingen on 14th October 2014, the company is now focusing on taking advantage of opportunities within the oil spill market, as Tom concludes: "The oil spill market is growing and environmental issues are becoming increasingly more important as people



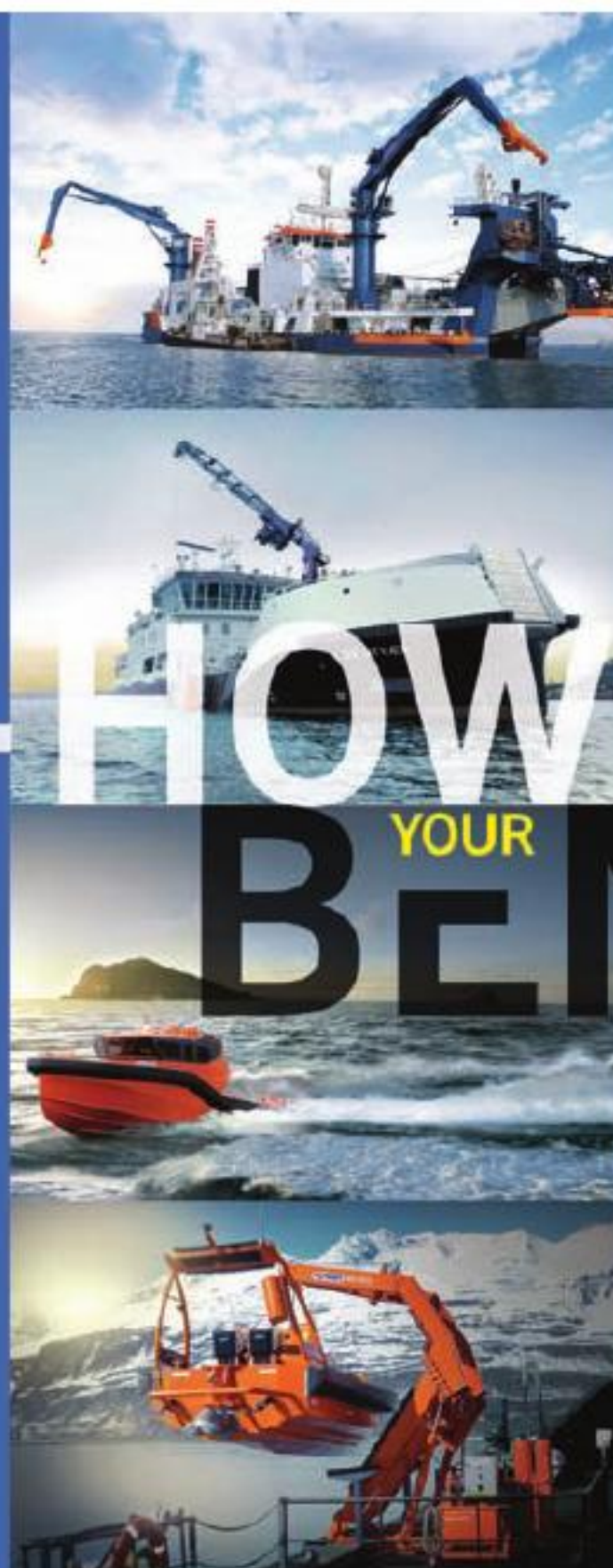
become aware of the dangers of oil pollution. To meet this growth, we have a unique method for the recovery of oil, which has proven to be the most effective in real oil spills. Besides that, we have a skilled R&D team that is now working on new products. Although we have already established great success with our systems in Europe, our next aim is to expand our presence on a global scale." 

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At the forefront of the developing cryogenic vaporiser market since its inception in 1968, Cryonorm was originally focused on the industrial gases market; however, when the small to mid scale LNG market expanded on a global scale, so too did Cryonorm. "In the beginning Cryonorm was only supplying cryogenic vaporisers for vaporising of liquid nitrogen, oxygen, argon and CO₂, major industrial gas suppliers are still part of our customer base. It was in the 1990s that the first vaporiser for the regasifying of LNG was delivered which opened a new market for us. Since then, we have expanded with the global small to mid scale LNG market and taken the opportunity to grow from a component (vaporiser) supplier to a supplier of complete systems," says Mr Piet Tel, director of Cryonorm Systems BV.

Employing a combination of technology and production techniques, Cryonorm has divided its organisation into three product lines to ensure customers receive the best possible service from personnel dedicated to their focal area of operation. The first business segment is Cryonorm BV, which is committed to the regasification of cryogenic liquids through the design and sales of cryogenic vaporisers that can be used for liquefied air gases and LNG. The second division is Cryonorm Systems BV, which focuses on the design and sales of LNG satellite plants, LNG ship bunkering plants, LNG ship fuelling systems and LCNG truck filling stations. The third and final product line, also handled through Cryonorm Systems BV, processes the engineering and design of small scale LNG liquefaction plants. Despite the separation in

activities, Cryonorm is committed to ensuring every customer receives the same level of understanding, empathy and sales care.

With vaporisers to the air gases market as steady base, Cryonorm believes LNG is the fuel of the future and now leads the way in the growing LNG market with its small to mid scale LNG systems. Despite being involved in a relatively new market, the company has already cemented its role by supplying the majority of LNG fuel systems in the Netherlands, as Piet highlights: "These LNG fuel systems were all one-of-a-kind and the first of their kind in the world. For example, we provided the Argonon, the first dual fuel powered inland ship, with one 40m³ LNG fuel system; we also delivered the Greenstream and Greenrhine, the first two 100 per cent gas-electric powered inland ships, with two 40m³ LNG fuel systems and retrofitted the Eiger, an inland ship, from diesel to dual fuel through the provision of one 60m³ LNG fuel system. Moreover, the first LNG fuel systems for worldwide first dual fuel propelled liquid Ethylene carrier was provided by us, and we are now constructing the first shore to ship LNG bunker station for LNG propelled ferries in Norway."


Specialising in LNG systems for inland and short seagoing waterway ships, the company is in a coveted position as the shipping industry has come under ever increasing pressure to reduce emissions from fuels and turn to a more economical and realistic solution. Because LNG powered ships comply with Stage IV emission standards for vessels on the North Sea and Baltic Sea, the benefits of using LNG has led to stronger demand in the LNG market and more

systems being built.

Discussing the blossoming LNG market, Piet notes: "The market for small to mid scale LNG is becoming mature, with more and more real projects. We hope the price gap between LNG and conventional fuels like diesel oil will give a further boost to projects involving small scale liquefaction, LNG fuel systems and bunkering." Other benefits of LNG include a reduction in carbon footprint, lower fuel costs, noise reduction, cleaner engines and lower maintenance costs.

Although Cryonorm is focused on delivering a turnkey solution through supplying complete LNG systems for both dual fuel and electric propulsion, Cryonorm also has experience in providing components to retrofit projects as well as new-builds, and as such is able to take on the most challenging of requests. For example, in October 2014, the company was selected by Erik Thun AB to supply an LNG fuel system onboard a new-build LNG powered cement carrier. Consisting of a turnkey marine

LNG fuel system with 130m³-type C storage tank, which will be installed inside the hull, the project is further confirmation of Cryonorm's position in the market as a trusted supplier. Meanwhile, in November 2014, the company received an order to supply a turnkey marine LNG fuel system with 30m³-type C storage tank, which is to be installed on deck eight. Working with Gas Natural Fenosa, this major project will see Cryonorm install an LNG system onto a passenger ferry for the first time, while its partner in the project will install the first natural gas engine for power generation on a passenger vessel in Spain.

Proud of its entrepreneurial spirit, Cryonorm will continue to deliver innovative and long-lasting solutions to its growing European customer base. However, as demand increases and further projects materialise, the company is keen to resource experienced and knowledgeable staff that can supply superior products in ground breaking projects, all while maintaining its core values of delivering exceptional customer service. 



With vaporisers to the air gases market as steady base, Cryonorm believes LNG is the fuel of the future and now leads the way in the growing LNG market with its small to mid scale LNG systems

Cryonorm Systems BV
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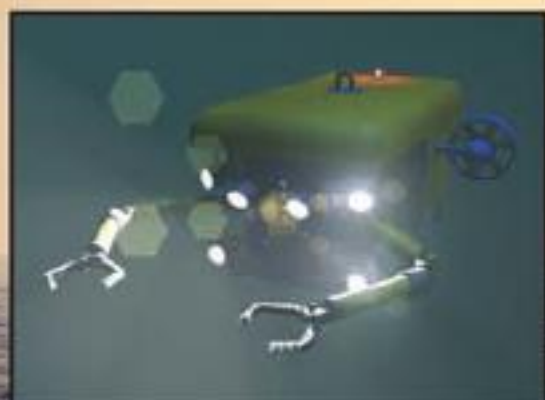
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Another string to the bow

From its humble beginnings


as a net importer of US manufactured products specifically designed for the subsea arena, Bowtech Products Ltd has grown over the years to become a specialist in the design, manufacture and supply of underwater harsh environment vision systems, as Mike Winstanley begins: "Bowtech Products Ltd (Est. 1989) began trading in January 1990 with just two members of staff: founder Steve Bowring and myself, then operating as sales executive. Bowtech grew over the next 18 years to become a specialist in the supply of cameras, lighting, connectors and multiplexers. In 2008 we decided to concentrate on the design, manufacture and supply of our own range underwater harsh environment vision systems. Today our underwater vision systems are deployed in the harshest environments within the ROV AUV, oil and gas, defence, oceanographic, nuclear, leisure and marine science industries."

On the verge of celebrating its 25th anniversary in operation, Bowtech has expanded in all areas over the years as it developed a strong reputation for meeting market demand for innovative and game-changing products. Beginning with two personnel, the Aberdeen-based company today boasts 50, of which over 30 are highly trained electrical and mechanical engineers and technicians that strive to provide high

quality technical support to the entire product range. The growing numbers of staff operate at Bowtech Products' brand new headquarters, located in Aberdeen's major new international business park, ABZ, which it moved into in December. Having secured a prominent entrance plot, the company developed a high specification office and manufacturing facility, which centralised its operations to one site and ensured there is potential to double staff numbers over the next five years.

"The new building is an enabler; with all departments under one roof it allows us to take innovations from concept through design and production as well as the ability to offer training in house now and ongoing support. The new facility is 2.5 x larger than all our previous facilities combined, which will enable us to grow to over 100 personnel in the coming years," highlights Mike.

Key to this ongoing expansion is Bowtech Products' impressive portfolio of innovative underwater harsh environment vision systems, which includes video inspection systems, underwater LED lights, xenon underwater emergency relocation strobes, custom moulded cable assemblies, pan and tilts, underwater electrical and fibre-optic connectors, fibre-optic multiplexers and slip rings for use in hazardous areas or subsea, to 6000 metres.

"Bowtech Products' underwater vision systems are deployed in the harshest environments within the ROV AUV, oil and gas, defence, 



oceanographic, nuclear, leisure and marine science industries. We pride ourselves on listening to customers to ascertain their requirements and supply to OEM manufacturers such as SMD, one of the largest suppliers of work class ROVs, trenchers and ploughs as well as Sub Atlantic and Seabotix who manufacture electric ROVs primarily for light intervention and observation tasks. Contractors such as Subsea 7, Oceaneering, and ROVOP are key clients as well as drilling contractors such as Transocean. SBM head up the customer base for FPSO's but are often specified by operators such as BP," says Mike.

The most recently launched product within the company's range is the high-resolution Pioneer multipurpose underwater camera with six integral high intensity LEDs. Suitable for general underwater viewing observation at depths as great as 4000 metres, the product measures only 53 mm diameter and 78.8 mm in length, and provides a cost effective solution for projects involving tooling and manipulators. Enclosed within a high quality titanium housing, the camera is fitted with a fixed focus wide-angle lense, thus providing customers with a 58 degrees diagonal angle of view when submerged through its highly scratch resistant and 98.8 per cent optically pure sapphire window.


"The Pioneer is a product that is so typical of how Bowtech create new products. A Norwegian client, FMC, was being supplied by a competitor but found that they were lagging behind in technology and non-responsive. Bowtech listened to the clients' needs and created with them their ideal solution, which was to fit within the existing space envelope but deliver higher performance," explains Mike. "The camera is 4000 meter rated with a 720 TVL resolution camera, 300 lines greater than the incumbent. In addition it has greater sensitivity, draws less power and is manufactured with a highly corrosion resistant titanium housing and sapphire viewport. The camera has been designed with other markets in mind and is already being introduced to other clients."

Although the innovative firm boasts a global client base, the highest areas of activity are the North Sea, Asia Pacific and Brazil, where its products are used in projects involving equipment such as ROVs, semi-submersibles and FPSOs. In fact, Bowtech Products was recently involved in BP's Quad 204 project, which involves the redevelopment of the



Schiehallion and Loyal Fields in the North Sea. The project, which was approved in July 2011 and is due to begin production in 2016, will extend the life of both fields, thus enabling them to continue production beyond 2035. Since being awarded the EPC contract for the internal turret mooring system (TMS) for the Quad 204 project, SBM Offshore subcontracted Bowtech Products to supply its Chain Stopper Monitoring System during the TMS's installation.

Following this contract win, the global market leader in subsea vision systems announced the delivery of a new £100,000 Chain Stopper Monitoring System in July 2013; the system will allow visual monitoring of each chain stopper ratchet when chains are being tensioned during the installation phase. The TMS has a total of 20 chain stoppers located on the chaintable on the lower turret; because these will be based approximately 15 metres below sea level during the phase, the company's scope of supply for the subsea system includes high sensitivity, high resolution monochrome cameras and LED lights. These will be installed on the I-tubes above the chain stoppers to allow downward viewing of operations throughout the installation. Meanwhile, the scope of supply for the topside system includes a video inspection and control system, which will enable viewing and controlling of the cameras and LED lights. On top of this, Bowtech Products supplied all associated cables, connectors and brackets for the contract.

Having earned a reputation for excellence in the oil and gas industry, Bowtech Products is now focusing on its strategy for future growth by taking its products overseas to new geographical markets and continually improving its portfolio in conjunction with its client base. "We want to work with customers to enhance the vision systems and create solutions which make remote operations safer, more reliable and more cost effective," concludes Mike. 



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Bowtech Products Ltd
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Products
Underwater harsh
environment vision systems

Cracking the market

Following a three-year

construction period, the Total refinery at Leuna first went into operation in 1997. The facility is the newest and one of the most modern refineries in Europe producing a comprehensive product range including gasoline, diesel, fuel oil, LPG, naphtha, aviation fuel, bitumen and methanol. Furthermore, the refinery is Germany's largest producer of methanol, which is an important raw material within the chemical industry.

The refinery is a 235 kilo barrel (kBOE) per day plant, capable of producing around three million tons of gasoline meaning that it largely covers the needs of Saxony-Anhalt, Saxony and Thuringia, including approximately 1300 service stations located within the catchment area of the refinery that obtain their supplies from Leuna. Each day the refinery processes an average of around 30,000 tons of crude oil, which is imported primarily from Russia into the plant's storage tanks via pipeline. The finished products produced at Total Refinery Leuna are delivered to market through its comprehensive road, rail and pipeline links.

"The special focus of Leuna is to produce methanol from the residue at the bottom of the refinery," says general manager, Reinhard Kroll, commenting on the development of the plant. "There are only a few refineries in the world that are doing this and it is an important point in the development of Leuna, because when Elf (which became Total) decided to build the refinery, the methanol plant already existed and was quite new at the time. The decision was made to incorporate this because we are an inland refinery, and as such we do not have easy access to the bunker market. At that time no one was talking about changes in bunker regulation and it was difficult for the refinery to access that market, but you can gasify the heavy residue for transport. This is what the POX (partial oxidation)/methanol plant is doing, it is gasifying the heavy residue and producing a syn (synthesis) gas of hydrogen and carbon oxides, and then transferring it to

methanol through synthesis."

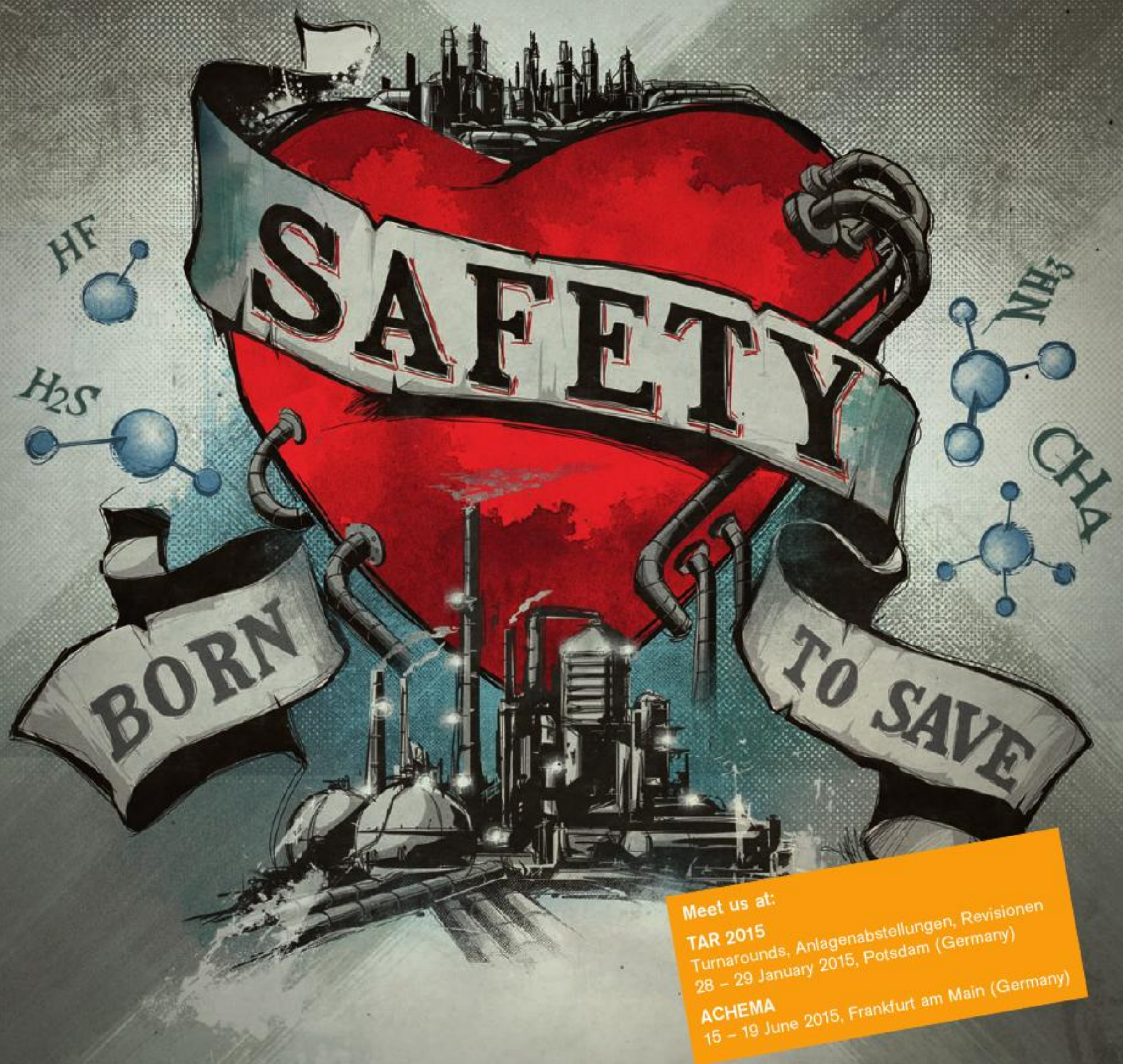
As such the Leuna refinery has become an important petrochemical hub for the region that incorporates the most modern processing technologies and the efficient use of raw materials, energy and water to ensure that the refinery is operated in an environmentally friendly way. The refinery relies on energy-efficient processing and employs a resource-efficient use of water from the Saale River, which is carried by multiple water saving technologies and efficient water treatment plants. As a newly constructed plant, the Leuna refinery is equipped with noise protection technology and the surrounding soil and ground water are protected from contamination by double-walled and double bottom tanks with leak detection systems.

During June 2014 the refinery was shutdown for the third time in its history to undergo a large turnaround and inspection project. Such fundamental refinery check-ups must be performed by law and preparation for the shutdown started in May 2011 because as part of the mammoth project columns, vessels, heat exchangers, compressors, safety valves, etc must be disassembled, cleaned, inspected, repaired and finally reassembled again. "We have a strategy for a full turnaround every six years," Reinhard elaborates. "Legally it should be five years, however through a system of inspection it is possible to extend this to six years. The refinery is a highly integrated one, so the units are not simply separate units acting on different products, but they are also highly integrated for energy efficiency and so on. For example, one unit will feed another with hot feed, so it does not make sense to have a partial shutdown of the refinery, and as such we have a strategy to have a full shutdown every six years."

The shutdown itself lasted some 45 days and involved as many as 60 small, medium and large investment projects valued at around 65 million euros. All of these projects were carried out simultaneously by over 3000 employees from multiple contractors, turning the refinery premises into a major construction site with 85 cranes in operation, including a 1250-ton crane at the site's cracker at the peak of the turnaround. "It was a huge shutdown," confirms Reinhard. "Normally you can expect around 800,000 work hours for a big shutdown, however we did 1.2 million work hours. To ensure that this was not a risky operation preparations for the shutdown commenced three years before it took place, so there was a long period of preparation for such a big event, which represents more than just the shutdown as it



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also encompasses bringing together the right contractors and organising the correct logistical support including cranes and insulation etc.”

Although the shutdown of the Leuna refinery was a vast operation, steps were taken to ensure that the standstill of operations did not adversely affect fuel customers within central Germany. Prior to the beginning of operations the tanks located on the refinery premises were filled to the brim with automotive and heating fuels to ensure fuel supplies remained consistent throughout the shutdown. This allowed the refinery's operators and supporting contractors to focus on completing the task at hand without distraction.

The purpose of the shutdown was to inspect, maintain and upgrade the refinery as well as adjust its focus to better meet the requirements of the current petrochemical and fuel markets, as Reinhard explains: “What we did was invest in the replacement of equipment, which is a normal part of such shutdowns, and we invested in improving our energy consumption as well as in slightly shifting the plant's product focus. The European market is developing in a decreasing direction in general, but mostly in gasoline.

Within Europe where there is a large surplus of gasoline and there is also a slightly decreasing market for diesel. There is however some market for intermediate chemical products, so we have adapted our cracker to produce less gasoline and more chemicals such as propylene. That was really our intent to develop our product portfolio to meet market needs.”

This focus on more efficient, cleaner and increasingly market focused operation will enable the plant to weather the challenges of a decreasing market within Europe and an increasing focus in its native Germany, as Reinhard concludes: “Looking at the German market, the German government is dedicated to shifting the country's reliance on oil and coal to other energies, so that it can significantly decrease emissions and the number of refineries that are necessary on the market. So there is a level of competition that is associated with operating in Germany, and what we are doing as the newest refinery in the area is working to keep that level of competition in our favour. We want to remain in the group of refineries that are able to survive in the German market.” 



Total Refinery Leuna
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SAFETY MANAGEMENT FOR SHUTDOWNS

Shutdowns, revisions or the deactivation of systems consistently pose new challenges for the companies affected. Competent and high performance partnerships must be developed for planned and unplanned projects in order to meet requirements during a shutdown. One of this year's scheduled shutdowns, e.g. at TOTAL Refinery Mitteldeutschland GmbH, was handled by Dräger Shutdown & Rental Management experts and combined modules for a safe and cost effective shutdowns.

“A uniform safety philosophy and the consistent application of safety related regulations is one of the advantages we offer to our customers”, states Thielo Hammer, product management Shutdown & Rental Management at Dräger. External safety personnel are just one aspect of integrated safety management as the increased number of workers results in an increased need for safety related equipment during the shutdown. The personnel provided are specially trained to deal with the demands and challenges of a shutdown. From individual safety personnel to a complete personnel organization with a management structure, Dräger offers everything required for the effective provision of personnel.

At the same time all safety related equipment is available. “As a manufacturer of safety related technology Dräger can react specifically to specific requirements. Large quantities of gas detection technology, breathing protection, fall protection systems, communication technology, electronics, fire prevention equipment and ventilation devices must be available for short periods of time while the costs for procurement and maintenance are uneconomical. During the shutdown at TOTAL, Dräger always retained a certain amount of safety related material on the customer's premises at all times in the format of a permanent shop system to give the customer the option to request e.g. detection technology or other safety equipment around the clock”, Thielo Hammer summarised the mode of operation used for this shutdown.

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Engineering continuity

Established in 1973, UK based Express Engineering operates as a leading global contract manufacturing group with a strong tradition of family involvement and firm financial backing. "The company was established 41 years ago by the father of our current chairman, who until October 2013 was the majority family shareholder in the business," explains CEO, Nigel Davison. "There has been a long legacy of family ownership, with profits being re-invested to fund steady growth. Then, in October 2013, we went through a private equity deal with Lloyds Development Capital (LDC), to bring in external funding which supported a phase of unprecedented expansion. LDC invested alongside family shareholders

and management - a model to generate capital that we may consider again. However, although the company is no longer regarded as a lifestyle family business, it retains its strong heritage of family ownership and involvement."

The business was incorporated as a precision engineering and tool-making company and today supplies the global oil and gas market with a comprehensive range of highly integrated precision machined components, kits of parts (turnkey supply) as well as fully assembled and pressure tested products - including wellheads, hydraulic actuators for Xmas trees and manifolds, completion tooling, flowlines and connections. These are exported from the main manufacturing base at Gateshead, on Tyneside 



MAZAK GOES LARGE WITH NEW INTEGREX E-800H II MULTI-TASKING MACHINE

Yamazaki Mazak is the world's largest manufacturer of computer controlled (CNC) metal-cutting machines. With over 200 different models, the Mazak product range includes CNC lathes, machining centres, multi-tasking machines and flexible manufacturing systems as well as laser processing machines.

Mazak's European manufacturing plant in Worcester, established in 1987 and expanded three times since, is the most advanced machine tool manufacturing plant in Europe, handling all key operations in-house, from raw material to the finished product. More than 80 per cent of the machine tools we build in Worcester are exported to over 30 countries around Europe, contributing to the export economy of the UK.

The e-800H II is the largest machine in the INTEGREX e-H series, designed for the machining of large and heavy products. The machine is ideally suited to machine tool users in the oil and gas, aerospace and renewable energy sectors, for the machining of a wide range of components including large valves, landing gear and crankshafts.

The new INTEGREX has a maximum swing of 1300mm and is capable of machining workpieces up to 15 tonnes. In addition it has one of the biggest Y-axis strokes of any machine in its class, capable of a stroke up to 800mm, along with a best-in-class NC steady-rest with capacity of 800mm ϕ .

The e-800H II is also ideally suited to the most complex machining applications, including deep hole boring, with the use of either a long boring bar (120x1500mm) or a super long boring bar (200x2000mm); seal contact surface machining of holes offset from the workpiece centre and complex shaping operations. In addition, the machine excels at cutting difficult materials and uses 14 MPa coolant for chip separation and enhancing tool life.

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Global demand has increased in recent years to a peak in the second quarter of 2014 and we anticipate that following a plateau, there will be further growth beyond 2015. Therefore we are focused on investment in the UK hub to increase its capacity and capability, whilst at the same time we are considering manufacture in other regional areas

to clients all over the world, including Aker Solutions, Cameron, FMC Technologies, GE Oil & Gas, Schlumberger and Weatherford. "Our clients are all global operators, which means we deliver products to Angola, Nigeria, Singapore, Houston, Norway and Aberdeen – in every location where our customers are assembling or manufacturing subsea production hardware. We are supplying directly to those regions, so only a very small amount of what we produce stays within the UK."

While the majority of Express Engineering's products are shipped across the globe, increasingly, as the company embarks on a programme of expansion, production is beginning to take place in new regions where its clients are active. The first of these is the new manufacturing facility located in Sao Paulo, Brazil, which operates under the name Petrotec Componentes de Precisão Ltda.

"Global demand has increased in recent years to a peak in the second quarter of 2014 and we

anticipate that following a plateau, there will be further growth beyond 2015. Therefore we are focused on investment in the UK hub to increase its capacity and capability, whilst at the same time we are considering manufacture in other regional areas," Nigel says. "The first such venture is in Brazil, where we have established a manufacturing business over the past five years. Initially this was a joint venture start-up operation, and this is now a fully owned subsidiary of Express Engineering Group.

"The strategy behind this is twofold, we will continue to support our very high demand in Brazil from the UK but in parallel we will build up the capability and the capacity of the Brazilian business," he continues. "The key to achieving that is technology transfer: we took the decision to set up our business in Sao Paulo using exactly the same machines and software that we have in the UK. It wasn't the cheapest solution by far, but it allowed us to have full transferability and capability between our UK 



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technology and our Brazilian facility. We can take established manufacturing processes and transfer them at very low risk and we can also prove new projects and processes before going into production in Brazil, which is a huge benefit for us and adds value for our customers."

Having successfully established its first plant outside the UK, during the past 12 months Express Engineering has invested in new UK facilities while continuing to develop its base in Brazil. Within the UK it has recently added 50,000 sq ft of manufacturing space and introduced a further 20 machines to its Gateshead plant. These include the first MAZAK Integrex E800 multi-tasking machine to go into operation within the UK, as supplied by Yamazaki Mazak UK Ltd.

"The E800 machine is capable of machining larger, more complex parts, which previously would have had to be produced on several different machines and over several operations," Nigel explains. "It means that we can condense manufacture into one operation, and allows us to machine components up to 1.3 metres in diameter and six metres in length in one setting. One of the benefits of this is that it allows clients to design a system using fewer components, through a process of parts consolidation. This means that there are fewer joints and therefore fewer seal interfaces where potential leak or weakness could take place. The result is higher integrity, lower cost products."

During the same period the company has increased the number of machines in use at its Brazilian site from 12 to 19, with the total investment through the business reaching a total value of around £10 million. As such, Express Engineering continues to grow as a significant player on the global market and is well placed to continue to deliver value-added service to its clients. "Size is important and we are now one of the largest contract engineering companies in Europe," Nigel says. "Also the fact that we are of a certain size, operating as a roughly £50 million turnover business, means that we can comfortably manage larger projects, which means that customers have fewer suppliers to manage – thereby reducing risk."


As 2014 draws to a close and the company heads into 2015, Express Engineering will navigate the changing tides of the market and continue to expand its footprint in new locations. "I think that in the short-term the market is quite volatile, but it is important to remember that we are in this business for the

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LV Shipping and LV Valenbeck work in partnership with Express Engineering, providing their export packing and shipping services. We are proud to enhance Express' reputation with their global client base by responding quickly in the provision of expedited road freight and airfreight services to meet both Express Engineering's and their clients' requirements. With a strong working relationship we consider Express Engineering to be a partner as well as a valued client. LV Shipping's growing global presence with the recent opening of an LV office in Rio de Janeiro, Brazil directly reflects and supports Express Engineering's growth and expansion in Brazil, making the working relationship a truly global one.

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long-term and have been around for 40 plus years. Now is actually a good time for investing, because finance is cheap and properties are available, so the current climate is not the worst for growing a business," Nigel says, before concluding: "Our core competence is in precision engineering and the most important things to us are very well maintained, high-quality machine tools, and the skilled people to operate them. Investing in both means we can offer the highest level of quality and service to our customers on a global basis." 

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