TEXAS INSTRUMENTS

TIRIS™ NEWS

INTERNATIONAL NEWSLETTER OF THE TIRIS GROUP ISSUE NO. 19, 1999

Airline Industry Poised to Adopt Smart Labels for Baggage

Texas Instruments Tag-it ™ is Clear Front Runner Based on Trial Scores

Tag-it™ is showing excellent scores in the live trials that British Airways is conducting in Europe. 225,000 pieces of luggage carrying these smart labels are traveling between airport hubs from Manchester and Munich to London's Heathrow Terminal 1. "We are seeing as near to 100% accuracy as you can get, said Bob Hornby, Tag-it program manager for airlines.

Participating with Texas Instruments in this field trial are a number of companies including the main contractor for these RFID trials, Ultra Electronics, an international leader in airport passenger and baggage tracking systems. Other participating companies include IER and Genicom, manufacturers of ticket printer systems; and Sihl,

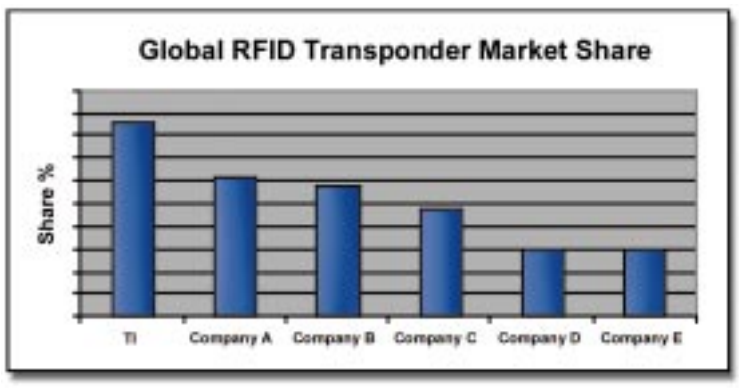
Continued on page 3.

Major Market Research Companies Proclaim TIRIS RFID Leader

Venture Development Corporation, in their recent RFID Market Study dated Feb. 1999, listed Texas Instruments as the leading supplier of RFID products with the most market share in transponder sales.

According to this research firm, RFID growth is forecasted at 24% annually through 2002. Growth from 2000 to 2002 averages 27%. Hardware remains the key component, with software and services comprising only 15%. Not surprisingly, the highest growth markets are North America and Europe.

Frost & Sullivan Presents Market Engineering Leadership Award



Last fall, TIRIS was presented with Frost & Sullivan's Market Engineering Leadership Award that is "given each year to the company that has exhibited world-

Continued on page 3.

Speedpass Goes Global

Mobil Singapore Rolls Out Asia's First RFID-Based Pay-At-The-Pump System

Since 1997, more than three million Americans have discovered the speed and convenience of Mobil's Speedpass automated payment system based on Texas Instruments TIRIS technology.

Singapore motorists also gain hands-free convenience and faster purchasing times with the roll-out of Speedpass at all of Mobil's filling stations in Singapore. Billed as "the fastest way to fill up," Speedpass allows Mobil's customers in Singapore the convenience of automated payment using TIRIS vehicle-mounted tags.

"Even before Mobil Speedpass Singaporeans were already quite acquainted with RFID as they are using a RFID-based toll collection system named Electronic Road Pricing (ERP)," reports Jim Bucklar, marketing strategy manager.

The global launch of Speedpass, together with the widespread acceptance of RFID by American consumers is catching the attention of other retailers in the U.S. and around the world," adds Bucklar. "Customers greatly prefer the faster, hassle-free automated transactions provided by RFID-based payment systems."

"Mobil is the first company in Asia to adopt RFID technology for retailing," reports Anthony Lim, fuels manager for Mobil Oil Singapore. "This is consistent with Mobil's drive to deliver customer convenience and first-in-industry products and services."

Other RFID applications in retailing are just around the corner," hints Bucklar. "From speeding drive-through purchases, to helping hotel & restaurant managers tailor personalized service to their customers, RFID is entering the retail mainstream. Even major banks in the UK have shown positive interest. We think the technology could eventually reach the point where RFID tags are welcomed throughout an entire merchant network."

Texas Instruments Builds Infrastructure of ADC Channel Companies for Seamless Integration by End Users

TI has entered into developer agreements with systems integrators and printer, label, and scanner manufacturers such as Avery Dennison, ID Systems, IER, Intermec, Meto, Moore, PSC, Sihl, Symbol Technologies, Zebra Technologies and other automatic identification industry leaders to set the stage for the successful deployment of Tag-it™ smart labels.

These manufacturers will incorporate smart label technology into their product lines, and support new platform developments to allow large end users to easily add this approach to their current data capture systems.

By lowering transponder costs, Tag-it has opened up a host of new identification and tracking applications to RFID. With cost of entry such a concern with customers, it was very important that the smart label platforms easily integrate into the existing Automatic Data Collection (ADC) infrastructure with little or no retrofit costs.

For example, Zebra Technologies has incorporated Tag-it reader/writer hardware into its barcode printer product family. Blank or pre-printed labels, embedded with Tag-it transponders are fed through the bar code printer. The reader/writer unit inside the printer then programs the label's transponder with up to 256 bits of data, prints the equivalent identification information in the form of a bar code, and any human readable information all simultaneously. The tag pops out and is ready to be stuck to a package, box, or other item. This process, called source tagging, adds little time to the printing process.

Many prominent label makers have integrated Tag-it inlays.

Bob Grabau, manager of label marketing programs for Moore, reports "with TI technology, we can offer our customers a range of lower cost labels that incorporate all the benefits of RFID. Labels manufactured with magnetic stripes, bar codes, or other printed information, are made easily compatible with existing systems."

"When we evaluated the state of the market, we wanted to work with a company that was experienced with RFID and had an integrated production capability," adds Peter Kuzma, director of new business ventures for Avery Dennison's VIP Converted Products. "RFID equipped labels are a logical extension of our broad line of label products and they can be easily produced at our proprietary electronics label manufacturing operations."

ISO Standards Proposal Acts as Catalyst to Wide Spread Adoption

TIRIS and Philips Semiconductors have reached an agreement to support a common communications protocol standard for RFID smart labels.

Unanimously approved by the technical task force, the proposal was promoted to Committee Draft (CD) and subsequently promoted to the status of Final Committee Draft (FCD) ISO 15693-2. This emerging standard provides the first multi-vendor platform for vicinity card and smart label technology, and allows products from both companies to communicate at the same time with suitable reader/writer units.

Dick Dane, general manager of the TIRIS RFID business unit, said "This agreement represents the catalyst that business and industry have been waiting for. A common protocol now guarantees complete interoperability of each of our products and is a huge step in the deployment of smart labels."

"Key industry players have applauded our move to combine the best of the existing proprietary solutions into a new compatible platform," said Christop Kauer, product line manager for RFID of Philips Semiconductors. "We feel confident that the smart label market will dramatically expand as a result of the strengthened confidence in the two market leaders."

> **"This agreement represents the catalyst that business and industry have been waiting for."**

With industry estimates forecasting the smart label market to reach 1 billion pieces in 2003, smart labels are one of the largest growth areas in the automatic identification market.

"With such international applications, such as airline baggage, it is very important to our customers that a standard exists," said Tony Sabetti, TIRIS marketing director. "This proposal is an important step in the roadmap of smart labels."

TI Technical Seminar on "Smart Labels"

Explains Design-in Issues for Auto ID Equipment Suppliers

At the Tag, Ticket, and Label Conference in Orlando in February, TIRIS held the second in a series of technical seminars for label converters and equipment suppliers to discuss many technical topics surrounding how to integrate Tag-it inlays into barcode printers, scanners, and stationary readers.

The seminar was attended by about 25 representatives of companies like Intermec, Brady, FlexCon, Datamax, Accusort, and Moore. The audience heard presentations and saw demos by Randy Roebuck, of TI, Simon Howell of id Systems, Mats Fredrikson, of Syneco (parent company to i2R), Mike Lauria of Telelynx, and Craig Swanson of Zebra Technologies.

From Left to Right:
Randy Roebuck, Craig Swanson, Mats Fredrikson, Matt Banach, Mike Lauria

GERMANY

Pilot Testing of Tag-it with Parcel Shipping Company Shows Excellent Results

The world of overnight and express parcel shipping took one giant step into the future with the successful completion of Deutscher Paket Dienst's (DPD, English translation, Direct Parcel Distribution), field trials of Tag-it smart labels.

The field trials, held at DPD's depot in Kesseldorf, Germany, consisted of some 5,000 Tag-it parcel labels. The parcels were accurately read while passing through a 1 meter x 1 meter tunnel mounted around a conveyor belt traveling at speeds up to 2.8 meters per second, which is the normal speed used for barcode scanning.

"Since smart labels can be read in random orientation, as well as in groups, they do not need special handling, like a barcode label would," states Horst Mollik, Texas Instruments sales manager in Germany. "Cutting down on the manual handling required of the parcel will dramatically cut operating costs and reduce data entry errors."

"We know what can be achieved with this technology and how it can benefit DPD and our customers," adds Peter Hoffmann, spokesman for DPD management. "As soon as some hurdles are overcome, such as standardization, we will be able to deploy smart labels on a large scale."

Smart Labels for Baggage

Continued from page 1.

a major producer of airline luggage tags.

Smart labels are ultra-thin RF identification chips that are laminated between paper to make one-time use labels, tickets or tags. These labels carry a unique ID code that is used to automatically tag, sort and route bags, far faster and more reliably than manual or bar code systems that require a clear line of sight. Smart labels can also be updated on the fly, adding new data such as revised flight or routing information.

"The combined efforts of these technology companies, all with extensive airline management and logistics systems experience, confirms the potential for the use of RFID in this new application," added Hornby.

Peter Stanton, senior manager, customer service delivery at British Airways said that he was delighted to have Texas Instruments and its partners join with his company in the development of a "smart bag tag" technology. This technology will enable the speeding up and processing of transfer baggage and help eliminate "lost luggage," thus providing British Airways with a 21st century system.

Texas Instruments has been working with BA since last year on preliminary testing and evaluation of RFID technology for baggage handling and sorting applications.

In the earlier Stage 1 trials held at Crisplant's airline baggage carousel manufacturing plant in Denmark, Tag-it scored highest of any of the RFID technologies tested on a wide variety of very rigorous tests.

British Airways is openly sharing this test data with other airlines and standards groups world-wide in an effort to accelerate the standardization and adoption of RFID-based handling and passenger matching systems internationally.

RFID systems may eventually be extended to positive passenger baggage matching (PPBM) systems that reliably match passengers to their bags during boarding. PPBM systems help to match re-routed bags onto correct flights, and insure a higher degree of airline security.

TIRIS RFID Leader

Continued from page 1.

FROST & SULLIVAN

class leadership in the RFID industry," reported Patricia O'Shea, senior industry analyst for F&S.

"TIRIS has led the industry in product innovation with the introduction of its smart label product, Tag-it, and focus on emerging applications, such as Mobil's Speedpass," she added.

The award is based on F&S's Automatic Identification Group research and consulting for the RFID industry and is given in conjunction with the release of their annual report, World Radio Frequency Identification (RFID) Markets.

To order the report, call Kathleen Cooney at +1 650 237-4385.

Third Party Companies Offer Multi-Protocol Products that Support Tag-it

i2R OEM Boards for Handheld Communicators

Top to Bottom:
Micro SLC and Pico SLC

i2R Demo Kit

i2R (ideas to Reality) offers several multi-protocol handheld communicator boards that program (both read and write) different brand tags (incl. Tag-it). They come in two versions: Pico Smart Label Communicator and Micro Smart Label Communicator. The Pico compact single board module offers basic functionality including asynchronous serial communications, and the ability to work with standard antennas. The Micro has some added features such as on board configurable memory, and the ability to vary power output to be able to interface with different antennas and achieve optimal performance.

For more information, contact i2R, Dave Evans,
Tele: +44 (0)1509 213 141,
Fax: +44 (0) 1509 213 191,
e-mail: DREvans@i2r.co.uk

idSystems Multi-Protocol Readers

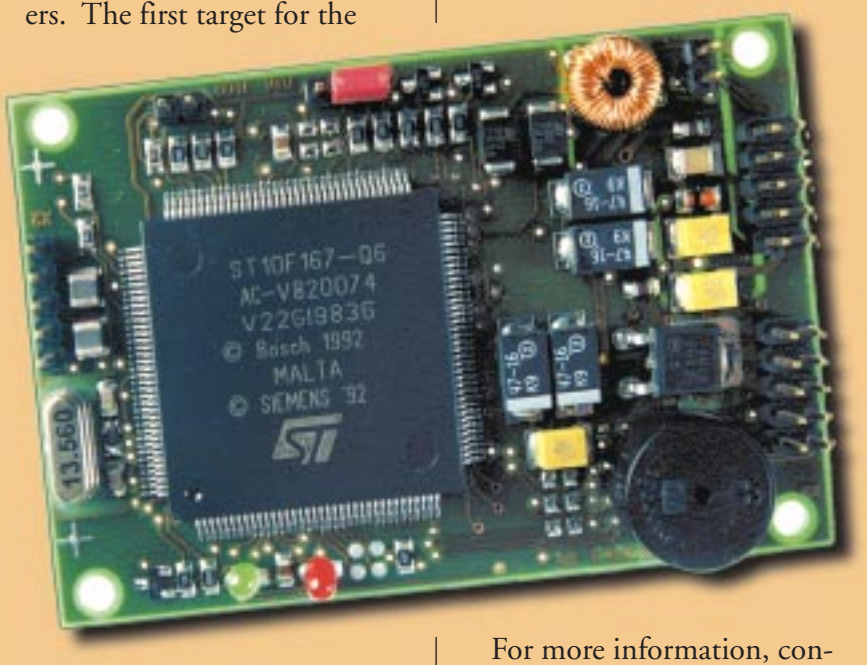
idSystems markets a range of products that can read/write 13.56MHz tags from different suppliers.

Flexiscan handheld readers are housed in rugged, splash-proof casings and have a 27-key alphanumeric keypad and graphics LCD. Data transfer can be done via an infrared link. Other products include OEM boards, antennas and software development tools.

For more information, contact idSystems, Dr. Simon Howell,
Tele: +44 (0)161 232 1000,
Fax: +44 (0) 161 232 1010,
e-mail: sales@idsys.demon.co.uk

Fieg Electronic – OBID Products

Feig has developed an RFID multi-protocol reader for smart labels that reads Tag-it transponders along with others. The first target for the I-Scan reader is for integration into printers, and applications needing a proximity read range of up to 10cm.



For more information, contact Feig, Mr. Frithjof Walk,
Tele: +49 (0)6471 3109-33,
Fax: +49 (0) 6471 3109-99,
e-mail: frithjof.walk@feig.de

Baltech – ID Engine for Smart Labels

The ID-engine is a miniaturized reader module that can read and write smart labels from several suppliers, including Tag-it. It is a complete reader with serial interface and antenna (RS232, RS422, RS485 CMOS), small and suited for integration into printers and handheld devices, offering proximity and medium read distances, with 8 digital I/O's, and it includes anti-collision capability.

For more information, contact Baltech AG, Mr. Juergen Roesch,
Tele: +49 (0)811 99881-0,
Fax: +49 (0) 811 99881-11,
e-mail: info@baltech.de

UK

Super Security Access Control

RFID Combined with Keypad – Economical and Easy

MST Chrontec of Malvern, England integrated a TIRIS reader into their compact keypad module to create a more secure access control system. The system is tested and proven in a South African prison where it controls access to around 100 cells in one wing of the facility.

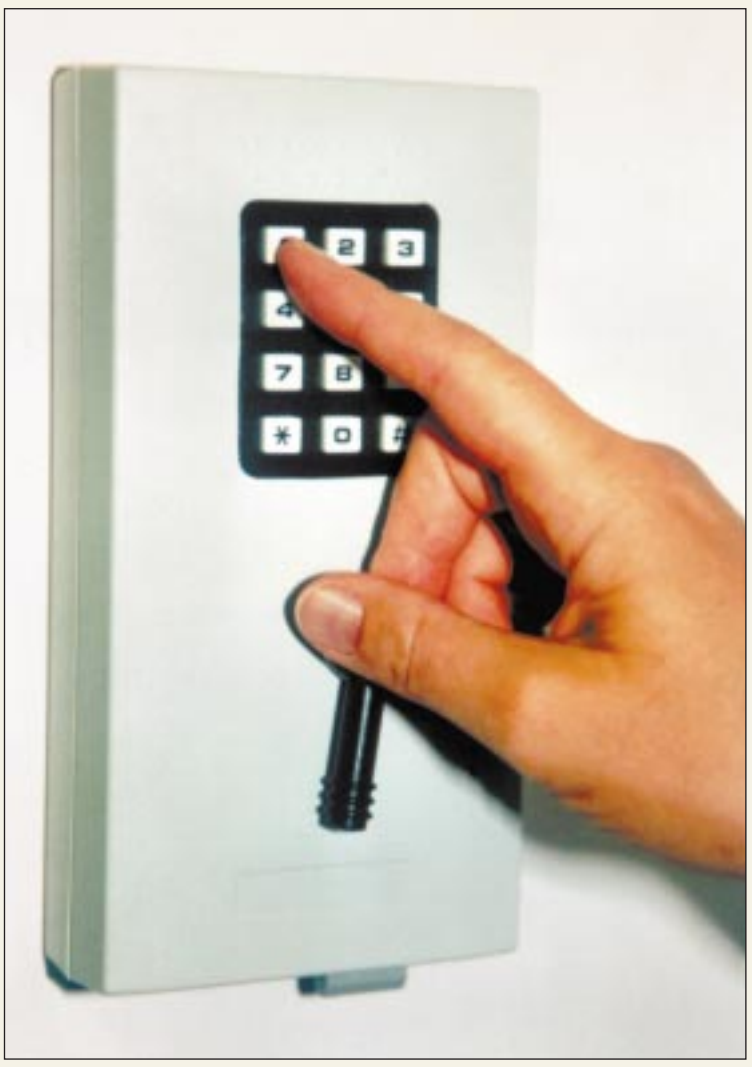
Staff members carry a TIRIS keyring tag or card whose unique ID number is registered to that employee. To prevent the wrong person stealing and using the tag, the employee must also enter a 4-digit personal PIN number into the keypad.

Operators can download lists of authorized ID codes via the industry-standard LonWorks system directly to each unit so access authorizations can be easily updated for changing shifts or special visits. The LonWorks microprocessor, providing networking capability, is built right into the keypad module which simplifies overall system design, and provides local distributed intelligence where it is needed. This also allows the LonWorks network to use a relatively simple and inexpensive twisted pair cable for all communications. It can control or monitor from 2 to 32,000 devices.

"Cost per node is a very sensitive issue in the security business. The low cost of TIRIS transponders and the Microreader has allowed us to attractively offer this solution," said Martin Peake, director of MST Chrontec. The company is also targeting markets like petrochemical plants, bank offices, hospitals, and any areas requiring extra levels of security.

The TIRIS products were purchased through the TI UK distributor, RFID Components.

For more information, contact
Martin Peake , MST Chrontec,
Tele: +44 (0)1684 560614,
Fax: +44 (0)1684 560624,
e-mail martin@mst-group.demon.co.uk, or
Graham Lane, RFID Components
Tele: +44 (0)1234 840102,
Fax +44 (0)1234 840707.



MST Chrontec keypad module with integrated TIRIS reader.

UK

PROTECTING INVENTORY IN A BONDED WAREHOUSE

A bonded warehouse in the UK stores expensive single malt whiskies which are subject to theft even by the warehouse employees. Pallets carrying these goods between transport trucks and storehouse locations are also subject to being misplaced by accident, thus delaying on time deliveries and costing manpower to find them.

To prevent these problems, the warehouse managers employed TIRIS tags to ensure that forklift trucks moving pallets would pass correctly along pre-set routes. Deviations might mean that employees were taking this valuable inventory off to a hiding location for later theft, or were just misplacing pallets in error.

To create this security system, the system integrator, Davis Derby of the UK, built a grid of transponders suspended from the ceiling. The unique ID of each transponder signals a specific location. The forklift trucks are equipped with RFID readers and a RFDC reader. Routing details are downloaded to the forklift truck from a central computer via a radio frequency communication link (RFDC). This includes correct loading location, exact sequence of transponders along the route, and the delivery bay location. Trucks pick up loads from any of 9 conveyors. At the pickup point, the trucks are automatically weighed as well to make sure they were actually loaded.

As the truck moves towards its destination, if the on-board reader detects deviations, the truck is immobilized and a supervisor is needed to reset the vehicle.

Once it reaches its destination and unloads, the truck is again weighed.

Said John Leverton, a Davis Derby director, "Using RFID has given the warehouse management team the certainty, for the first time, that high value loads are not mis-routed for any reason. Warehouse efficiency is improved, errors and fraud are virtually eliminated and far less management time is spent investigating mis-routed or lost loads."

For more information, contact
John Leverton, Davis Derby Ltd.,
Tele: +44 (0)1332 341671,
Fax: +44 (0)1332 372190.

"Vehicle immobilizer systems are fast becoming a standard feature since proving their effectiveness against auto theft. TIRIS has been driving the market from its early days in 1993. As with all security systems, there is no room for complacency. We are committed to continuous improvement in design sophistication while continuing to strive for cost reduction."

– Michael Knebelkamp, Automotive Strategy Manager

UK

Nissan Steps Up Security With Adoption of DST Transponders

Nissan will advance the security level of its vehicle protection systems by introducing a new immobilizer, supplied by TIRIS, worldwide in 1999. The immobilizer uses the TIRIS Digital Signature Transponder (DST) as the unique identifier in the system, and it is embedded in the plastic head of each key.

Most transponder-based immobilizer systems, to date, are based around fixed unique code transponders. While these factory-programmed transponders have been very successful, leading manufacturers such as Nissan have been increasingly adopting full challenge and response encryption, due to the higher level of security it provides.

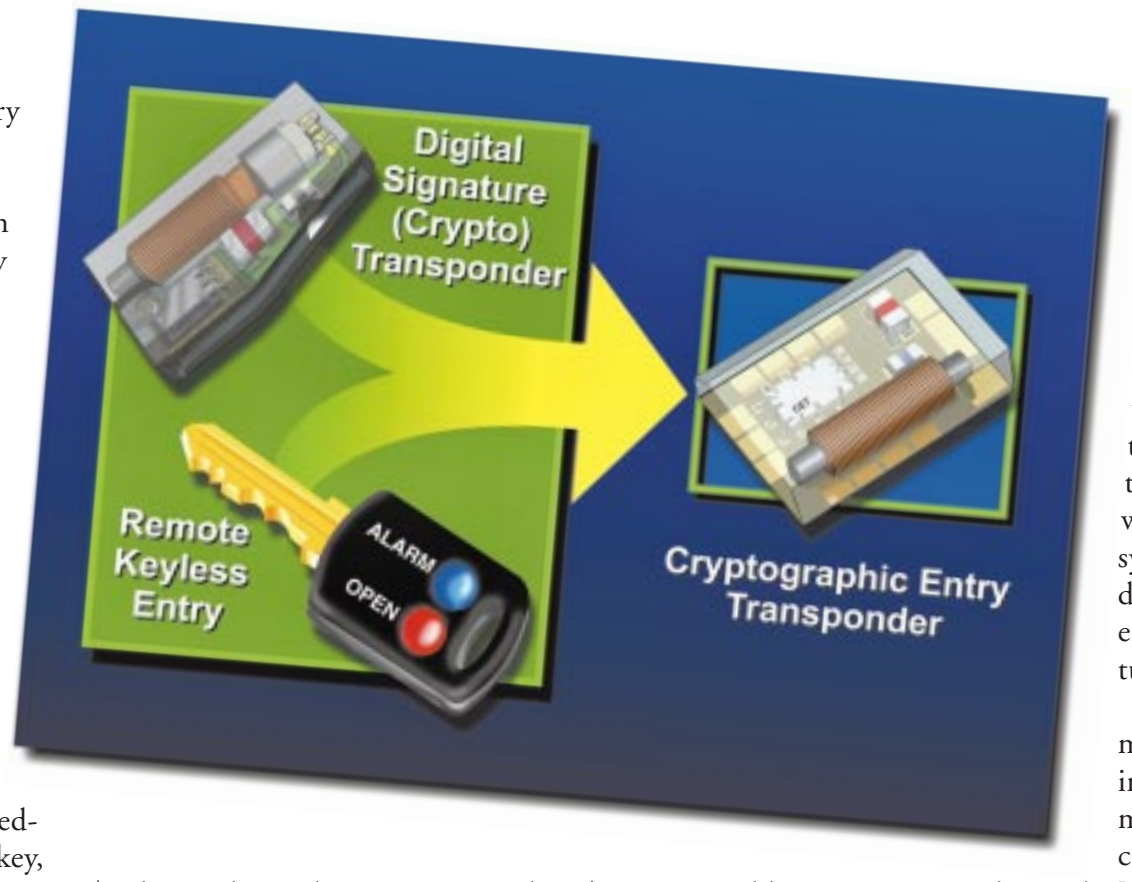
The first Nissan model to feature the new DST immobilizer will be the Primera, available in Europe in August, 1999. The system will also be fitted to the Almera replacement in January 2000, followed by the Micra later the same year.

Transponder-based immobilizers have cut auto theft by 90% in Europe.

"While our current immobilizers have been very effective, Nissan is always enhancing its products, and increasing the security that they provide. The DST transponder allows us to take another significant step forward," said Gary Kirby, electrical engineering manager at Nissan's European Technology Centre.

CET: THE NEXT GENERATION IN IMMOBILIZER TECHNOLOGY

The recently introduced CET or Cryptographic Entry Transponder is the next generation of immobilizer technology from TIRIS. It adds the flexibility of Remote Keyless Entry (RKE) to TI's current family of automotive immobilizers. This system is the first of its kind to combine two previously separate elements (immobilizer and RKE) into one compact package.



A typical immobilizer system consists of the engine control unit, a reader unit, and an antenna. The reader provides an energizing signal to the batteryfree transponder embedded in the vehicle's ignition key, generates and transmits a random code to the transponder (key), verifies the response received from the transponder and reports the results to the engine control unit, which approves or denies engine ignition.

If the vehicle is equipped with RKE in addition to an immobilizer, the RKE controller in the key generates a new Ultra High Frequency (UHF) "rolling code" security code each time the push button is used to gain access to the vehicle. For immobilization, the transponder in the ignition key encrypts the challenge received from the reader based on a security algorithm and a hidden encryption key. The result of this "challenge-response" is then transmitted to the engine control unit for evaluation. Before the CET transponder, vehicles with both RKE and immobilizer systems required two independent designs to handle the different frequencies and security features each system required.

"By combining the two elements of automotive security into one design, automotive manufacturers stand to significantly reduce system cost," said Michael Knebelkamp, automotive strategy manager for Texas Instruments TIRIS.

BRAZIL

Bus ID Provides Information for Passengers

Buses in Brasilia, Brazil are tracked with TIRIS tags to provide a sophisticated passenger information system for the 400,000 people who pass through the bus station.

Displays are located at the 69 different platforms where buses arrive and depart. These electronic signs are triggered by the transponders on the buses to provide real time information about arrival and departure times.

UK

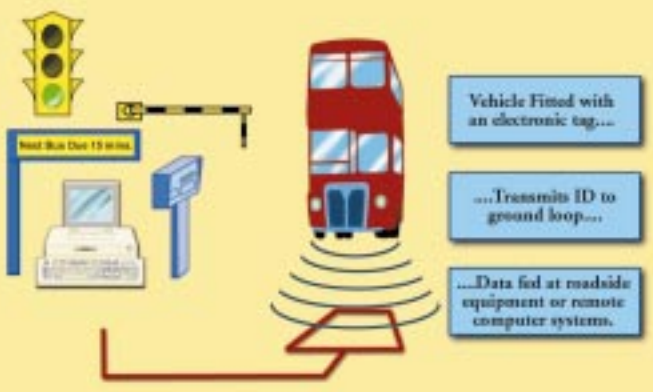
Bus Priority System Reduces Congestion and Speeds Up Traffic

A new bus ID system came on line last year in Edinburgh, Scotland to give public transport traffic light priority. JMW Systems, a TIRIS integrator, began by installing read points at 57 approaches to the west side of the city. They mounted TIRIS transponders on 800 vehicles. A second phase expanded the system as part of Edinburgh's Greenness Project, adding read points at major highways into the city, and at 23 additional junctions.

As a bus approaches a traffic light, it passes over an in-ground antenna that triggers the light to change depending upon the priority of the vehicle. The system can trigger green light wave-throughs for buses and other public transport as well as emergency vehicles such as police, ambulance and fire trucks.

Claims Vince McCann, the city of Edinburgh's transport engineer, "We have already seen significant positive benefits in reduced congestion and increased bus use." The system also reduces congestion and reduces road accidents.

For more information contact, Texas Instruments, Dave Hylsop at Tele: +44 (0)1604 663399.



BRAZIL

Automatic Weighing Around the Clock

The Alcan plant in Ouro Preto, Brazil produces raw aluminum, and other related products. Systems integrator, Unidata, has installed a TIRIS-based automatic weigh system that has increased the productivity of this step in the manufacturing process by 20% because it allows trucks to be weighed on a 24-hour a day basis without the need for human operators.

Before the system was installed, the fully manned weigh station was only open from 6:00 a.m. to 12 p.m. Trucks arriving and departing during the night would have to wait until the station again opened.

A transponder is mounted on the windshield of the each of the 43 trucks transporting raw product from the mine. When a truck drives onto the weigh station, the ID is read and combined with the weight of the load in a host computer.

For more information, contact Unidata, Tele: +55 31 292 9799.

USA

From Pay-at-the-Pump to the Checkout Counter

VeriFone RF250 payment terminal for in-store Speedpass purchases.

TIRIS technology has certainly captured the petroleum industry's attention. First rolled out by Mobil Oil Corporation as part of its Speedpass™ pay-at-the-pump system, RFID is now in use by approximately three million consumers at over 3,500 service stations across North America.

> **"Mobil customers experience speed and convenience when they buy items inside the c-store with their keyring tag."**

With the commercial acceptance of RFID by consumers, petroleum and other retailers will be expanding their use of TIRIS as a payment option. In fact, Mobil has already started pilot testing the VeriFone RF250 customer unit – an in-store payment terminal based on the VeriFone Everest customer terminal. It is equipped with RFID for in-store transactions, as well as a magnetic card reader for credit and debit transactions. RFID-ready carwashes, ATM's, fast food counters, and vending machines are sure to follow.

TIRIS Stops Car Thieves in Their Tracks –

Aftermarket Immobilizer Becoming Industry Standard

Car dealers have tried everything from hidden switches to secret passwords to provide an effective solution to auto theft. Unfortunately, problems with reliability, cars that would not start, and more kept coming back to haunt them.

That all changed when Dealer Security Solutions Inc. (DSS) a more convenient, foolproof option with the introduction of their TIRIS-based TRIAD™ aftermarket immobilizer in 1998.

"Automotive dealerships across the country have really responded to offering their customers an effective security option," reports Mark Milligan, president of DSS. "Since TRIAD's launch last year, we have expanded our operations throughout North America. TRIAD has taken us from a regional supplier in Northern California to serving dealerships in 17 states and into Canada."

The TRIAD family of products provides the dealer the flexibility to offer their customers a customized system to meet their own specific needs. The original product, an immobilizer-only version, offers cost-effective security, and an upgraded version adds the additional features of intrusion monitoring, anti-carjacking activation with visuals, and an audible alert. A unique new version greatly expands the security features of most major automotive models equipped with factory immobilizers.

The TRIAD system is sold to the dealer to protect their inventory while the cars remain on the lot, and is then offered as a pass-through option to their customers. "Since we installed the TRIAD system, our inventory losses have been cut dramatically," reports Marshall Crossan, owner of Folsom Chevrolet. "Now, we have the added bonus of passing this innovative security option on to our customers."

For information contact,
Mark Milligan, DSS,
Tele: +1 916 851 9073,
www.transponder-security.com

TIRIS Keeps New Orleans Mass Transit Running

Fuelman, based in Metairie, Louisiana supplies fuel for 600 buses owned by the City of New Orleans. The company manages its refueling data with a Fuel Manager RFID system developed by Austin, Texas-based National Business Control Systems (NBCS). Using TIRIS technology, the system tracks more than 80,000 gallons of fuel used by the buses each week.

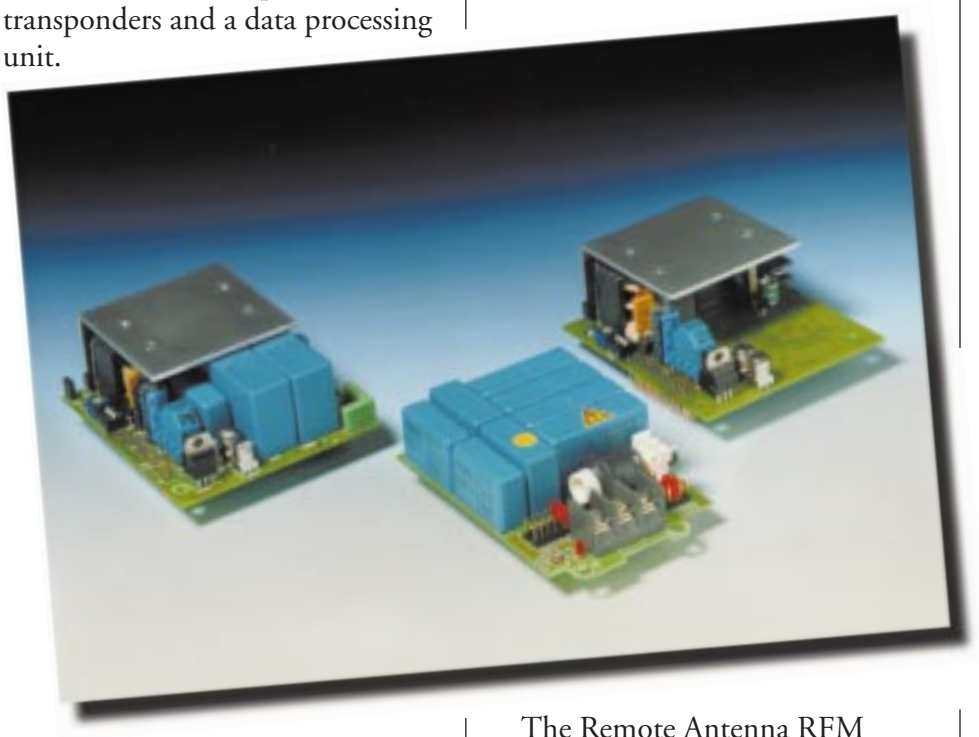
When a driver pulls up at one of the Fuelman refueling facilities, an overhead sensor detects when the bus is in position and signals a red light. The driver waves his ID tag over the reader box, and is identified. Buses are identified by a Vehicle Data Module (VDM, a sophisticated transponder) attached to the undercarriage of the bus. The VDM provides information such as the odometer reading, engine hours and tank level, and is read by an in-ground reader. All fueling data is exported to a central computer for processing by the city.

Fuelman's operations manager Mike Felix says the RFID system saves the company at least an hour's work each night. "Tracking 600 buses that use 80,000 gallons of fuel a week can be time-consuming and result in inaccurate records," Felix says. "The odometer readings help the city meet strict maintenance schedules, and the fueling data allows us to generate invoices quickly, which we post to an electronic bulletin board."

For information contact,
Mike Felix, Fuelman,
Tele: +1 504 835 7171,
www.fuelman.com.

Integrators Have a Choice of Two New Radio Frequency Modules

RFM's are the core of a TIRIS reader system; providing the interface between low frequency transponders and a data processing unit.



TIRIS now offers two new versions of RFM's: a RFM (RI-RFM-007B) that supports antenna lengths up to 5 meters, and a Remote Antenna RFM (RI-RFM-008B) that supports antenna cable lengths up to 120 meters. Both modules offer high field strength to enable maximum performance in readout distances. They also offer variable power supply range, and synchronization control in multi-reader arrays.

The Remote Antenna RFM requires an additional module, called an Antenna Tuning Module (RI-ACC-008B) that can be installed inside a readout antenna or nearby to allow for tuning at the readout point.

Both RFM's can be combined with the new Digital Reader Board to greatly increase noise immunity of the reader.

"TIRIS continues to invest in a full portfolio of low frequency products to support the many systems integrators who have successfully created solutions around our technology. We are expanding and improving our Series 2000 Reader System family with the new boards described here. We are also moving in the direction of consolidating features, and modularizing our products, so that integrators have various options in combining boards in different ways to more directly meet their needs."

– Jakob Strobl, TIRIS strategy manager

Events Calendar

Visit TIRIS at the following events:

June

June 7 - 9

Retail Systems 99

Chicago

October

Oct. 5 - 7

SCAN-TECH

Chicago

November

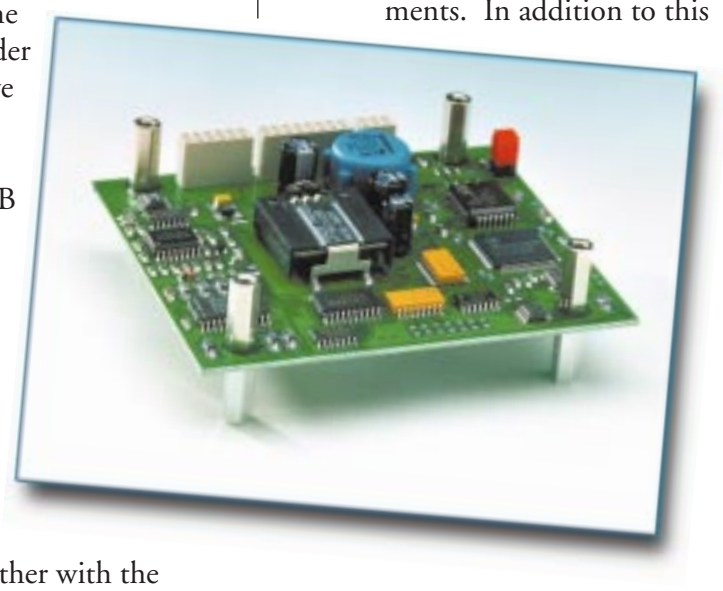
Nov. 16 - 18

SCAN-TECH Europe

Koln, Germany

Digital Receiver Board Offers Improved Performance

TIRIS recently introduced the Digital Receiver Board (DRB) as an addition to the Series 2000 Reader System to achieve further performance improvements. The DRB (RI-CTL-010A) is an add-on module that includes the power of a Texas Instruments DSP (Digital Signal Processor). It can be used together with the High Performance Transmitter/Receiver Modules (RI-RFM-007B or RI-RFM-008B) in situations where electrical noise has a detrimental effect on the system's performance.



An algorithm is applied to "filter out" the periodic noise components of the signal and then the remaining data signal is enhanced and made available for further processing.

The effect is maintaining superior read range in noisy environments. In addition to this filter function the DRB can act as a basic controller. Thus, a module made up by one of the RFM's and the DRB form a complete reader which can be integrated through a serial communication interface (TTL level) in numerous application systems with minimal adaptation of user software.

TIRIS Goes Green To Save Trees

Transponders are Injected into Trees in Major Cities Worldwide

Tree surgeons are tagging trees along Paris boulevards, the Royal Parks of London and in the Botanic Gardens of New York. Several different companies have put together systems based on TIRIS glass capsule transponders that allow caretakers to uniquely ID each tree and establish a comprehensive file to track its health, plan its treatment, and protect it from epidemics.

Adage, a leading French company in auto ID, created a system that is being used to track 90,000 alignment trees in Paris. These are the very fragile trees, costing around $3,000 each, that are planted along 1,400 different streets. "Life for these trees is very difficult, what with car exhaust, street salt, and other pollution, and this system allows us a way to monitor them carefully and accurately," said Jean-Pol Neme of the city council.

UK-based company Fujikura Europe has also developed a system they call FTRS, Fujikura Total Recognition System. Using a special hammer, a hollow nail is embedded in the tree that contains a transponder. Caretakers use a custom-developed handheld computer from Blackroc, who have re-engineered a Psion Workabout. The Blackroc T100F has 2 MB of flash memory and the FTRS application software. Data can be easily down and up-loaded into the unit.

A Blackroc handheld stores and updates a complete file for each tree.

Tree care tasks include: creating a unique record for each tree – its growth statistics, obvious visual effects such as bare branches and aphid infestation, results of ultrasound and micro-drilling tests, and maintenance work that is required immediately.

The handheld computer can also contain simple look-up tables covering the common and botanical names of 250 tree species. New look-up tables can be user defined, such as size class, age class, environment, conditions, actions, priority and next action. Fields can be selectively turned on or off to limit the information collected at any one time.

According to Phil Wade, Product Manager at Fujikkura Europe, "This unique solution is perfect. Global Positioning Systems are not accurate enough to pinpoint each tree, especially when they are grouped together. Other forms of ID, like bar-coding are prone to vandalism and wear."

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TIRIS is Preferred Solution in IDEA Project

The European Commission recently launched a large scale electronic identification of livestock project called I.D.E.A. (Identification Electronique des Animaux) in which TIRIS emerged as a central player.

The project includes the participation by France, Germany, the Netherlands, Ireland, Italy, Portugal, and Spain all of whom play a unique role in the overall effort to test every facet of a total system for tracking and managing animals from birth to slaughter. The project includes hundreds of thousands of injectable transponders, electronic eartags and electronic bolus' – most of which are TIRIS-based, and a total of a million cows, sheep and goats.

Lasting a total of three years, the project will result in a decision about the feasibility to implement an ISO-compatible RFID registration system across Europe. Inputs to IDEA began in 1993 with the FEOGA research project that included tagging thousands of sheep, cows, and goats that proved out basic assumptions about its readiness to be used under field conditions. Following FEOGA, Project AIR 2304 took off in 1995 and ran until 1998 focusing on aspects like slaughterhouse tracking, system reliability under farm conditions, and cost/benefit.

Worker takes inventory with handheld tag reader.

The European Union has about 300 million livestock animals. An electronic tagging system can go a long way to improving quality control, cost-effectiveness of farm management, control of subsidies payments, disease transmission, and intra-EU animal transport.

Not only does this project include all factors of electronic tagging, it also addresses evaluation of all the equipment needed for the solution, i.e., static and portable readers and computers in the field, on farm, and at slaughter. It also includes the details of an overall database and uploading and downloading of information.

TIRIS technology is involved in the projects of all 6 participating countries where value added resellers have offered complete, integrated packages that address the local conditions and animal species of the area. Two outstanding companies involved are Gesimpex of Spain (main supplier of the Bolus transponder, (Rumitag), and portable and stationary reader installations), and Allflex, the leading supplier of electronic eartags.

The IDEA project is launched by the General Direction VI (Agriculture) with the technical support of the Joint Research Centre of Ispra.

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Australia Tags Cattle

The Agriculture and Resources Department of Victoria, Australia announced that they would distribute one million tags free to begin a wide-scale cattle monitoring program. These electronic eartags, manufactured by Allflex Australia Pty Ltd. and containing TIRIS inlays, are available to beef producers and dairy farmers. This represents the first stage implementation of the National Livestock Identification Scheme (NLIS).

Mr. Patrick McNamara, deputy premier, said, "Improved cattle identification is needed to protect and enhance consumer confidence in Australia's beef." "The early introduction of NLIS in Victoria will be important in enabling this State to implement consumer grading of beef using the Meat Standards Australia System," he added.

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German Company, GIS, Markets Dual Barcode/RFID Readers

GIS offers three different products that read and write TIRIS tags and have bar code (Code 39) emulation all in one. A leading manufacturer of kitchen furniture uses GIS systems because this allows workers to identify furniture parts without handling them, which is a benefit when the parts are freshly painted. But, the company can also use the same GIS devices to scan bar code labels that may be on other components that go into the finished goods.

Dual RFID/bar code scanner that mounts alongside a conveyor system.

GIS handheld dual RFID/barcode scanner.

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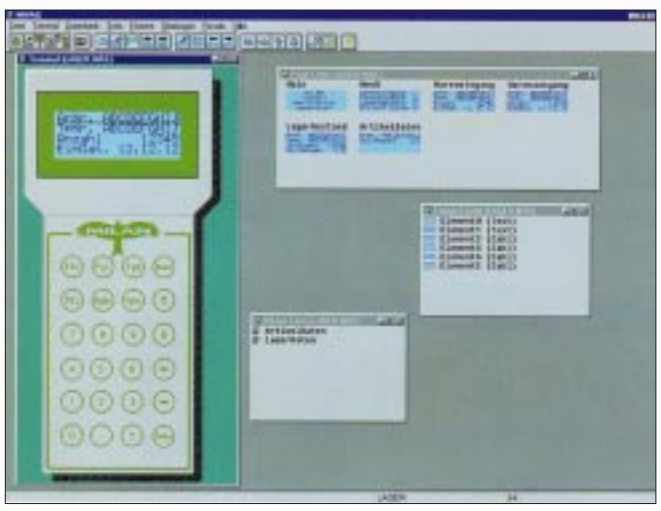
MIVAG
(Milan Visual Application Generator)

MIVAG is a software product that generates S/W applications for handheld terminals that read and store data from TIRIS tags.

Typically, these applications are developed by way of a tedious and time-consuming process. Experts have to set up a "duty book", and specialist programmers build the application. MIVAG has been developed to offer more flexibility for the terminal user. The software tool is in English, but the applications can be generated in any language with icons, logos and special signs when using a graphic display.

The only requirement for working with MIVAG is knowledge of Windows 95 or Windows NT. Applications are compiled in C, and easily downloaded into the handheld. You can do real application tests in terminals to monitor development.



User Interface

Features:

- No limitation in pages or elements.
- Complete mapping of the single bits for multi-page transponders.
- No simulation in the PC–real application testing.
- Data transfer to the MILAN terminal contactless via inductivity.
- Easy modification or expanding of the application.

This tool can be easily adapted to work with other well-known industry handheld devices that Mannebeck is hoping to announce soon.

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Island of Cyprus Automates Waste Treatment Processes with RFID

A waste treatment plant that serves the Greek sector of the island of Cyprus handles up to 120 tankers a day who are delivering over 1000 cubic meters of waste. The waste ranges from domestic and dairy to strong organics and metals. Each tanker has to be received, verified, and allocated to the right discharge point, plus invoiced correctly.

Biwater Treatment, of the U.K., was awarded a contract to automate the facility. They first looked for an off-the-shelf system. Discovering there was none available, Biwater custom-built a system based on TIRIS that also includes application software and the user interface for the operators.

Waste plant gains better control over the discharge from 120 tankers per day.

All the tanker trucks are equipped with a battery free 10 cm cylindrical tag mounted underneath the chassis. Read points (in-ground antennas) are located at the entrance to the site and at each of the 21 discharge locations. Data is communicated back to a central host via split RS485 networks through programmable logic controllers.

Besides managing all of the transactions in the operation and preventing fraud, a significant benefit is that the system can automatically insure that a tanker is at the correct location before discharge begins, thus avoiding contamination.

The system is operating successfully providing site operators with improved control and accountability over discharges. Throughput of trucks is increased and the bottom line for the facility is improved through more effective recovery of costs as a result of faster and more accurate billing.

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