BOOK REVIEWS

Fluid Mechanics of Combustion Systems

Edited by T. Morel, R. P. Lohmann and J. M. Rackley

This volume consists of a collection of papers presented at an ASME Symposium in 1981 organized as a follow-up to an earlier meeting entitled 'Fluid Mechanics of Combustion' held in 1974. It is not a structured text book nor is it intended to be one.

The papers included cover a very wide field from fundamental theoretical investigations through theoretical modelling of components and systems, to experimental parametric studies and overall tests on various devices. The range of subjects covered make it difficult to classify and group the papers in a logical order. However, in an attempt to do this, the volume consists of papers on:

- Fluid velocity measurements in reciprocating engines, in pulsed and coaxial jets and gas turbine combustors. Fundamental experimental studies are reported on liquid sprays, combustion in swirling flow and on turbulent premixed flames.
- Experiments using special techniques, including raman scattering, optical tomography and laser doppler anemometry, are reported.
- There are a few papers which discuss fundamental theoretical studies. These include critical conditions in thermal boundary layer ignition, the interaction of strain fields and flames and the combustion of porous solids.

Almost a third of the papers are concerned with modelling a turbulent flow in a complex situation, possibly in a reacting fluid. Most of these are applications and extensions of the methods developed at Imperial College.

The volume of proceedings is aimed at '...engineers working in this field...(combustion)...' and it will be of most use to research workers. It could be of help to a designer when seeking out a suitable calculation method.

Although there are a few exceptions, most of the papers deal with combustion in fluid flow systems and the title is an acceptable one. The diversity of the papers make a logical presentation difficult.

The camera-ready method of reproduction is used and consequently the quality of type face and the diagrams vary. Many of the diagrams have been reduced too much, particularly those showing the impressive results obtained using optical tomography.

The volume, therefore, contains a useful set of papers on application of numerical modelling of combustion systems, a number of papers which report relevant experimental data and, finally, a few papers on interesting fundamentals.

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Conference volumes received

The extent of the 'Calendar' section in this journal attests to the number of conferences, symposia and similar events of direct or related interest to the target readership of this journal. Hardly surprising, the proliferation of meetings appears to be matched by a similar number of conference proceedings; some of those recently received for review are listed below.

Heat Transfer—Milwaukee 1981, *ed. Ralph P. Stein*, $34.00 (AIChe members $17.00), pp 426, American Institute of Chemical Engineers

49 full texts and 35 abstracts of papers at AIChE sponsored sessions at 1981 National Heat Transfer Conference. Session titles were: Direct contact heat transfer; Transport phenomena in fusion reactors; Enhanced nucleate boiling; Flow boiling; Heat transfer in non-Newtonian systems; Two-phase systems; Heat transfer in fossil fuel conversion systems; Process heat transfer; Thermal and hydraulic behaviour in rod and tube bundles; two-phase systems in rod and tube bundles; Solar energy heat transfer; Heat transfer in fluidized beds; Fire and combustion fundamentals.

Heat and Mass Transfer in Metallurgical Systems, *eds D. Brian Spalding and N. H. Afgan*, $99.00, pp 758, Hemisphere Publishing Corporation

Thermal Radiation Heat Transfer, *Robert Siegel and John R. Howell*, $32.00, pp 862, Hemisphere Publishing Corporation

Advances in Fluid Mechanics (Lecture Notes in Physics, Vol. 148), *ed. E. Krause*, DM 52.00 ($20.10 approx), pp 485, Springer-Verlag

Thirteen 'distinguished experts' were invited to describe advances in various branches of fluid mechanics at a seminar at RWTH-Aachen in 1980. These proceedings contain the papers, inaugural lecture and opening address in full.

Advances in Heat Pipe Technology, *ed. D. A. Reay*, £42.00 ($100.00), pp 818, Pergamon Press Ltd

68 papers from the IVth International Heat Pipe Conference (London, September 1981). Principal topics covered: terrestrial and spacecraft applications; heat pipes for energy conservation; thermosyphons; experimental techniques and life tests; lead pipe theory and techniques.

Fouling of Heat Transfer Equipment, *eds E. F. C. Somerscales and J. G. Knudsen*, $75.00, pp 743, Hemisphere Publishing Corporation

Proceedings of an international conference of the same name; 11 invited papers, 18 submitted papers, and summaries of workshop sessions.

Heat Exchangers: Thermal-Hydraulic Fundamentals and Design, *eds S. Kakac, A. E. Bergles and F. Mayinger*, $95.00, pp 1131, Hemisphere Publishing Corporation

49 papers represent a 'record' of NATO Advanced Study Institute of the same name (Turkey, August 1980). Topics covered include: single and two phase thermal-hydraulic fundamentals; rating, sizing and optimisation; surface selection and performance, and operational considerations.