

Foreword: Thermal-fluid Devices and Machinery

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Biographical notes: KT Ooi is associate professor of Thermal and Fluids Engineering Division at the School of Mechanical and Production Engineering, Nanyang Technological University, Singapore. He received his PhD in Mechanical Engineering from Strathclyde University, UK in 1989. His research interests include study, design and optimisation of refrigeration compressors and systems, microfluidics and microelectronics cooling devices and systems. He also works as an engineering consultant for Matsushita Refrigeration, Singapore since 1991, for ODE, Singapore Technologies since 1990 and KCL (India) since 2003. He serves as the chairman of the Academic Committee of the International Compressor Techniques conference, Xian China. He is actively participating in international conferences and has published widely in many major fluid and thermal international journals. He is the holder of a few patents in thermal/fluid devices.

It is not an exaggeration to say that the computer is now probably the single most important tool in almost all fields of research and development. Its contribution has been particularly significant in two areas: The first is in simulation studies where computers are used to carry out the massive computations required to replicate actual physical phenomena. Not only has the design process been accelerated as a result, it has also brought insights into aspects that were previously impossible to investigate. The second area of contribution has been in measurement, particularly with the introduction of the high-speed computerised data acquisition system some 25 years ago. All six studies in this Special Issue have employed computer applications intensively and extensively to obtain their research outcomes.

Thermal and fluid devices were chosen as the focus for two reasons. Firstly, there is no archival journal available today which is specially devoted to this wide-ranging area of research. This Special Issue thus serves as a small collection of good research in this area. Secondly, developments in thermal devices have recently been overshadowed by interest in micro and nano fluidics. This Special Issue will help to redress the imbalance and reaffirm the importance of these existing devices.

The six papers – three from United Kingdom, two from China and one from Singapore – are all original work representing the state-of-the-art. I am confident that this Issue will serve as an important reference for all researchers working in the area of thermal fluid devices and machinery.