

Editorial Introduction

PRES conferences: Energy efficiency and environmental protection

The new conference on *Process Integration, Modelling and Optimisation for Energy Saving and Pollution Reduction—PRES*, was first organised under the “Chemical and Process Engineering” (CHISA) umbrella in 1998 in Prague. Following the highly successful *PRES’98*, a new tradition of regular conferences dealing with the array of issues relevant to energy saving and pollution reduction was established.

The popularity of the new conference was firmly established with *PRES’99* in Budapest, Hungary, and *PRES 2000* in Prague, both conferences showing an increased number of delegates and submitted contributions. This success continued with the 4th conference *PRES’01* which was held in Florence, Italy, and also the *PRES 2002* held again in Prague.

The success and relevance of the PRES conferences has led to collaborations with several known journals (see e.g. *Applied Thermal Engineering* [1], *Journal of Cleaner Production* [2], *Heat Transfer Engineering* [3], *Resources, Conservation and Recycling* [4], and the newly established collaboration with the *Energy—The International Journal* is very much appreciated.

For this Special Issue papers have been subjected to an additional review, and nine were selected from two recent PRES conferences – *PRES’03* and *PRES 2004*. Each conference was attended by more than 300 delegates. *PRES 2004* attracted 432 abstracts from which 85 were selected as oral presentations and 51 as posters, after the review.

The *PRES’03* conference was held outside the European continent for the first time. The organisers were very pleased to accept the invitation from the Canadian Society for Chemical Engineering and Chemical Institute of Canada, and *PRES’03* was held jointly with the 53rd Canadian Chemical Engineering Conference—CSCHE 2003 in Hamilton, Ont., Canada. The Canadian organisers led by Andrew Hrymak and Roland Anderson contributed enormously to the conference success.

PRES 2004 was held as usual in the very heart of Europe—Prague. The “golden city” had fully recovered from the 2002 floods and delegates from more than 40 countries participated, representing, in addition to the traditional European countries, Asia, Africa, Australia and North and South Americas. The CHISA conference offered considerable synergy and excellent logistical support.

Nine papers from two recent PRES conferences—*PRES’03* and *PRES 2004*, were selected for this special issue of ENERGY. All selected papers are related to energy efficiency and environmental protection. Most of them are based on heat integration methodology [5,6] and pinch analysis [7].

The first two papers are concerned with targeting the reduction of CO₂ emissions in separation systems [8,9]. The third and fourth contributions deal with dynamic optimisation [10] and control for increased energy efficiency [11]. The fifth and sixth papers again make use of energy integration methodologies for reducing energy consumption—first for the production of fuel ethanol from lignocellulosic biomass [12], and second an

automotive shredder residue pyrolysis reactor energy recovery system [13]. The seventh contribution is devoted to electrical energy—contract optimisation with demand uncertainties [14]. The eighth selection presents an interesting extension of traditional heat integration—energy analysis which offers the ability for the simultaneous consideration of energy, different industrial resources, goods and services for the purposes of decision-making [15]. The last paper tackles an important problem—integration of renewables into an existing CHP system [16].

This Special Issue papers have revealed that energy efficiency, when connected with environmental protection issues, is generating an increasingly strong interest and is providing a new base for further research and development. We will all watch with great interest future research results being submitted to future *PRES* conferences. The interest and relevance to the international community is reflected by the nationalities of the authors of the selected papers, China—Hong Kong, Colombia, the Czech Republic, Greece, Germany, Ireland, Italy, Japan, the Netherlands, and the United Kingdom. We very much hope that this internationality continues and grows with the future *PRES* conferences.

At the time being we trust that the papers in this Special Issue of *Energy—the International Journal* will be of interest and relevance to a broad range of the scientific community and will bring to their attention the *PRES* conference series as well.

The help of all collaborators and the ISC members [17,18] is gratefully acknowledged, both for their active contribution to the conference and for taking part in the reviewing process. A special appreciation is being expressed to all authors for their contribution.

We would like to further develop the collaboration between *Energy—the International Journal* and the *PRES* conference series. The 8th conference, *PRES'05*, was very successfully organised jointly with ICheaP-07 in Giardini die Naxos, Taormina, Sicily, Italy [19], and another Special Issue has been already prepared based on this conference. The 9th *PRES 2006* will again return to “golden Prague”, 27–31 August 2006, organised jointly with *CHISA 2006*.

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