

HEAT EXCHANGER FOULING AND CLEANING - VII

PREFACE

Fouling of heat exchangers in processing industries is a chronic operating problem that compromises energy recovery and maybe environmental welfare. Mitigation of fouling occurrence is frequently hindered by the lack of quantitative knowledge of the dynamic effects of fouling on exchanger heat transfer and pressure drop. Maintaining clean heat transfer surfaces is of vital importance for reliable and efficient energy recovery. However, fouling in tubes or flow channels creates three major problems: (1) Loss of heat transfer, (2) Under-deposit corrosion, and (3) Pressure loss. In addition, it is responsible for the emission of many millions of tonnes of carbon dioxide as well as the use and disposal of hazardous cleaning chemicals. For instance, data from oil refineries suggest that crude oil fouling accounts for about 10% of the total CO₂ footprint of these plants. Generally speaking, costs associated with heat exchanger fouling may include the following:

- Production losses due to efficiency deterioration and to loss of production during planned or unplanned shutdowns.
- Higher maintenance costs resulting from the removal of fouling deposits with chemicals and/or mechanical antifouling devices or the replacement of corroded or plugged equipment.
- Increased consumption of water, electricity, fossil fuels and other resources
- Need for excess heat transfer surface in the design of heat exchangers.
- A reduction in the ability of the system to supply the design output
- Increased safety hazards
- Increased environmental hazards and emissions

The goal of the bi-yearly conferences on heat exchanger fouling has been to facilitate innovative thinking and to explore new theoretical and practical approaches to address the tremendous challenges associated with fouling of heat exchangers. In addition these conferences have successfully provided a forum for experts from industry, academia and government research centres from around the world to present their latest research and technological developments in the areas of fouling mitigation and cleaning technologies. Since 1995, seven of these conferences have been organised by Engineering Conferences International (previously United Engineering Foundation). These meetings generally involve overview presentations, technical papers, poster sessions, and panel discussions. Following the highly successful meetings in San Luis Obispo (1995), Lucca (1997), Banff (1999), Davos (2001), Santa Fé (2003), Kloster Irsee (2005), the 7th conference in this series was held in Tomar, Portugal, in July 2007. The conference attracted representatives from a wide range of universities, research institutes and companies and hence was able to provide participants with excellent technical presentations and a very conducive environment for personal discussions. In total, 92 participants attended the conference, presenting 70 papers/posters, which was the highest numbers in any meeting of this series. The next International meeting on heat exchanger fouling will be held in June or July 2009.

The following papers have been presented, and recommended for publication in the final conference proceedings after a careful refereeing and revision process. The proceedings cover various aspects of heat exchanger fouling along with updated state-

of-art fouling mitigation and cleaning strategies. The present e-proceedings as well as those from the previous conferences in 2003 and 2005 can be obtained free of charge from the following homepage of Engineering Conferences International Symposium Series:

<http://services.bepress.com/eci/>

The editors wish to thank everybody who contributed towards the conference and the conference proceedings, i.e.

- all the authors and participants who invested substantial efforts to produce high-quality papers and to attend the conference
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- the Conference Advisory Committee and the Session Chairmen
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Editors

Hans Müller-Steinhagen
German Aerospace Centre and University of Stuttgart (Germany)

M. Reza Malayeri
University of Stuttgart (Germany)

A. Paul Watkinson
University of British Columbia (Canada)