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Conference**

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## FOREWORD

The 6<sup>th</sup> European Stainless Steel Conference, Science and Market, is held in Helsinki in June 2008 just before another important event in the Nordic area, Midsummer. The conference has attracted more than 150 scientific and application-oriented contributions from all over the world. Holding the conference in Scandinavia is a logical step after the earlier venues in Seville 2005, Paris 2002, Sardinia 1999, Düsseldorf 1996 and Florence 1993.

The conference locations reflect the fact that around half the world tonnage of stainless steels is produced by European companies. From a historical perspective the European position has been very strong, starting with the early patents from Krupp and Firth Brearley Stainless Syndicate. Stainless steel production was also dominated by European companies until the end of 1920's, when USA moved to the forefront. However, from the 1960's onwards European and Asian production has taken the lead. The development and early growth of stainless steels is touched upon in a note in the proceedings.

A number of trends can be identified over recent years. Some are driven by supply of raw materials and the related price fluctuations, other by the demands regarding performance in terms of corrosion resistance and mechanical strength. However, the application of stainless steels in demanding environments must be supported by design guides and recommendations if the market is to increase in a controlled way. In the conference a number of efforts, in various states of development, are presented with the ambition to supply the engineering society with tools for successful inclusion of stainless steels in buildings, transport industry and more demanding process industry applications. This in a way demonstrates the concept of the conference series - the research community meet the market.

The methods regarding development of new steel grades and process routes have changed radically over the last decades, primarily due to the emerging new databases based on thermodynamic principles. The lead times are decreased significantly by reduction of experimental work and introduction of new strategies for alloy development. A whole session in the conference is devoted to thermodynamic modelling, including ab initio modelling, where fundamental principles are used to shed light on phenomena which cannot be examined experimentally as well as those which can be observed but not fully explained. What we see is maybe not the breakthrough of ab initio modelling in application areas but definitely important steps on the way to becoming an important complement to today's very successful thermodynamic modelling.

We have an exciting time ahead with new applications, a rapidly changing market situation, and a research community with new and powerful tools available for the benefit of stainless steel producers and society as a whole. We are convinced that this is reflected in the presentations and proceedings of this conference.

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