3rd international Seminar

Oxygen Steelmaking

22nd – 24th June 2020
Dortmund, Germany

DIRECTED BY
Karl-Heinz Spitzer, TU Clausthal / Jochen Schlüter, SMS group

TARGET GROUP
Although oxygen steelmaking is a well-known process there are a lot of current challenges for the operating engineer: the quality of raw materials, process control, different operating practices, modelling, CFD and Industry 4.0. Next to these new questions the seminar programme also includes the important basics thermodynamics, chemical reactions kinetics, heat and mass balance and a lecture on tramp elements.

Our target groups are:
• Steel shop operating staff
• Employees in R&D
• Supervisors responsible for decisions on metallurgy, energy, purchasing and environmental protection
• Raw material staff

The participants will learn about modern processes on oxygen steelmaking and will particularly benefit from detailed discussions. Note: Both during lectures and discussions, as well as in the breaks of the seminar, our guidelines on adherence to cartel-law regulations shall be followed.

REGISTRATION FEE
EUR 990,00* registration fee VAT-free plus
EUR 255,00 conference package (total EUR 1,245,00*)

EUR 1,190,00 registration fee VAT-free plus
EUR 255,00 conference package (total EUR 1,445,00)

* for employees of member companies and individual members of the Steel Institute VDEh, and for scientific staff of universities

The conference package includes food and beverages during the seminar (incl. 19 % VAT). A free withdrawal from the seminar is possible until 2 weeks prior to the start. Then, 25% of the seminar fee must be paid. The total registration amount will be charged for no show or cancellation from the first day of the event. The participant also has to bear the cancellation costs of the seminar hotel.

CONTENT
• History, developments and types and of oxygen converters
• Thermodynamic and Kinetic Basics in the Converter Process
• Tramp Elements
• Hot-Metal Pretreatment
• Computational Fluid Dynamics in the Converter
• Design and construction of modern Oxygen Converters
• Chemical Reactions Kinetics: Refining Reactions and Slag Forming in the BOF Process
• Mass Balance and Heat Balance
• Converter Process Modelling
• Qualities of Raw Materials
• Refractory Materials for BOF
• Comparison of different Converter Operation Practices: US – Europe – Japan
• Environmental Aspects: Dedusting
• Practical Approaches on Converter Process Control
• Steel Panel on Raw Materials and Operation Practices

ORGANISATION
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VENUE / SEMINAR HOTEL
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Fon +49 231-91130
https://hotel-dortmund.dorint.com/de

The Steel Academy will automatically make a room booking for the participants at the Dorint Dortmund from 21st (the evening prior to the seminar’s beginning) to 24th June 2020 for a special rate of EUR 114,00 per night incl. breakfast. The hotel room bill will be settled by you upon departure. Please advise at your registration, if you do not need a reservation or whether you would like to stay longer in the hotel.
Monday, 22nd June 2020

08:45  Introduction to the seminar  
Peter Schmieding

09:15  History, developments, types of oxygen converters  
Jochen Schlüter  
technology of Bessemer-, Thomas-, LD- and OBM-converters

10:45 coffee break

11:15  Thermodynamic and kinetic basics in the converter process  
Karl-Heinz Spitzer  
reactions and transport in the converter / basics of a model on thermodynamics and kinetics / slags: structure and importance

12:45 lunch

14:00  Tramp elements  
Wolfgang Bleck  
importance and impacts of Phosphor, Nitrogen, Copper etc

15:30 Coffee Break

16:00  Hot-metal pretreatment  
Mark Whitehead  
reactions and processes for the removal of silicon, phosphorus and sulphur / HMD / DDD / injection technology / KR process; des-agents

17:00  Computational fluid dynamics in the converter  
Hans-Jürgen Odenthal  
transport equations / physical (water modelling) and numerical simulation (CFD) / specific converter flow phenomena (supersonic jets, gas bubbling, post combustion) / CFD examples AOD and BOF

19:00 Borussia Dortmund Stadium Tour  
and common dinner at Strobels beer garden

Tuesday, 23rd June 2020

08:45  Chemical reaction kinetics – refining reactions and slag forming in the BOF process  
Helmut Lachmund  
oxidation of C, Si, Mn, P, S, Fe and their interactions / achievable contents in the crude steel / gas reactions (CO, CO₂, H₂, N₂) / slag: forming, reactions, properties / final slag composition

10:45 coffee break

11:15  Practical Approaches:  
• BOF development and process control at Tata IJmuiden  
  Jan Brockhoff
• BOF development and process control at Dillinger  
  Helmut Lachmund

13:00 lunch

14:15  Design and construction of modern oxygen converters  
Gerald Wimmer  
design, construction and equipments of LD- and OBM-converters / the converter in industry 4.0

15:15  Qualities of iron ores  
Hans Bodo Lüngen  
iron ores for the steel industry: worldwide reserves and qualities

16:00 coffee break

16:30  Global comparison of converter operation practices: US – Europe – Japan  
Jens Kempken

17:00  Steelmaking Panel:  
▪ Impacts of raw material’s qualities / Pretreatment / Lance Design / Stirring / Alloying Agents / Process Control  
  Moderation: Jochen Schlüter

19:00 common dinner

Wednesday, 24th June 2020

08:45  Refractory materials for BOF  
Jochen Schlüter  
interaction metallurgy, slags and refractory materials / wear mechanism / failures

09:45  Mass balance and heat balance  
Dieter Senk  
heat of reactions in refining and slagging / kinetics of scrap melting / kinetics of DRI melting / post combustion  
(=> including coffee break at 10:30)

12:15 lunch

13:15  Converter process modelling  
Martin Schlautmann  
dynamic models for online monitoring and control of oxygen refining processes / examples for BOF, AOD and VOD converters

14:15  Environmental aspects: dedusting  
Rüdiger Deike  
dust formation in the BOF process / typical dust composition / dust cleaning systems / behavior of Na, K and Zn at high temperatures

15:30 End of Seminar