Seminar

**Refractory Technology**

Applications, Wear Mechanism and Failures

24 to 27 April 2016, Cologne

**TARGET GROUP**

Maintenance and operating personnel, supervisors responsible for plant and unit operations, and managers responsible for decisions on refractory problems will learn about new materials and installation methods. Refractory installers, third party inspectors and contract maintenance personnel will particularly benefit from detailed discussions on new installation techniques and materials.

**SUPPORTED BY**

Technical Committee Refractory Materials in the Steel Institute VDEh

**DIRECTED BY**

Dr. Andreas Buhr, Frankfurt

**REGISTRATION FEE / REMARKS**

<table>
<thead>
<tr>
<th>Registration Fee</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>EUR 1.245,00*</td>
<td>(EUR 990,00* registration fee VAT-free plus EUR 255,00 conference package)</td>
</tr>
<tr>
<td>EUR 1.445,00</td>
<td>(EUR 1.190,00 registration fee VAT-free plus EUR 255,00 conference package)</td>
</tr>
</tbody>
</table>

* for employees of member companies and individual members of the Steel Institute VDEh

The conference package includes food and beverages during the seminar.

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 resp. his company also has to bear the cancellation costs of the seminar hotel.

**CONTENT**

- Steel manufacturing process
- General overview of wear mechanisms and methods for examination of the refractory material after use
- Refractory lining and wear mechanism of blast furnace, taphole, and runners
- Refractory lining and wear in the torpedo ladle
- Process conditions affecting the refractory lining life and the development of refractory materials technology in oxygen blowing converters
- Steel Teeming Ladle: ladle metallurgical treatment, refractory stress, materials and lining concepts
- Challenges and solutions for continuous casting refractories in consideration of clean steel, automation and economy
- Refractory lining and wear of AC and DC furnaces
- Economics in refractory usage
- Team-work on failure case studies

**ORGANISATION**

Stahl-Akademie / Steel Academy • Stahlinstitut VDEh
Sohnstraße 65 • 40237 Düsseldorf
Fon +49 (0)211 6707-458 • Fax -655
info@steel-academy.com, www.steel-academy.com

**VENUE / SEMINAR HOTEL**

Leonardo Royal Hotel Köln
Am Stadtwald / Dürerer Str. 287
50935 Köln, Germany

The Steel Academy will automatically make a room booking for the participants at the Leonardo Royal Hotel Cologne from 24 to 27 April 2016 for a special rate of EUR 105,00/night incl. breakfast. The hotel room bill will be settled by you upon departure. Please advise at registration, if you do not need a reservation or whether you would like to stay longer in the hotel.
PROGRAMME

Sunday, 24 April 2016

17:00 Introduction
Andreas Buhr
Participants can present their failure cases and the according information material, so that they can be included in the team work on failure cases.

17:30 Steel Manufacturing Process
Andreas Buhr

18:30 General Overview of Wear Mechanisms, Methods for Examination of the Refractory Material after Use
Waltraud Winkler
Chemistry, physics, mineralogy, procedure and evaluation: wear mechanisms, types of damages, description of optional research methods to examine the wear mechanism, typical failures of refractory material after the operational application, evaluation of the samples.

19:30 Common Dinner

Monday, 25 April 2016

8:30 Refractory Lining and Wear Mechanism of BLAST FURNACE, Taphole, and Runners
Horst-Peter Rüther
Lining concepts considering furnace dimensions, cooling and investment costs. Refractories for furnace shaft and hearth, wear mechanism. Intermediate repair techniques to extend furnace campaign. Development of tapping technique, requirements on taphole mixes and materials used. Performance criteria on lab and practical scale.

10:30 Coffee Break

11:00 Refractory Lining and Wear in the TORPEDO LADLE
Waltraud Winkler

12:00 Team Work – Introduction
Andreas Buhr

12:30 Common Lunch

13:30 Team Work – Failure Case Studies

15:00 Coffee Break

15:30 Process Conditions and Factors affecting the Refractory Lining Life and the Development of Refractory Materials Technology in OXYGEN BLOWING CONVERTERS
Michael Berger / Jochen Schlüter

(15:30, incl. short Break)

19:00 Common Dinner

Tuesday, 26 April 2016

8:30 STEEL TEEMING LADLE: Ladle Metallurgical Treatment / Refractory Stress / Materials and Lining Concepts
Andreas Viertauer / Hans Schröter
Secondary metallurgy: metallurgical tasks, different ladle treatments and different ladle slag, homogenisation. Steel teeming ladle: refining concepts, wear mechanism, refractory lab tests, drying and heating, laser based measurement to determine the residual thickness, ladle stirring, problem areas and safety precautions.

10:00 Coffee Break

10:30 STEEL TEEMING LADLE, Part II
Andreas Viertauer / Hans Schröter

12:00 ECONOMICS in Refractory Usage – Part I
Rinus Siebring

12:30 Common Lunch

13:30 Team Work – Failure Case Studies

15:00 Coffee Break

15:30 Challenges and Solutions for CONTINUOUS CASTING Refractories in Consideration of Clean Steel, Automation and Economy
Sven Karrasch / Wilhelm Parbel

(15:30, incl. short Break)

19:00 Common Dinner

Wednesday, 27 April 2016

8:30 Refractory Lining and Wear of AC and DC FURNACES
Leandro Schöttler
Influences on the wear, comparison AC and DC furnaces, different kinds of lining, refining hearth and sidewalls between the heats.

10:00 Coffee Break

10:30 Economics in Refractory Usage – Part II
Rinus Siebring
Including Team Work - Economics

12:30 Common Lunch

13:30 Discussion of Team Work: Results on Failure Case Studies
Andreas Buhr

15:30 Closing Remarks / Discussion

SPEAKERS
Dipl.-Ing. Michael Berger, RHI AG, Wien
Dr. rer. nat. Andreas Buhr, Almatis GmbH, Frankfurt
Dipl.-Ing. Sven Karrasch, ThyssenKrupp Steel Europe AG, Duisburg
Dipl.-Ing. Wilhelm Parbel, RHI AG, Wien
Dr.-Ing. Horst-Peter Rüther, ThyssenKrupp Steel Europe AG, Duisburg
Dipl.-Ing. Jochen Schlüter, SMS Mevac GmbH, Essen
Dipl.-Ing. Leandro Schöttler, Deutsche Edelstahlwerke GmbH, Siegen
Dipl.-Ing. Hans-Christian Schröter, Hüttenwerke Krupp Mannesmann GmbH, Duisburg
Ir. Rinus Siebring, Tata Steel RD & T, Ceramic Research Center, IJmuiden
Ing. Andreas Viertauer, RHI AG, Wien
Dr. Waltraud Winkler, voestalpine Stahl GmbH, Linz