

Online seminar | Live-Stream

Continuous Casting of Steel

Basic Course

Established by Prof. Klaus Schwerdtfeger

October 6th to 7th, 2022



AIM

Steel is the no 1 material in the world of technology. About 96% of all the total steel production is cast continuously. Automobiles, machines and countless parts of daily live are made of steel. New and innovative high-performance steel grades are created and combine several properties on a high level of quality. Plant design and casting processes are continuously developed.

This seminar introduces continuous casting technology. It provides the basic understanding of the process, its components and its metallurgy. Target Group: Engineers, operating personnel, planning and construction, quality department, students, machine suppliers. Also suitable for non-metallurgists

CONTENT

- Basic Concepts
- Technology of Continuous Casting
- Solidification and Temperatures
- Micro-Structure
- Macro-Segregation
- Cleanness/Inclusions
- Strand Mechanics /
- Casting Fluxes
- Refractories
- Automation

REGISTRATION FEE

€ 640,00* // € 690,00 VAT-free

* for employees of member companies and individual members of the Steel Institute VDEh. Scientific staff of universities gets a 50 % off. Also 50 % discount for each additional participant from the same company. Cancellation free of charge is not possible after receiving of the log-in data.

+++ as part of the VDEh youth development sponsorship also young engineers (up to 35 years) of member companies receive a 50% discount +++

REGISTRATION

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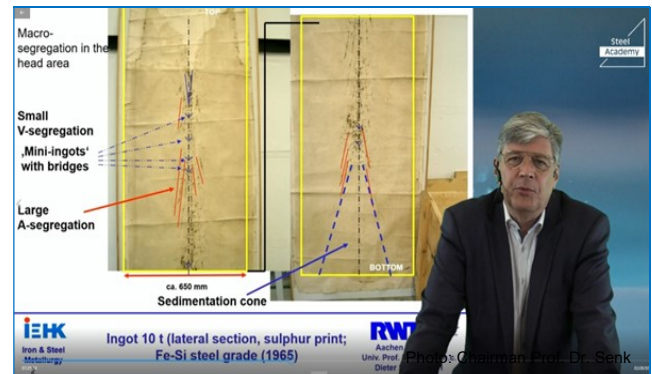
CHAIRMAN

Professor Dr.-Ing. Dr. h.c. Dieter Senk

ONLINE SEMINAR CONCEPT

Technical quality

The Steel Academy attaches great importance to the audio-visual quality of its online seminars. This seminar will be broadcast as a live-stream from Steel Academy's film studio in Dusseldorf – with high quality camera, microphone and lighting. In the picture will be shown the speaker and his presentation. A moderator leads through the seminar programme.



Online seminar - how does it work?

- 2-3 days before seminar's starting you receive an e-mail with a link and a password
- the link leads you to the streaming platform vimeo.com
- you log in with the password
⇒ we recommend using earphones, LAN or good WLAN

Schedule

2 days, 5 hours from 9 a.m. to 2 p.m. CET Berlin time

Seminar handouts

Before seminar's starting the participant can download the presentations as a pdf

PROGRAMME

Thursday, 6th October

- 09:00 **Introduction to Course**
Dieter Senk
- 09:15 **Basic Concepts**
Dieter Senk
General approach, Crash course. Fundamentals
- 09:45 Questions and answers
- 10:00 **Technology of Continuous Casting (Part 1)**
Jochen Wans
Principles of CC technology | Machine types and components
- 10:45 Questions and answers
- 11:00 **Technology of Continuous Casting (Part 2)**
Jochen Wans
- 11:30 Questions and answers
- 11:45 **Solidification, Heat flux, Temperatures**
Karl-Hermann Tacke
Shell growth, crater end | Simplified models with applications | Thermal modelling | Heat extraction
- 12:45 Questions and answers
- 13:00 **Micro-Structure**
Dieter Senk
As-cast structure | Dendrites | Micro-segregation | Models.
- 14:00 Questions and answers

Friday, 7th October

- 09:00 **Macro-Segregation**
Dieter Senk
Mechanisms of macro-segregation | Cooling effects
- 10:00 Questions and answers
- 10:15 **Cleanness and Inclusions**
Karl-Hermann Tacke
Non-metallic inclusions | Fluid flow of steel and removal of inclusions
- 11:15 Questions and answers
- 11:30 **Strand Mechanics**
Karl-Hermann Tacke
Mechanical loads and cracks | Ductility, creep | Thermal stresses | Unbending | Bulging
- 12:30 Questions and answers
- 12:45 **Casting Fluxes**
Dieter Senk
Task of fluxes | Mineral composition | Melting mechanisms | Powder consumption
- 13:15 **Refractories**
Dieter Senk
Use of refractories in CC | Ceramic composition | Melt and flux attack
- 13:45 Questions and answers
- 14:00 **Automation**
Jochen Wans
Automation levels | Sensors, actuators | Algorithms, models
- 14:45 Questions and answers

SPEAKERS

University Professor Dr.-Ing. Dr. h. c. Dieter Senk is responsible for the Chair of Iron and Steel Making at Dept. of Ferrous Metallurgy of RWTH Aachen University. Since nearly 40 years in steelmaking industry and university he is involved with numerous research and development projects to improve CC.

Professor Dr.-Ing. Karl-Hermann Tacke worked at Concast Zurich, was Head of the Department of Metallurgy at Max-Planck-Institut für Eisenforschung and Director of Research and Development at Dillinger Hüttenwerke. He is now an independent researcher and teaches continuous casting at Technical University Berlin.

Dr.-Ing. Jochen Wans worked as a metallurgist in the steelmaking industry before he changed his career to a plant manufacturer in the same business. Within numerous projects he is focused to connect material and process development in the field of CC. A major part of his sphere of action is dedicated to near-net-shape casting. Today he is Vice President Continuous Casting for SMS group GmbH.

ABOUT THE ORIGINATOR

University Professor Dr.-Ing. Klaus Schwerdtfeger worked a lifetime in the field of metallurgy, particularly in metallurgy of solidification. After leading the Metallurgical Department of Max-Planck-Institute at Düsseldorf he chaired the Department of General Metallurgy at TU Clausthal University. He hosted the seminar from 1974 to 2017. The current course follows the spirit of the original seminar. The content is continuously updated.