OURSE OVERVIEW ME0840
Roll Pass Design and Mill Operation

Course Title
Roll Pass Design and Mill Operation

Course Reference
ME0840

Course Duration/Credits
Five days/3.0 CEUs/30 PDHs

Course Date/Venue

Session(s)	Date	Venue
1	April 20-24, 2025	Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE
2	May 11-15, 2025	Crowne Meeting Room, Crowne Plaza Al Khobar, KSA
3	October 26-30, 2025	Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE
4	November 16-20, 2025	Cheops Meeting Room, Radisson Blu Hotel, Istanbul Sisli, Turkey

Course Objectives

This practical and highly-interactive course includes real-life case studies and exercises where participants will be engaged in a series of interactive small groups and class workshops.

This course is designed to provide participants with a detailed and up-to-date overview of roll pass design and mill operation. It covers the hot rolling concepts and the metallurgy of rolling for ferrous and non-ferrous metals; the different elements of roll pass design according to power, torque and separating force calculations; the development and use of spreadsheet for roll pass design calculation; rolling mill arrangements, mill layouts and various equipment considerations; and the characteristics of flat pass design, its types of flat products and their tolerances.

During this interactive course, participants will learn the aspects of rounds, rod pass designs and rolling sequences; the various types of angles, several angle products and their tolerances; the products, tolerances and sequence of beams and channels; and the several guiding and troubleshooting techniques in roll pass design and mill operation.

Course Objectives

Upon the successful completion of this course, each participant will be able to:-

- Apply proper techniques, tools and procedures on roll pass design and mill operation
- Review and update knowledge on hot rolling concepts and the metallurgy of rolling for ferrous and non-ferrous metals
- Determine the different elements of roll pass design according to power, torque, and separating force calculations
- Use a spreadsheet for roll pass design calculation
- Evaluate rolling mill arrangements and mill layouts including various equipment considerations
- Identify the characteristics of flat pass design through its types of flat products and their tolerances
- Recognize the aspects of rounds and rod pass designs and become acquainted with round rolling sequences
- Characterize the various types of angles as well as several angle products and their tolerances
- Enhance knowledge on beams and channels through their products, tolerances, and sequences
- Apply several guiding and troubleshooting techniques in roll pass design and mill operation

Exclusive Smart Training Kit - H-STK®

*Participants of this course will receive the exclusive "Haward Smart Training Kit" (**H-STK®**). The **H-STK®** consists of a comprehensive set of technical content which includes **electronic version** of the course materials conveniently saved in a **Tablet PC**.*

Who Should Attend

The course covers systematic techniques and methodologies on roll pass design and mill operation for roll pass designers, mill engineers, guide and set-up shop personnel, mill operators and mill management personnel who are interested or involved in the hot rolling of steel.

Accommodation

Accommodation is not included in the course fees. However, any accommodation required can be arranged at the time of booking.

Course Certificate(s)

Internationally recognized certificates will be issued to all participants of the course who completed a minimum of 80% of the total tuition hours.

Certificate Accreditations

Certificates are accredited by the following international accreditation organizations:-

- The International Accreditors for Continuing Education and Training (IACET - USA)

  Haward Technology is an Authorized Training Provider by the International Accreditors for Continuing Education and Training (IACET), 2201 Cooperative Way, Suite 600, Herndon, VA 20171, USA. In obtaining this authority, Haward Technology has demonstrated that it complies with the **ANSI/IACET 2018-1 Standard** which is widely recognized as the standard of good practice internationally. As a result of our Authorized Provider membership status, Haward Technology is authorized to offer IACET CEUs for its programs that qualify under the **ANSI/IACET 2018-1 Standard**.

  Haward Technology's courses meet the professional certification and continuing education requirements for participants seeking **Continuing Education Units** (CEUs) in accordance with the rules & regulations of the International Accreditors for Continuing Education & Training (IACET). IACET is an international authority that evaluates programs according to strict, research-based criteria and guidelines. The CEU is an internationally accepted uniform unit of measurement in qualified courses of continuing education.

  Haward Technology Middle East will award **3.0 CEUs** (Continuing Education Units) or **30 PDHs** (Professional Development Hours) for participants who completed the total tuition hours of this program. One CEU is equivalent to ten Professional Development Hours (PDHs) or ten contact hours of the participation in and completion of Haward Technology programs. A permanent record of a participant's involvement and awarding of CEU will be maintained by Haward Technology. Haward Technology will provide a copy of the participant's CEU and PDH Transcript of Records upon request.

- British Accreditation Council (BAC)

  Haward Technology is accredited by the **British Accreditation Council** for **Independent Further and Higher Education** as an **International Centre**. BAC is the British accrediting body responsible for setting standards within independent further and higher education sector in the UK and overseas. As a BAC-accredited international centre, Haward Technology meets all of the international higher education criteria and standards set by BAC.

Course Instructor(s)

This course will be conducted by the following instructor(s). However, we have the right to change the course instructor(s) prior to the course date and inform participants accordingly:

Mr. Mark Schweitzer is an **International Expert** in **Rolling Mill & Steel Manufacturing** with over **25 years** of extensive experience in the industry. His expertise mainly covers the **design**, **manufacturing**, **process monitoring & engineering**, **power & load calculations**, **process audit & review**, **maintenance** and the **training** required for **steelmaking** & the **operation** of **rolling mills**. Currently, he is the **Managing Director** of **Falcata Inc**. (**DBA Capital Rolls**) wherein he spearheads the **major operations** in **steelmaking** & providing **rolls** and **guide** to **rolling mills**. At the same time, he is also the **President** and **Principle Engineer** of **Schweitzer Rolling Technology Inc**. that offers **design & process engineering** and provides **training programs** for existing and new ferrous and non-ferrous rolling mills.

With his **lengthy experience** and **indisputable expertise**, Mr. Schweitzer has built-up a formidable reputation in the **design**, **inspection**, **process engineering** in **steel manufacturing** and the **installation** & **maintenance** of **rolling mills**. Much earlier in his career life, he has worked with numerous international companies such as the **Morgan Construction Company**, **Quad Engineering** and **Steel** of **West Virginia** with prime positions such as a **Roll Pass Chief Engineer**, **Pass Design Services Manager**, **Roll Designer**, **Process Engineer**, **Project Manager**, **Pass Designer**, **CAM Programmer** and **CAD Draftsman** as well as a **Writer** and an **AutoCAD Instructor** in the University. Moreover, he has successfully handled numerous projects such as the **FEM simulation & analysis** for **Steel Dynamics**, a **Mill audit** and **Roll pass review** for **US Steel**, the **design**, **power** and **load calculations** and **setup sheets** for **Jindal Steel West**, the **design** and **simulation** for **Bayou Steel**, **Smorgon Steel**, **Atlantic Steel**, **Ameristeel**, **Franklin Industries**, **Steel Dynamics** & **Nocur Steel** and the **layout**, **design**, **power** and **load calculations** for **Arkansas Steel**, **Sheffield Steel**, **North Star Steel**, **Birmingham Steel** and **Ameri-Forge**.

Mr. Schweitzer has a **Bachelor** degree. He is a well-respected member of the **Association for Iron and Steel Technology** (**AIST**) and the **Arbeitsgemeinschaft Internationaler Kalibreure und Walzwerksingenieure** (**AIKW**). Further, he is **Certified Instructor/Trainer**, a **Certified Master Roll Designer** and even heads the **Certification Review Board** for the **Institute of Roll Design** (**IRD**).

Course Fee

Dubai	**US$ 10,000** per Delegate + **VAT**. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.
Al Khobar	**US$ 10,000** per Delegate + **VAT**. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.
Istanbul	**US$ 10,000** per Delegate + **VAT**. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Training Methodology

This interactive training course includes the following training methodologies as a percentage of the total tuition hours: -

30% Lectures
20% Workshops & Work Presentations
20% Case Studies & Practical Exercises
30% Videos, Software & Simulators

In an unlikely event, the course instructor may modify the above training methodology before or during the course for technical reasons.

Course Program

The following program is planned for this course. However, the course instructor(s) may modify this program before or during the course for technical reasons with no prior notice to participants. Nevertheless, the course objectives will always be met:

Day 1

0730 – 0800	*Registration & Coffee*
0800 – 0815	*Welcome & Introduction*
0815 – 0830	***PRE-TEST***
0830 – 1030	***Hot Rolling Concepts*** *The Metallurgy of Rolling ● Plastic Deformation ● Average Reduction and Elongation*
1030 – 1045	*Break*
1045 – 1130	***Hot Rolling Concepts (cont'd)*** *Bite Angle Calculations and Limitations ● Mass Flow ● Introduction to Using a Spreadsheet for Roll Pass Design Calculation*
1130 – 1230	***Roll Pass Design*** *Billet to Product ● Rolling Plan ● Breakdown Sequences*
1230 – 1245	*Break*
1245 – 1420	***Roll Pass Design (cont'd)*** *Spread ● Power, Torque and Separating Force Calculations ● Creating and Using Power Curves*
1420 – 1430	***Recap***
1430	*Lunch & End of Day One*

Day 2

0730 – 1030	***Mill Layouts & Equipment Considerations*** *Historical Mill Arrangements ● Reheating*
1030 – 1045	*Break*
1045 – 1130	***Mill Layouts & Equipment Considerations (cont'd)*** *Rolling Mill Arrangements ● Finishing Considerations*
1130 – 1230	***Mill Layouts & Equipment Considerations (cont'd)*** *Mill Layouts ● Continuous Mills*
1230 – 1245	*Break*
1245 – 1420	***Mill Layouts & Equipment Considerations (cont'd)*** *Cross-Country Mills*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Two*

Day 3

0730 – 1030	***Flat Pass Design*** *Types of Flat Products and their Tolerances ● Development of Spreadsheet for Calculation*
1030 – 1045	*Break*
1045 – 1130	***Flat Pass Design (cont'd)*** *Flat Rolling Sequences ● Developing & Using a Spreadsheet for Calculation*
1130 – 1230	***Flat Pass Design (cont'd)*** *Example Flat Pass Design ● Using a Spreadsheet for Calculation*
1230 – 1245	*Break*
1245 – 1420	***Round & Rod Pass Design*** *Types of Round Products and their Tolerances ● Round Rolling Sequences*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Three*

Day 4

0730 – 1030	***Round & Rod Pass Design (cont'd)*** *Example Round Pass Design ● Finishing Block Rolling*
1030 – 1045	*Break*
1045 – 1130	***Angles*** *Angle Products and their Tolerances*
1130 – 1230	***Angles (cont'd)*** *Angle Rolling Sequences*
1230 – 1245	*Break*
1245 – 1420	***Angles (cont'd)*** *Example Angle Pass Design*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Four*

Day 5

0730 – 1030	***Beams & Channels*** *Beam Products and their Tolerances ● Beam Rolling Sequences ● Example Beam Pass Design*
1030 – 1045	*Break*
1045 – 1130	***Beams & Channels (cont'd)*** *Channel Products and their Tolerances ● Channel Rolling Sequences ● Example Channel Pass Design*
1130 – 1230	***Guiding*** *Basic Guiding ● Static Guides ● Roller Guides ● Shape Guiding*
1230 – 1245	*Break*
1245 – 1345	***Troubleshooting*** *Defect Cause and Effects ● Product Tolerances ● Production*
1345 – 1400	***Course Conclusion***
1400 – 1415	***POST-TEST***
1415 – 1430	*Presentation of Course Certificates*
1430	*Lunch & End of Course*

Practical Sessions

This practical and highly-interactive course includes real-life case studies and exercises:-

Course Coordinator

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