

Aluminium Rolling Technology Course - Online.

This course contains the following modules

Aluminium Market Dynamics & Drivers.

- Economics of rolling
- Business cycles
- Future trends

Aluminium Casting Overview.

- Outline of the process routes continuous casting and direct chill casting
- Metal conditions at various stages during casting
- Machinery used in casting

Process Overview.

- Outline of Aluminium process routes
- Major components of reversing and hot mills, tandem mills and cold mills,

Machinery Overview.

- Outline of machinery used
- Types of actuator in rolling mills

Mechanics of Rolling.

- Yield criteria
- Friction hill
- Factors determining rolling load
- Closed and open gap rolling
- Attenuation

Finishing Overview.

- Outline of finishing line process routes
- Outline of machinery used
- Affects of processing on product quality

Process Metallurgy.

- Alloy choice
- Microstructure
- Strengthening mechanisms
- Annealing

Thermal Aspects of Rolling.

- Heat sources and sinks
- Temperature distributions in rolls and strip
- Design of roll spray cooling systems
- Strip cooling

Tribology in Aluminium Rolling.

- Friction and lubrication basic principles
- Interaction of rough surfaces
- Role of additives
- Hot and cold rolling oils
- System maintenance
- Filtration

Mechanics of Profile & Flatness.

- Definitions of profile and flatness
- Sources of variation
- In-process specification and targets for control

Surface Generation & Surface Defects.

- Surface generation during rolling
- Oil entrapment
- Strip brightness control
- Scuffing
- Types of defect
- Reduction marks
- Surface inspection

Data Workshop.

- Introduction of data analysis and IBA software
- How to interpret rolling mil data and create meaningful templates

Sustainability and Life Cycle Assessment.

- Overview LCA method
- Introduction to intricacies of aluminium sustainability studies

Introduction to Control.

- Open and closed loop control systems
- PID control and gain determination
- Ziegler-Nichols testing
- Use of feedback

Mill Vibration.

- Sources of vibration in cold mills
- Vibration modes
- Mechanical defects & vibration

Automatic Gauge Control.

- Total gauge description
- Gauge control loops
- Measurement devices
- Different methods of gauge control in current use

Profile Measurement and Control.

- Measurement of profile
- Actuators for control
- An integrated control strategy
- Scheduling, setup, adapted setup & in-coil strategies

Automatic Flatness Control.

- Definition
- I-units
- Different types of off-flatness
- Relation with stress
- On-line measurement
- Flatness control actuators
- Strategies to control flatness

Wrap up and Q&A Session.

- Interactive session with Innoval's experts
- Wrap-up of the week

For more information please contact

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Sample agenda:

ALUMINIUM ROLLING TECHNOLOGY COURSE - ONLINE 2022											
MONDAY 09:00 GMT Start		TUESDAY 09:00 GMT Start		WEDNESDAY 09:00 GMT Start		THURSDAY 09:00 GMT Start		FRIDAY 09:00 GMT Start			
09:00	Introduction	09:00	Machinery Overview	09:00	Finishing Overview	09:00	Thermal Aspects of Rolling	09:00	Tribology in Aluminium Rolling		
09:45	Aluminium Market Dynamics and Drivers	10:00	BREAK	09:45	BREAK	10:00	BREAK	10:00	BREAK		
10:30	BREAK	10:15	Mechanics of Rolling	10:00	Process Metallurgy	10:15	Thermal Aspects of Rolling	10:15	Mechanics of Profile and Flatness		
10:45	Aluminium Casting Overview			11:00	BREAK	11:15	BREAK	11:15	BREAK		
11:30	BREAK	11:30		11:15	Process Metallurgy Tutorial	11:30	Thermal Aspects of Rolling Tutorial	11:30	Mechanics of Profile and Flatness		
11:45	Process Overview	11:45	Mechanics of Rolling Tutorial		Process Metallurgy						
12:30 - 12:45	Group Discussion and Q&A	12:30 - 12:45	Group Discussion and Q&A	12:30 - 12:45	Group Discussion and Q&A	12:30 - 12:45	Group Discussion and Q&A	12:30 - 12:45	Group Discussion and Q&A		
MONDAY 09:00 GMT Start		TUESDAY 09:00 GMT Start		WEDNESDAY 09:00 GMT Start		THURSDAY 09:00 GMT Start		FRIDAY 09:00 GMT Start			
09:00	Surface Generation	09:00	Sustainability & Life Cycle Assessment	09:00	Automatic Gauge Control	09:00	Measurement and Control of Profile	09:00	Automatic Flatness Control		
		09:30	Introduction to Control								
10:00	BREAK	10:00	BREAK	10:00	BREAK	10:00	BREAK	10:00	BREAK		
10:15	Surface Defects	10:15	Control Tutorial	10:15	Automatic Gauge Control Tutorial	10:15	Measurement and Control of Profile	10:15	Automatic Flatness Control Tutorial		
		11:00	Introduction to Control		Automatic Gauge Control			11:00	BREAK		
11:15	BREAK	11:00	Mill Vibration			11:15	BREAK	11:15			
11:30	Data Tutorial	11:30	BREAK	11:30	BREAK	11:30	Measurement and Control of Profile Tutorial		Automatic Flatness Control		
		11:45	Mill Vibration	11:45	Automatic Gauge Control						
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