

Aluminium Rolling Technology Course.

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

Finishing Overview.

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

Mechanics of Rolling.

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

Sustainability and Life Cycle Assessment.

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

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

Surface Generation & Surface Defects.

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

Mechanics of Profile & Flatness.

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

Data Workshop.

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

Introduction to Aluminium cars and Visit to JLR.

- Overview of Aluminium cars
- Introduction to the manufacturing process
- Visit and tour of Jaguar Land Rover plant

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

Tribology in Aluminium Rolling.

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

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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Aluminium Rolling Technology Course.

Sample agenda:

ALUMINIUM ROLLING TECHNOLOGY COURSE 2022										
MONDAY 08:15 GMT Arrival		TUESDAY 08:15 GMT Arrival		WEDNESDAY 08:00 GMT Arrival		THURSDAY 08:15 GMT Arrival		FRIDAY 08:15 GMT Arrival		
08:30	Introduction	08:30	Sustainability & Life Cycle Assessment	08:00	Mechanics of Profile and Flatness	08:30	Introduction to Control	08:30	Tribology in Aluminium Rolling	
09:15	Aluminium Market Dynamics and Drivers	09:00	Process Metallurgy			09:30	Control Workshop	09:30		BREAK
	BREAK					09:45	BREAK	09:45	Automatic Flatness Control	
10:00	Aluminium Casting Overview	10:15	BREAK	10:00	Data Workshop	10:45	BREAK			Automatic Flatness Control Workshop
10:15		10:30	Process Metallurgy Workshop				11:00	Automatic Gauge Control	11:00	
11:15	Process Overview	11:15	Thermal Aspects of Rolling	11:30	Travel to JLR	12:00	GROUP PHOTO & LUNCH	11:45	LUNCH	
12:15	LUNCH	12:15	LUNCH		LUNCH					12:30
13:00	Machinery Overview	13:00	Thermal Aspects of Rolling	13:00	Course visit and tour at Jaguar Land Rover (JLR)	13:00	Automatic Gauge Control Workshop	13:30	Summary & Wrap up	
14:15	Finishing Overview	14:30	Thermal Aspects of Rolling Workshop				14:15	Profile Measurement and Control		14:00
		15:00	BREAK					15:15	BREAK	
15:15	BREAK	15:15	Surface Generation	15:30		Travel back to Banbury	15:30	Profile Measurement and Control		
15:30	Mechanics of Rolling	16:30		Surface Defects / Lab Workshop				16:30	Profile Measurement and Control Workshop	
16:30	Mechanics of Rolling Workshop	16:30				17:30	Home time			
17:30	Home time	17:30	Home time							
MONDAY EVENING NO EVENT		TUESDAY EVENING 18:00 SOCIAL EVENT		WEDNESDAY EVENING NO EVENT		THURSDAY 18:00 SOCIAL EVENT		FRIDAY EVENING NO EVENT		

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