

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 and Machinery Overview.

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

Tribology in Aluminium Rolling.

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

Process Metallurgy.

- Alloy choice
- Microstructure
- Strengthening mechanisms
- Annealing

Finishing Overview.

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

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

Automotive Aluminium 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

Mechanics of Profile & Flatness.

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

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

Measurement and Control of Profile.

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

Data Workshop.

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

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:

Innoval Technology Ltd. Aluminium Rolling Technology Course 2024.								INNOVAL		
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	Process Metallurgy	08:00	Mechanics of Profile and Flatness	08:30	Mill Vibration	08:30	Data Workshop	
09:15	Aluminium Market Dynamics and Drivers									09:30
10:00	BREAK		Process Metallurgy Workshop	09:45	Introduction to Control	09:45	Automatic Gauge Control	09:45	BREAK	
10:15	Aluminium Casting Overview	10:30	BREAK			Control Workshop				10:00
11:15	BREAK	10:45	Thermal Aspects of Rolling	11:00	Automotive Aluminium				Automatic Flatness Control Workshop	
11:30	Process & Machinery Overview	12:15		LUNCH	11:30	Travel to JLR LUNCH on bus		Automatic Gauge Control Workshop	12:00	LUNCH
13:00		LUNCH	13:00	Thermal Aspects of Rolling	13:00		Course visit and tour at Jaguar Land Rover (JLR)	12:30	GROUP PHOTO & LUNCH	12:45
13:45	Mechanics of Rolling	14:15	Thermal Aspects of Rolling Workshop			13:15		Measurement and Control of Profile	13:30	Summary & Wrap up
15:00		BREAK	15:15	Finishing overview					15:15	BREAK
15:15	Mechanics of Rolling Workshop	15:30	BREAK		15:30	Travel back to Banbury		15:30	Measurement and Control of Profile	
16:00	Tribology in Aluminium Rolling		Surface Generation					Measurement and Control of Profile		
17:30	End of the day	17:30	Surface Defects / Lab Workshop			17:30	End of the day			
	Monday evening. No event		Tuesday evening. 18:00 Social event		Wednesday evening. No event		Thursday evening. 18:00 Social event		Friday evening. No event	

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