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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
Rachel Wiffen
Tel: +44 (0) 1709 724300
rachel.wiffen@innovaltec.com

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Sample agenda:

Innoval Technology Ltd. Aluminium Rolling Technology Course 2025. INNOVAL

Monday. 08:15 BST Arrival		Tuesday. 08:15 BST Arrival		Wednesday. 08:15 BST Arrival		Thursday. 08:15 BST Arrival		Friday. 07:00 BST Arrival	
08:30	Introduction	08:30	Process Metallurgy	08:30	Introduction to Control	08:30	Measurement and Control of Profile and Workshop	07:00	Travel to JLR
09:15	Aluminium Market Dynamics and Drivers		Process Metallurgy Workshop		Control Workshop			09:30	Course visit and tour at Jaguar Land Rover (JLR)
10:00	BREAK	10:30	BREAK	09:45	BREAK				
10:15	Aluminium Casting Overview	10:45	Thermal Aspects of Rolling	10:00	Mechanics of Profile and Flatness				
11:15	BREAK					11:30	BREAK		
11:30	Process & Machinery Overview			11:45	Data Workshop	11:45	Automatic Flatness Control	12:00 - 12:30	Travel to Birmingham International Rail Station
13:00	LUNCH	12:45	LUNCH	12:45	LUNCH	12:45	GROUP PHOTO & LUNCH	12:45	Course Finish
13:45	Mechanics of Rolling	13:30	Thermal Aspects of Rolling Workshop	13:30	Automatic Gauge Control	13:45	Automatic Flatness Control and Workshop		
		14:00	Surface Generation						
15:00	BREAK	15:00	BREAK						
15:15	Mechanics of Rolling Workshop	15:15	Surface Defects / Lab Workshop		Automatic Gauge Control Workshop	15:45	BREAK		
16:00	Tribology in Aluminium Rolling	16:15	Finishing overview	16:30	Mill Vibration	16:00	Automotive Aluminium		
						17:00	Summary & Wrap up		
17:30	End of the day	17:30	End of the day	17:30	End of the day	17:30	End of the day		
Monday evening. 18:00 Social event		Tuesday evening. No event		Wednesday evening. 18:00 Social event		Thursday evening. No event		Friday evening. No event	

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