Sarclad Limited

- Located in Chesterfield
- 2 hours from London
- 1 hour from Manchester
Sarclad Limited

Providing Technology Based Equipment to The Metals Industry for 35 Years

HEAD OFFICE
SHEFFIELD U.K.
➢ Sales & Marketing
➢ Procurement
➢ Product development
➢ Design
   • Mechanical
   • Electrical
   • Software
➢ Assembly
➢ On site Commissioning and Service

SARCLAD North America - Pittsburg
➢ Sales & Marketing
➢ Technical Service and Commissioning

SARCLAD China – Shanghai
➢ Sales, Service & Support office for East Asia.
➢ Global Supplier to 46 Countries
➢ Network of 29 Agents
Sarclad Limited – Head Office SHEFFIELD U.K.

- Sales and Marketing
- Product development
- Technical Support, Training & Customer Service
- Design
- Assembly & Testing
- Procurement
Sarclad North America, L.P. - PITTSBURGH, USA

- Equipment Sales
- Spare Parts
- Technical Support, Training & Customer Service
- North & South America
Sarclad Products

- **ROLLTEX** – Texturing cold rolling mill work rolls for varying applications.
- **ROLLSCAN** – Hot and Cold rolling mill roll inspection
- **SCM / In-Chain** – Continuous caster measurement and assessment.
ROLLTEX (EDT) Roll Texturing

Rolltex EDT textured rolls for high quality control and repeatability of precise Ra and PC values.
Surface Inspection - To detect cracks and bruises in hot and cold rolling mill work and back-up rolls.

Sub-surface - To detect cracking, porosity, non metallic inclusions and bond interface defects
Measurement System For Continuous Casting Machines

Over 300 Systems In Use World wide
Sarclad - Strand Condition Monitor

- World Leader in Continuous Caster Measurement.
- Over 300 Sarclad Strand Condition Monitor’s (SCM’s) Currently in Use.
- Leading Supplier to all Continuous Caster OEM’s
- Proven Technology & Performance
- Depth of Experience and Knowledge
Sarclad - Strand Condition Monitor
Sarclad - Strand Condition Monitor
SCM Benefits

Engineering Tool

- Quality Assurance
- Prediction of failures
- Target Maintenance – Proactive, not reactive
- Casting with Knowledge and Confidence
- Improved Process Efficiency
- Reduce Scrap Levels, Down Grading, Slab Dressing and Caster Down Time
Cost of a breakout?

General Factors Attributed to a Breakout

- Roll Alignment (Pass Line)
- Bearing Failure (collapse - Seizure)
- Poor Water Cooling

COSTS

- Capital Equipment Damage
- Lost Production Time
- Additional Maintenance and Service Time
- Overall Cost of Breakout??
Sarclad are the pioneers in Slab and Bloom continuous caster measuring

Caster measurement technology developed for over 25 years

Continuous development and improvement has resulted in the evolution and miniaturisation of sensors and technology

Measurement of all quality critical parameters for Slab and Bloom casters

Custom sensors used across entire SCM range
SCM In Use (Top Fed)

Designed for the caster environment
SCM measuring the caster
SCM measuring the caster
Dummy Bar

Dummy Bar Head is used to seal the bottom of the mould at the start of casting.

Strand Condition Monitor attached to the Dummy Bar.
A Range Of Strand Condition Monitors

Slab Strand Condition Monitors
Typical SCM

Inner Face
Typical SCM

Outer Face
Medium Thickness SCM

90mm Slab
(SALDAHNA South Africa)
Thin Slab SCM

65mm Slab (TATA Netherlands)
Thin Slab SCM

65mm Slab (TATA Netherlands)
SCM Vertical Caster

Dillinger Hutte, Germany
Bloom Caster Strand Condition Monitor

Measurement System for BLOOM Caster

- Roll Gap (All faces)
- Roll Rotation
- Outer face roll Alignment
- Water Spray analysis
“In - Chain” Strand Condition Monitor
In-Chain Strand Condition Monitor

- Permanently installed on the dummy bar chain.
- On-line caster measurements performed during start of every casting sequence.
- Roll gap and fixed roll alignment measurements.
- Fully automated measuring, battery charging and data transfer.
- Automated data analysis, interpretation and display to local or remote PC’s.
Spring Anvils

- Simulates the ferrostatic forces of the slab.
- Provides stability during measuring.
- Eliminates bearing clearances.
- Rotates the rolls to determine the freedom of rotation.
Strand Condition Monitor (SCM)

SCM is custom designed for each continuous casting machine.

Available Measurements Include:

- Roll Gap
- Outer Roll Condition
- Roll Bend
- Outer Roll Alignment (caster radius)
- Roll Rotation (Bearing Condition)
- Water Cooling
Roll Gap & Roll Bend Sensors
Principle Of Roll Gap Measurement

HARDENED FOLLOWER

SENSORS
Principle Of Outer Roll Condition

Indicates the deviation of outer face rolls from the horizontal
Roll Bend Transducers
Roll Bend

Bend Sensors

A
B
C

A
B
C

A
B
C

A
B
C

A
B
C
Outer Roll Alignment - Caster Radius
Outer Roll Alignment - Caster Radius

Angle Sensor

Measuring Blade
STEP ERROR: The distance calculated from the actual and theoretical angles between rolls.
SCM Roll Rotation Detector

Spring loaded wheel and sensor
Water Spray Sensors

Water Detection Sensors
Principle of Water Spray Measurement
On-board the SCM
Data Collection, Transfer & Analysis

- Measurements are initiated during insertion into the caster.
- Data from all sensors is recorded and stored to non-volatile memory.
- 5 caster measurements can be stored in on-board memory.
- Data transferred via RS232 hard wired link or optional Wireless Wi-Fi link.
- Laptop PC analyses and interprets measured data, which is stored to hard drive.
- Data viewed locally or remotely via network.
Ancillary Equipment

- Industrial Laptop PC
- Gap & Inclinometer Calibration Equipment.
- Digital Operator Interface.
- IR Remote Control.
- Manual Battery Charger.
- Hydraulic System – Top Feed Caster
Laptop Computer

Rugged construction, touch screen display

Used for:
- Calibration
- Data Display
- Transfer
- Networking
Hydraulic System

- Required for top feed dummy bar insertion.
- Retracts spring anvils to enable the SCM to pass through the mold without damage.
SCM Storage Stand

Toolbox built into SCM stand
Roll Gap Threshold Summary
| Roll Gap Results Table |

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Roll Gap Comparison
Roll Gap Error Analysis
Strand 1, Segment 6 - Before Change
Strand 1, Segment 6 - After Change
Strand 2, Segment 7 - Before Change
Strand 2, Segment 7 - After Change
Roll Gap Trend Analysis
Roll Gap Trend Analysis
Outer Roll Condition

M1

02/10/2003 10:10:50

1st measurement: no water

225

13 0.2

14 0.7

15 0.1

2

16 0.3

17 0.1
# Outer Roll Alignment

![Image of Roll Alignment Interface]

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Roll Alignment Step Error Graph
Roll Alignment Angular Graph
Roll Bend
Water Spray Assessment
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The table above provides a summary of water spray threshold values for different zones.
Summary

- Rapid assessment of the caster condition. (less than 1 hour)
- Accurate & Repeatable Caster Assessment.
- Target Maintenance Activities.
- Reduce Caster Down Time.
- Reduce scrap and Downgrading / Remedial Work.
Information

- **SARCLAD (UK)**
  
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  Fax: +44 (0)1246 457021
  Email: [Sales@Sarclad.com](mailto:Sales@Sarclad.com)

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  Fax: +1 412 466 6300
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