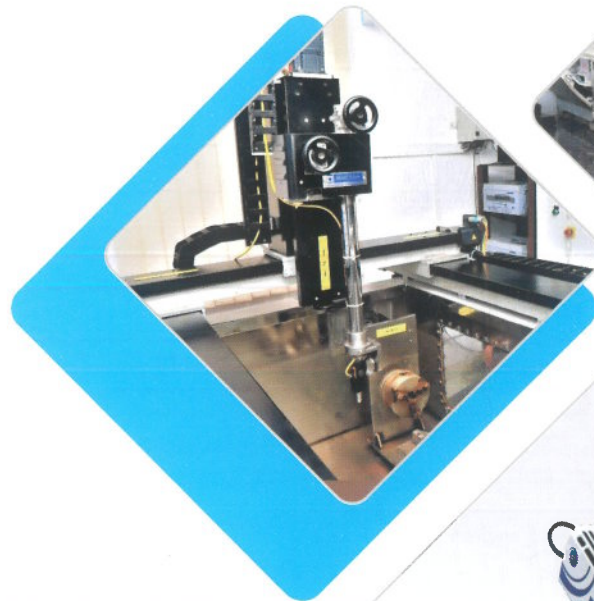


**RESEARCH AND DEVELOPMENT CENTRE
&
AUTOMATIC INSPECTION FACILITIES**



Steel
State of the Art Process Technology
Clean

RESEARCH AND DEVELOPMENT

R & D division of Sunflag Iron Steel Co. Ltd. Plays a pivotal role in retaining and consolidating Sunflags' leadership position in automobile industry.

R & D focus on development of new steel grades, process improvement, continuous up-gradation of Quality, Customer Satisfaction through customized products matching with their specific requirement.

Sunflag R&D lab is equipped with following state of the art equipment :

- Scanning Electron Microscope with Energy Dispersive X-Ray Spectroscopy (SEM-EDS) of Make – JOEL
- Immersion Ultrasonic Testing Facility of Make – Olympus / Blue Star
- Optical Microscope with Automatic Multiaxis stage Movement and Image Analysis software
- Micro-hardness tester • Ferritometer

- **NABL Certified Testing Lab**
- **R&D Centre Recognised DSIR Government of India**

SCANNING ELECTRON MICROSCOPE WITH EDS

- Key Function
 - Microstructure analysis
 - Quantitative & qualitative Analysis of Inclusions
- Failure Analysis
- Fractography
- Inclusion with quantitative elemental analysis

Salient Features

- Fully automatic system comprising of Turbo molecular rotary pump
- Automatic stage movement



IMMERSION ULTRASONIC TESTING MACHINE

- Key Function : Inspection of cleanliness levels (macro inclusions) in steel

Salient Features

- Dimension of samples that can be tested :
 - Round Bars :
- Size 15-120 mm dia.
- Length 800mm
- Round Corner Square Bars :
- Size 60-120 mm
- Length 800 mm

UST Prob : 10 MHz - 6mm as per Sep 1927

- Automatic data saving & reporting
- A scan & C scan analysis with real time display

Quality Highlights

Inclusion Mapping with 100% volume as Sep 1927 Class 1 to 5



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UPRIGHT METALLURGICAL MICROSCOPE WITH CLEMEX SOFTWARE

- Automatic Motorised Stage & Auto Focus
- Clemex Automated Inclusion Rating Analysis As per
 - ASTM E 45 Method A, C, D, E
 - Din 50602 Method K, M,
 - JIS G 0555,
 - ISO 4967 compliant (DS)
 - EN 10247 Complete analysis by all above methods simultaneously
- Automated Grain Size measurement
- Phase analysis



AUTOMATIC MAGNETIC FLUX LEAKAGE TESTING (MFLT)

- Highly sensitive test method for detection of longitudinal defects on steel bars
- No Coupling Liquid
- Reliable and reproducible test results
- Automatic marking and sorting of defective bars during testing
- High production speed
- Real time display of inspection results

MFLT SALIENT FEATURES

Diameter range	5 to 140 mm
Channels	8
Probes	up to 16
Channel width	5.0 mm
AC Frequency	7 kHz
Rotation	max. 1.800 rpm
Test Speed	up to 2 m/s for 100% material Scanning



AUTOMATIC EDDY CURRENT TESTING (ECT) FOR BAR & WIRE RODS

ECT is a non-destructive testing technique making use of electromagnetic induction to detect and characterize surface & subsurface flaws for bright bars.

SALIENT FEATURES

ECT For Bars

- Automatic bar feeding system
- Automatic marking and sorting of defective bars during testing
- Size range: 6 to 60 mm
- Inspection of Longitudinal / Circular Surface defects
- Detectability of ECT: 0.05mm depth flaw with length 5mm
- Reliable and reproducible test results
- High production speed

ECT For Wire Rod Coils

- Online Eddy Current Testing facility
- Automatic marking of defects during testing
- Size range: 5.5 to 26 mm
- Inspection of Longitudinal / Circular Surface defects
- Detectability of ECT: 0.05mm depth flaw with length 5mm
- Reliable and reproducible test results
- High production speed



Eddy Current Testing for Bar



Eddy Current Testing for Wire Rod

PHASED ARRAY AUTO ULTRASONIC TESTING

SALIENT FEATURES

Phased Array Technology

Phased Array testing is a specialized type of ultrasonic testing that uses sophisticated multi-element array transducers and powerful instrumentation/software to steer ultrasonic beams through the test piece and map returning echoes.

No rotating movement, only electronic scanning is done

Depth focalization for bar volume inspection (LW)

Electronic steering for bar surface inspection (SW)

Quality Highlights :

Capacity - 15 to 120 mm dia. Full bar volume inspection

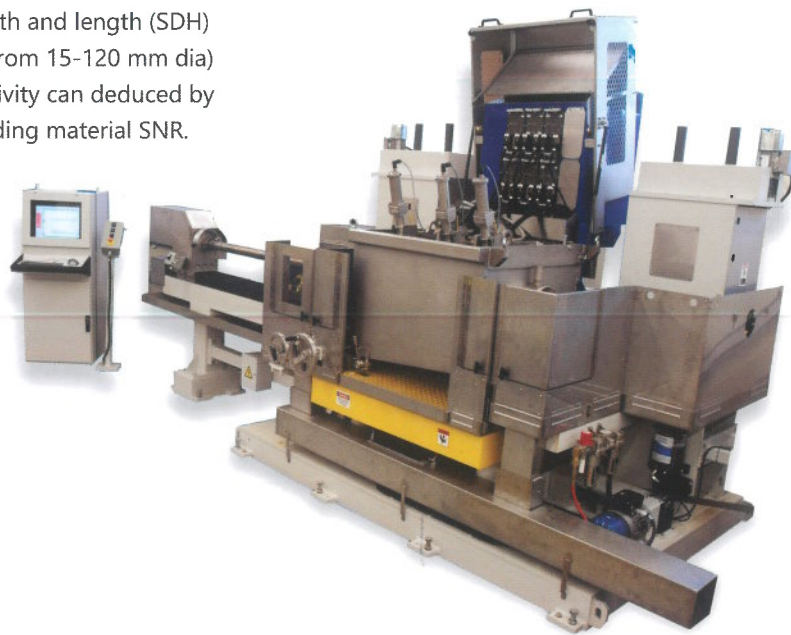
Acceptance Criteria -

Minimum defect depth and length (FBH)

- 0.7 mm FBH from 15-60 mm dia
- 1.2 mm FBH above 60 dia

Minimum defect depth and length (SDH)

- 0.5 mm x 10 mm (from 15-120 mm dia)
- 0.3 mm SDH sensitivity can deduced by extrapolation depending material SNR.



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State of the Art Process Technology



BIS Approved
NABL Accredited Chem & Mech Labs.
ISO 9001 & IATF 16949 Certified by UL DQS
ISO 14001 & ISO 45001 Certified by TUV Nord
AD 2000 Merkblatt WO/PEd Certified by TUV Nord

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