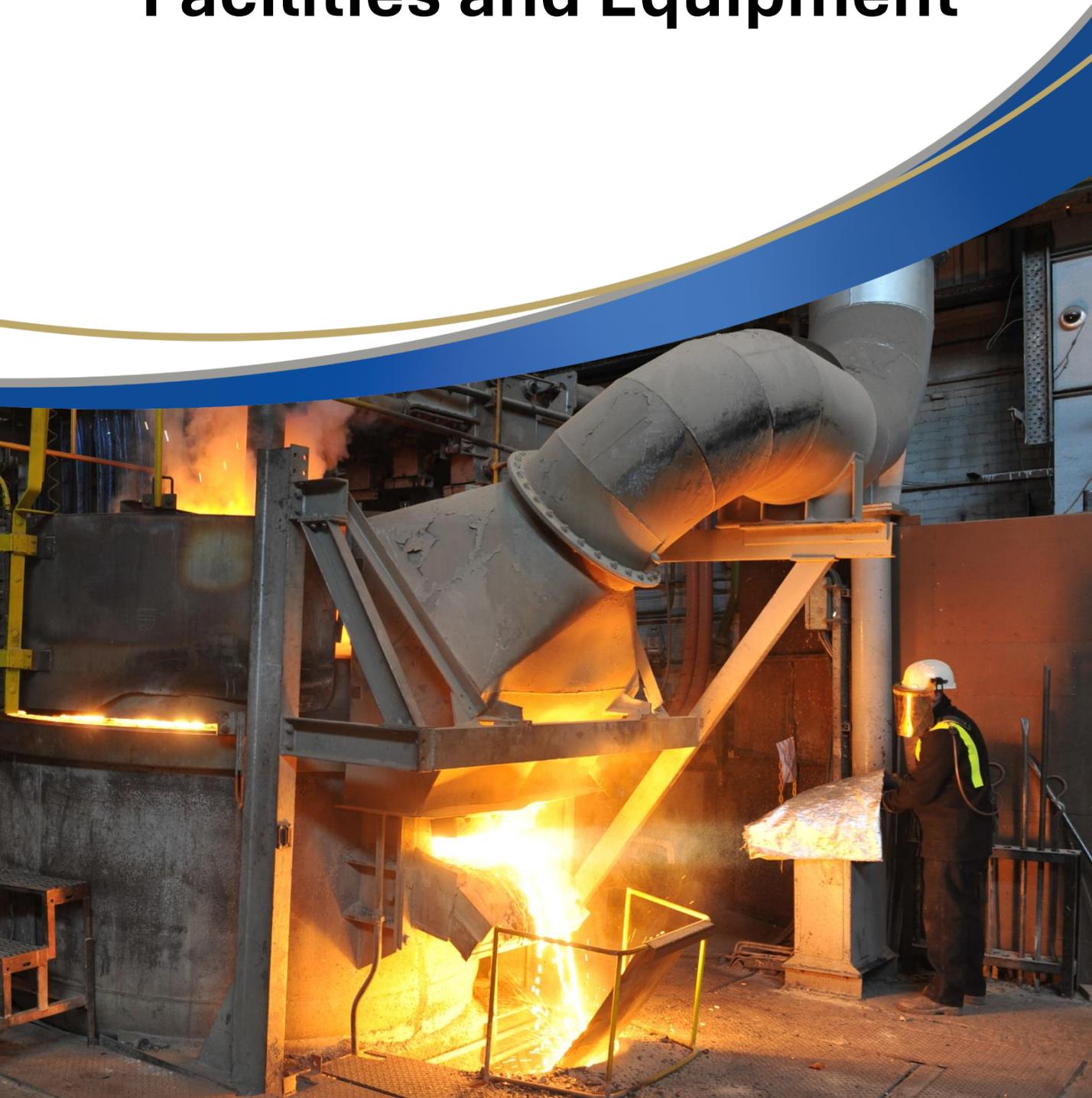




**Materials
Processing
Institute**

Services Portfolio

Facilities and Equipment





Facilities and Equipment

- 7-tonne Electric Arc Furnace (EAF)
- Continuous Caster
- 7-tonne Ladle Arc Furnace (LAF) combined with Vacuum Degasser

- 80kg, 250kg and 1000kg Induction Furnaces (IM)
- 100kg Vacuum Induction Furnace (VIM)
- 30 litre Top Blown Rotary Converter (TBRC)
- 15 litre Hydrogen Furnace
- 5-tonne Multi-fuel Bogie Hearth Furnace (hydrogen and natural gas blends)

- Iron Ore Reduction Rig
- Electric Rotary Kiln
- Hydrometallurgy Rigs
- Wet Chemistry Lab

- Portable Mass Spectrometry Unit



Facilities and Equipment

Sustainable Cement and Concrete Centre

Concrete and Mortar Preparation

- 10 litre and 70 litre Pan Mixers
- Mortar Mixer
- Flowability and Workability Equipment
- Concrete and Mortar Vibrating Tables
- Water Curing Tanks
- Temperature Controlled Storage Container

Durability Testing

- Sulphate Resistance Container
- Natural Carbonation Chambers
- Chloride Migration Kit – PELCON NT Build 492 Instrument
- Ageing Chambers – Freeze Thaw
- Compressive Strength Testing Equipment

Bulk Materials Processing

- Drum Mill
- Jaw Crusher
- Diamond Cutter

Other Capabilities

- Calorimeter
- Air Entrainment Meters
- Automatic Vicat Test Apparatus – Setting Times
- Le Chatelier Water Bath
- Density and Surface Measurements
- Vibrating Table

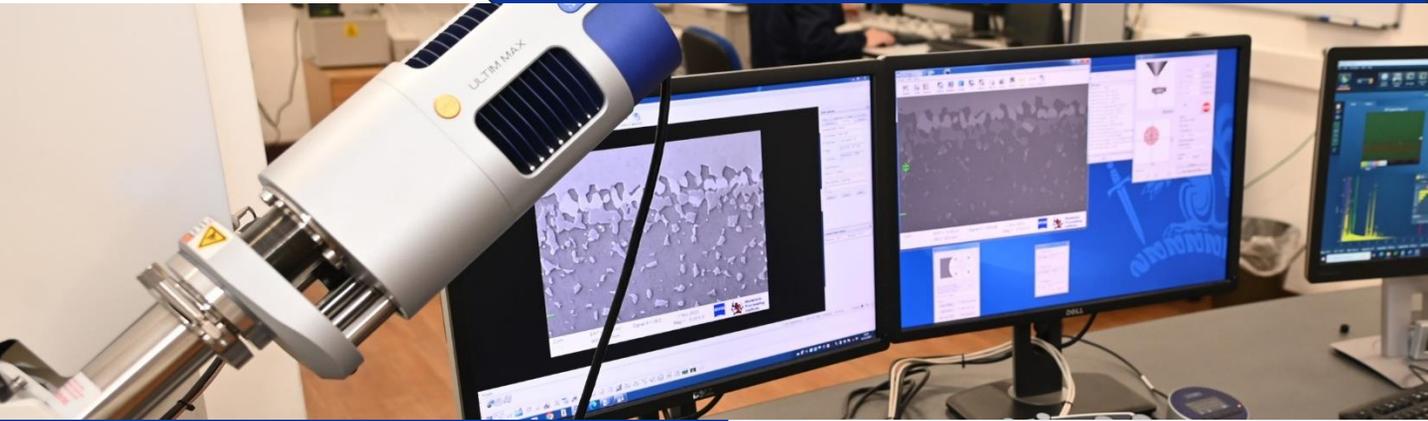


Facilities and Equipment

Advanced Materials Development Centre

- Hot Rolling Mill
- Lab Scale Furnaces
- Lab Scale Casting
- Vacuum furnace (for heat treatment and brazing operations)
- 50-tonne Press Forge
- 250kg Bogie Hearth Furnace
- Ageing Chambers

- Hardness testing (Brinell / Knoop / Vickers)
- Tensile, compression, charpy, creep and impression creep tests
- BET/BJH analysis
- Viscosity
- Moisture assessment on Karl Fischer Titrator
- Sulphur printing
- Macro-etching
- Expansion test



Facilities and Equipment

Compositional Analysis Lab

- X-ray Diffraction (XRD) -) – hot stage available
- X-ray Fluorescence (XRF)
- Energy Dispersive X-ray Spectroscopy (EDS)
- Wavelength Dispersive Spectroscopy (WDS)
- Electron Backscatter Diffraction (EBSD)
- Optical emission spectroscopy (OES)
- Scanning Electron Microscopy (SEM) – hot stage available
- CHNS
- Live Analysis – OES, XRD, XRF
- Optical microscopy with machine learning for inclusion analysis

Thermal Analysis Lab

- Simultaneous Thermal Analysis (STA)
- Thermogravimetric Analysis (TGA)
- Differential Scanning Calorimetry (DSC)
- Differential thermal analysis (DTA)
- Quadrupole Mass Spectrometry (QMS)

Powder Lab

- GranuPack, GranuDrum
- Portable Surface Profilometer
- Malvern Morphologi with RAMAN
- Laser Powder Bed Fusion Machine

Full Services Portfolio

Advanced Metals & Green Steelmaking

- Green Steel
- Product Development
- Process Improvement
- Extra

Advanced Materials Development

- Custom Alloy Development
- New Steel
- Supporting R&D
- Additive Manufacturing & Powder Metallurgy
- Additional Services

Characterisation and Analysis

- Characterisation and Analysis

Critical Raw Materials

- By-product Valorisation
- End of Life Process Development
- Mine Tailing Valorisation
- Piloting /Testbed Hosting
- Process Scale-up
- Process Optimisation

Sustainable Cement and Concrete

- Product Development
- Process Improvement

Powder Analysis and Additive Manufacturing

- Powder Analysis
- Additive Manufacturing
- Powder Processing

Energy and Process Decarbonisation

- Feasibility Studies
- Energy and Emission Optimisation
- Process Optimisation
- Leveraging Facilities

Facilities and Equipment

Full Services Portfolio

Training

Processes

- Ironmaking
- Desulphurisation of Iron
- Steel Plant Raw Material
- Primary Steelmaking
- Secondary Steelmaking
- Ladles
- Practical Steelmaking
- Stainless Steelmaking
- Electric Arc Furnace (EAF) Steelmaking
- Continuous Casting
- General

Supplementary

- Engineering
- Metallurgy
- Environmental Protection
- Management
- Research

Applications

- Circular Economy
- Digital Technology
- Analytical Techniques

Products

- Finished Goods

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