



NON-DESTRUCTIVE TESTING (NDT) SERVICES

IRON AND STEEL MAKING SERVICES

During the operation of iron and steel furnaces, including blast furnaces, aggressive mechanical and chemical conditions cause deterioration to the inner refractory linings and tapholes. The loss of refractories could cause untimely shutdowns and loss of production. Moreover, in severe situations, operator safety could be at risk. Hatch's acousto ultrasonic-echo (AU-E) technique for non-destructive testing (NDT) of operating furnaces can detect potential problems before they occur.

Hatch's AU-E technique uses stress waves to detect flaws and defects in furnace refractory linings. It also measures the quality and thickness of refractory layers and build-ups. The technique has been developed exclusively to serve the metallurgical industry. By using the AU-E technique, Hatch specialists are able to determine the inner condition of the operating furnaces, rapidly, accurately, and with low cost.

The inspection system can be mobile or installed in situ for periodic inspections. The system and the sensors are designed to resist extreme temperatures, and will function regardless of the presence of dust, heat, and water. The resulting data is interpreted and presented in the form of tables, reports, and contour drawings of defective areas or thickness profiles. NDT inspections can be carried out while the furnace is at operating temperature.

Hatch provides a full range of inspection capabilities for the iron and steel industry including:

BLAST FURNACE

- Refractory thickness measurements through metallic shell and/or cooling staves
- Copper or cast steel stave thickness measurements
- Tapping block thickness measurements
- Determination of cooling-stave thickness within ± 10 mm accuracy
- Detection of delamination and spacing between furnace shell and the lining
- Cooling circuit leak detection
- Baseline inspection
- Accretion/buildup thickness measurement



Blast furnace acousto ultrasonic-echo inspection

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NON-DESTRUCTIVE TESTING (NDT) SERVICES CONTINUED



Tapping block inspection

REHEAT FURNACES

- Inspection of roof and sidewalls for anchor refractory brick thickness and quality assessment

CONVERTERS

- Accurate determination of refractory thickness in converters

QUALIFICATION

- Quality assessment of carbon and graphite blocks before installation
- Quality assessment of individual refractories prior to installation

PERIODIC INSPECTION

- Baseline inspection
- Regular inspection for thickness measurements of refractories and accretions
- Blast furnace deterioration rate measurement
- Tapping block deterioration rate monitoring

LADLE FURNACES

- Refractory thickness measurement through the metallic shell



Acousto ultrasonic-echo taphole inspection



Reheat furnace anchor brick inspection

