Vale Manganèse France

History of the company

• December 1989: Signature of a Mn ore sale contract between Usinor-Sacilor and Companhia Vale do Rio Doce (CVRD).

• April 1990: setting-up of Société Européenne des Alliages pour la Sidérurgie (S.E.A.S) by Usinor-Sacilor.

• April 1992: the holding company ITACO (CVRD Group) enters S.E.A.S. stock equity (35%).

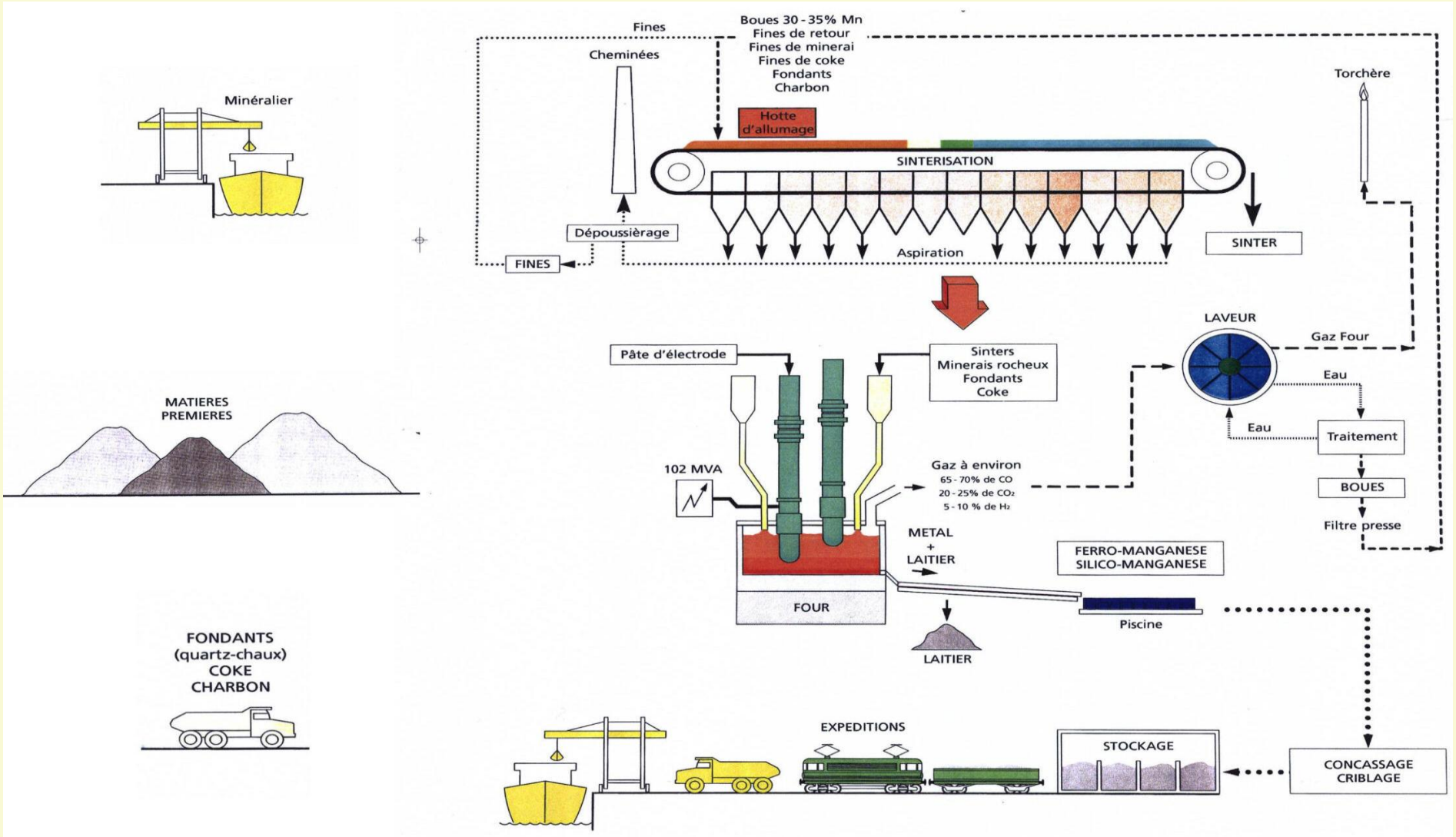
• December 1995: ITACO becomes the main shareholder (65 %).

• January 1999: ITACO buys the remaining equity stock.

• June 2000: S.E.A.S. changes its name for Rio Doce Manganèse Europe – RDME.

• September 2008: RDME becomes Vale Manganèse France.

Production flow



The furnace

- Apparent power: 102 MVA
- Normal load: 50 MW
- Secundary current: 140 kA
- Electrodes diameter: 1.9 m
- Shell diameter: 15.2 m
- Shell height: 8.0 m

Furnace water leakage prevention

Water is used for the cooling of the roof of the furnace, and the cooling of the 3 electrodes columns.

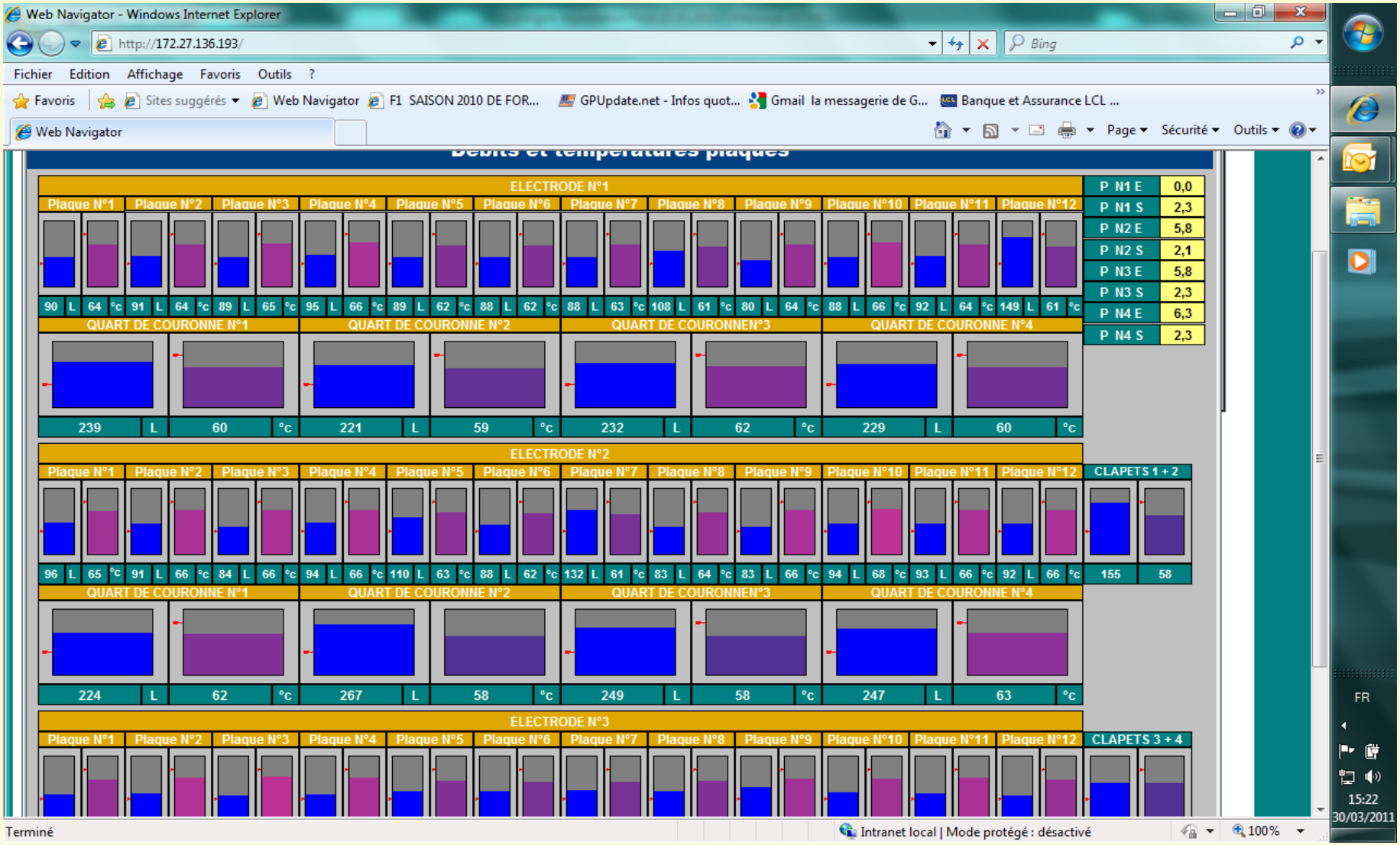
All together, 132 circuits are water cooled : they are separated into 4 distribution loops on pressure : 3 for the cooling of the electrode columns and 1 for the cooling of the roof.

Water leakage detection is ensured by using BURKER unidirectional flow-meters on each individual circuits. The detection technique used is based on an optical measurement of the rotating speed of the wheels.

A 15% decrease of the water flow versus the nominal flow immediately leads to an automatic shutdown of the furnace. A specific alarm warns the furnace supervisor who can react by shutting down the water pumps until a complementary assessment is done to detect the origin of the possible leakage.

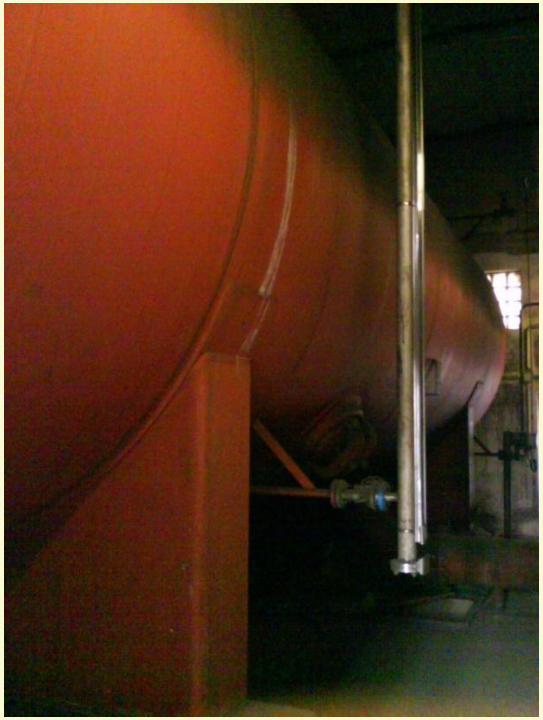
The furnace supervisor monitors continuously the water flows and temperatures

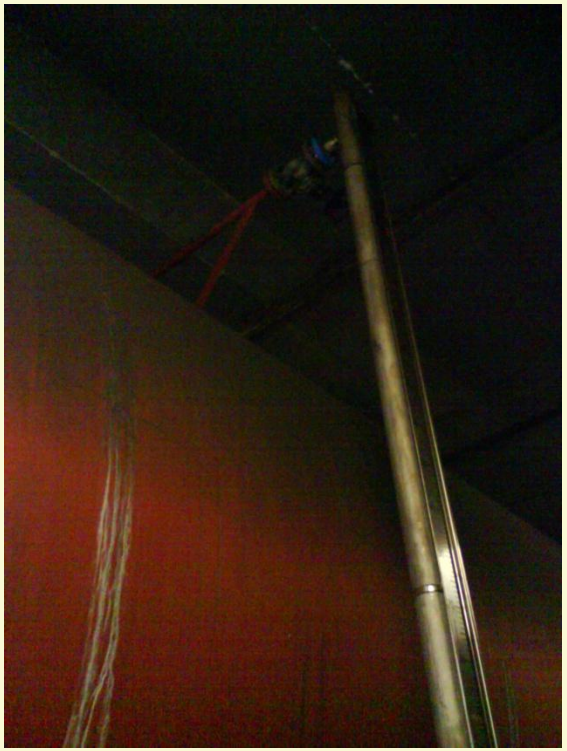
Furnace water leakage prevention



Furnace water leakage prevention

A complementary furnace water leakage detection has been implemented based on the continuous monitoring of the cooling water tank level.





Furnace water leakage prevention

This monitoring is a good indicator of a possible leakage as the cooling system runs in closed circuit with nitrogen used for pressure regulation.

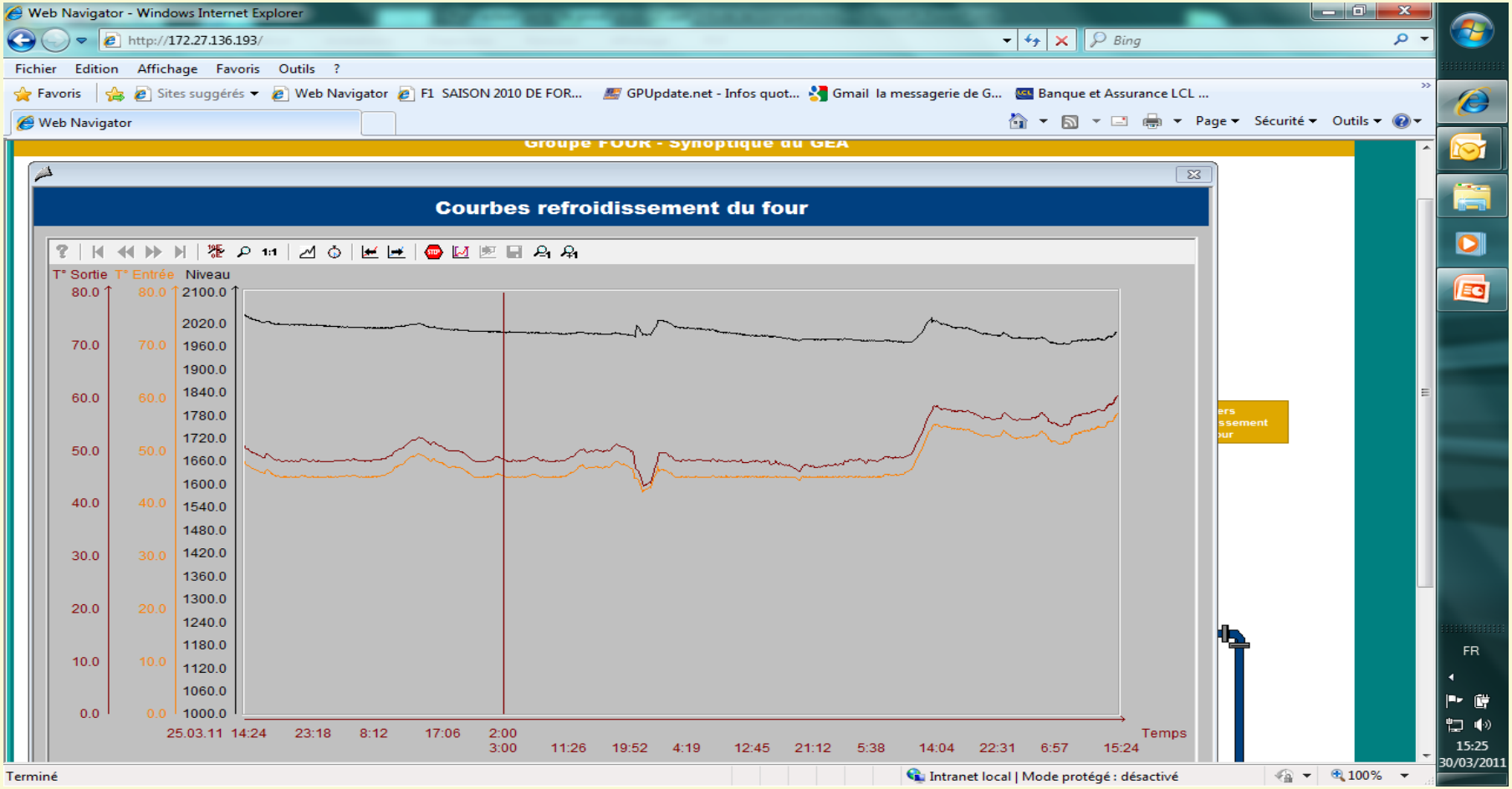
The variations related to changes in the water temperature (which can impact the nitrogen pressure) have been computerized and are corrected on line so that they do not affect the monitoring.

2 alarm levels defined at 5 mm / minute or 5 mm / 3 minutes can provide the furnace supervisor with good information about the intensity of the possible leakage.

This information comes as a good support for the furnace supervisor to analyze and take the right action.

Furnace water leakage prevention

The furnace supervisor continuously monitors the water tank level : any variation offering a good tool to identify a possible water leakage

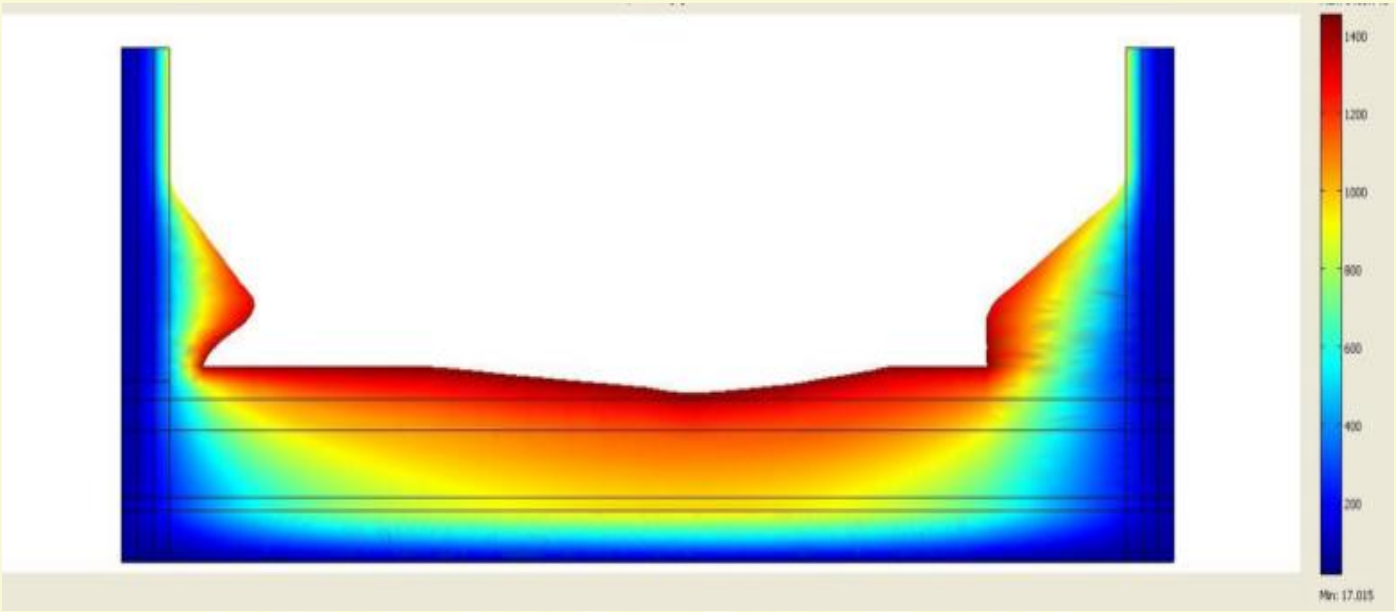


Furnace water leakage prevention

Complementary actions are taken to prevent any possible water leakage, in particular:

•Shift operators inspection

•Furnace supervision based on highly instrumental freeze lining monitoring system with more than 100 thermocouples



Thank you