

2014 November 17th

Smelter of the Future Project



Context

- Strong International competition in Aluminium Industry
- European production decreasing
- Aluminium production
 - Requires a large amount of energy (Around 13 MWh for 1 tonne of Aluminium)
 - Respects high environmental standards
 - Improve continuously the working conditions

Today, we have the **best in world aluminium production Technology** but we have to go further to solve the **Energy, Environmental , Productivity and Competiveness challenges**

The Smelter of the Future European Project is adressing these challenges

Project

- A brand new design of Smelter Pot in a fully automated plant

Challenges

- Energy Efficiency
- Environment
- Working Conditions
- Productivity / Competitiveness

Technological Axes to answer

- New Pot Process performances
- Robustness and reliability with automated operations
- New Gas Treatments (more concentrated, higher temperatures)
- Solid wastes recovery
- New Buildings design and ventilation
- Robots and cobots to support the operations in harsh conditions
- Predictive maintenance
- Automated Measurements, control and sampling

What Technological Breakthroughs

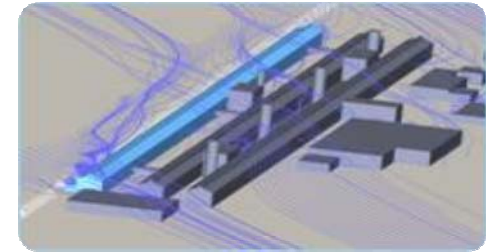
Some examples

-Robots / Cobots :

- Hazardous environments : High Temperatures, abrasive dust, Magnetic fields, Electrical Risks

-Environment

- New pots and new buildings => Needs in 3D models simulations
- New processes for new gases conditions



-Metrology

- A plant = 300 to 400 pots
- So we are looking for wireless, energy-autonomous, high temperature compliant sensors
- ... and low cost!

Which Competencies / Partners

- Sensors (Voltage drop, Temperature, magnetic field, mechanical deformation measurements)
- Robots / Cobots for heavy loads in constrained environments
- Modelisation and simulation tools (ventilation, flows)
- Predictive maintenance tools
- Fluorinated Gases treatment