

→ THE INTERVIEW

“ Virgile Mialet, France North East Business Development Manager, who was in charge of the project, explains how the operation was conducted and pinpoints the principal technical difficulties the team met while processing to the operation on Arcelor Mittal site in Dunkerque.

• What was making work harder than on other installations?

We regularly had to go down to the lower floors as the gas alarm was warning us from a gas concentration on the highest facilities of the HF4. Eventually, we were compelled to wear a breathing inhalator so that the work could be done.

• Why did you not fully pursue the second operation?

We were able to set up the actuators although we could not configure parameters as foreseen. The gas alarm triggered too frequently for us to make a move and experts noticed it was too dangerous to realize this operation while still keeping on producing iron on the site. In this case, a new operation has been conducted by the end of 2015.

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« The STX range figure the BC Premium Label, which is a guarantee of quality and security for installations in case of demanding environmental and operational constraints. »



Did you know?

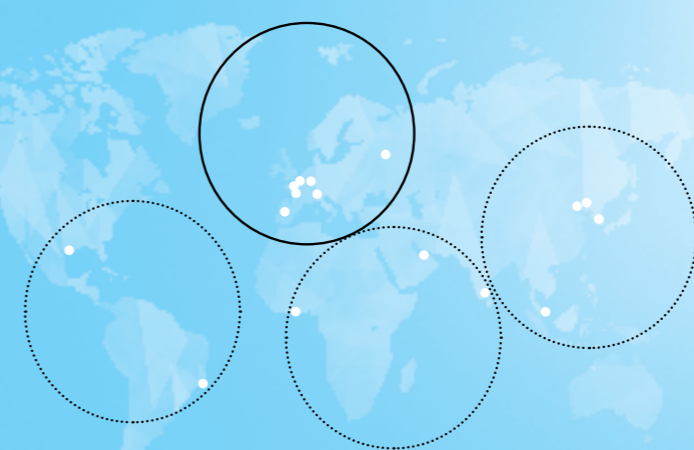
On Arcelor Mittal site in Dunkerque, the production of the iron goes through three principal blast furnaces, including the HF4, actually one of the biggest that can be found in Europe.



Installation of an aluminium cover before the separation of the snag from smelting iron



BERNARD CONTROLS' actuators used to motorize the dampers (+22m)



Project Name	Arcelor-Mittal Steel Plant
Location	Dunkerque, France
Operating Area	Operating Units
EUROPE Operating Area	BERNARD CONTROLS FRANCE

Description

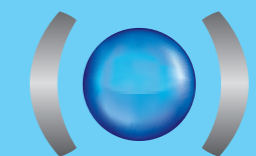
Intervention on the ventilation system of the blast furnaces, aimed at producing the steel which is extracted from the ironworks. In total, eight explosionproof electric actuators have been replaced, wired, and settled.

S U C C E S S S T O R Y



ARCELOR MITTAL

Dunkerque, FRANCE



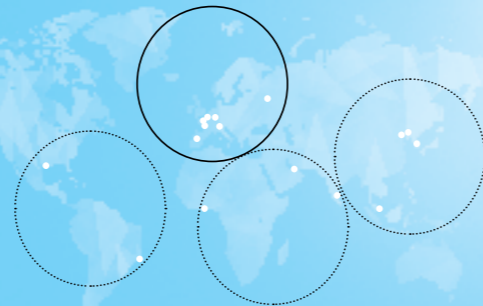
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«In this kind of hazardous environment, electric actuators are at the core of industrial safety».



Middle of 2015, Bernard Controls, world leader in electric actuation technology, intervened for the retrofitting of electric actuators mounted on dampers of the ventilation system of the plant of Arcelor Mittal Steel Dunkerque (North of France). This site, one of the most efficient in France¹, was already equipped with some Bernard Controls actuators.

In such application, electric actuators are at the core of industrial safety. Indeed, we can find these directly in the process of ironworks, on ventilation dampers, but also in other parts of the site activities such as industrial waste water treatment and thermal power station.

→ FOCUS ON

Customer's Needs

On this installation and for this job, Arcelor Mittal's main requirements encompassed:

- > **Phase n°1:** Four days for the configuration and commissioning of six actuators located on the ground floor of the four tapholes.
 - > **Phase n°2:** Four days for the intervention on the high floor of the blast furnace to operate actuators on valves aiming at ventilating the tank body.
- In total, the operation consisted in:
- > The replacement of eight electric actuators on two tapholes (TC41, TC43) in HF4 (blast furnace n°4) - four per taphole,
 - > Process of wiring and take off of some existing targeted installation points,
 - > Setting and equipment testing, both for local and remote command & control (Profibus protocol).

Bernard Controls' expertise, commitment to quality and innovative solutions were key elements for success in this operation. Indeed, main customer requirement was the retrofitting of installed explosion proof actuators operating in severe environmental conditions, mainly on dampers of the HVAC. Furthermore, the intervention demanded a highly qualified team, able to process on valves while being surrounded by a hazardous environment. Two other tapholes within the HF4 remained in activity during the intervention therefore creating harsh heat conditions and causing sulphur-containing gas into the working space.

Therefore, the replacement, commissioning and setting of new actuators were challenging for the team. And a long-distance control was essential to command actuators positioned in hardly accessible places. Only specialized and trained teams with full knowledge of the procedure can work in an explosive and hot area such as blast furnaces.



BERNARD CONTROLS team at Arcelor Mittal Steel Dunkerque



ARCELOR MITTAL iron plant

TIPS & REMINDER ABOUT THE PROCESS OF IRONWORKS

Cast iron has to be fined and hammered to obtain wrought iron. Thus, cast iron is transformed into steel by removing the carbon content. That is why Carbon Monoxide is said to be the key of iron's extraction. For this, the coke, a combustible filled with carbon, is injected. After this main step, cast iron has been processed into a lightweighting alloy (with low carbon content) that will make it exploitable.

Moreover, ironworks will also change the nature of other components:

1. Remove sulphur: while the metal has been extracted, a residue called the snag, has come out during the process. But this step brings about a reaction of sulphur-containing gas inside the tank too. By removing this gas, the snag can be exploited to produce cement.
2. Burn silicon
3. Remove phosphorus

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BERNARD CONTROLS' Solution

Reliable Products

In order to satisfy Arcelor Mittal's requirements, Bernard Controls supplied STX models of explosion proof multi-turn electric actuators with INTELLI+® integrated intelligent controls. The STX range figures the BC Premium Label, which is a guarantee of quality and security for installations in case of demanding environmental and operational constraints. There, heat constraints coupled with explosive atmosphere clearly represented harsh conditions.

On the other hand, as there is no access to the crucible, the possibility to install the INTELLI+® in a separated control box was clearly essential to get a long-distance control (20m) over the actuators. These turn-key actuator control solution, adapted to all actuators duties, enables to control & command actuators while avoiding being too close to the crucible. As many functions are already built-in, Bernard Controls offers simplified motorized valve control circuit which makes control easier.



BERNARD CONTROLS Weatherproof multi-turn actuator with INTELLI+® in a separated control box

In addition to electric actuators, BC also supplied and set up a Master Station Fieldbus Solution. Fieldbus is used to communicate information and commands with multiple actuators and contactors connected in series on a single pair of wires. For all types of

purpose, this system enables to multiply the number of information received from each actuator while reducing the overall cost of wiring on site.

On-Site Support

On this intervention, Bernard Controls team undertook training sessions before being fully able to start the operation & take off of the old materials.

As a first step, BC technicians performed the replacement, configuration and commissioning of six actuators located on the ground floor of the four tapholes (+22m). Through this action, Bernard Controls team brought adequate solutions to modulate and ventilate the HF4 so that the blast furnace could be fully productive again.

The second step occurred on the high floors (+45m) and (+70m) of the HF4 to operate actuators bound to superheated air nozzles on valves aimed at ventilating the tank body. From a common agreement between Bernard Controls and Arcelor Mittal, it was decided that the second operation would be rescheduled later in the year.

→ BC PREMIUM RANGE

Solutions always by your side: Relying on more than 75 years of continuous experience in the global electric actuation business, BERNARD CONTROLS positions itself as the close partner of its clients with a dedicated support, from the earliest stages of each project to identify their needs and find out the best solution. To fulfill the need for reliable, high performance and innovative

actuators, we have defined the **BC PREMIUM** label. The **BC PREMIUM** label is the guarantee of quality and security for installations' actuation in the case of demanding environmental and operational constraints. In addition, the **BC PREMIUM** label offers a large user friendliness, a sturdy and proven design and a minimum level of maintenance requirements.



STX RANGE DESCRIPTION

- Available torque Range from 60 to 25000 Nm
- Ex d/NEMA 7 explosion proof enclosure
- ATEX IEC Ex, CSA/FM, INMETRO, EAC Customs Union
- INTELLI+® intelligent control
- Electromechanical versions (switches) on request (refer to specific datasheet)

For more information about the STX Range, consult our catalogue: **Explosionproof Intelli+® Actuators**

¹ http://www.arcelormittalfrance.com/?sc_lang=fr-FR

