



A new water distillation column at ArcelorMittal Fos-sur-Mer has reduced H<sub>2</sub>S levels.

# Investing in the future of steel

**ArcelorMittal Europe – Flat Products is constantly working to improve the energy efficiency and environmental performance of our mills. Over the past year we have completed major projects to reduce emissions of dust, NO<sub>x</sub> and SO<sub>x</sub>, and to use waste gases to generate energy. The following stories provide an overview of some of the investments which have been finalised over the past year.**

## ISO 50001 certification builds on Energize gains

The 2012-2014 Energize programme aimed to identify and reduce energy losses at ArcelorMittal Europe – Flat Products mills. Following on from this successful programme, most mills have launched new projects to develop an energy management system in accordance with the ISO 50001 standard.

In 2015 we certified our first ISO 50001 integrated mills in France (Fos-sur-Mer), Spain (Asturias), and Romania (Galati). They joined sites in Germany (Bremen and Eisenhüttenstadt) and Poland (Katowice and Krakow) which had already received this accreditation. Other mills, including Ostrava in the Czech Republic, are expected to be certified during 2016.

Sites that are not yet engaged in the ISO 50001 certification process, such as our French plant in Dunkirk, have launched internal energy audits. “Our teams are currently collecting data on our energy use,” explains Thierry Scherpereel, manager of energy efficiency at ArcelorMittal Dunkirk. “This will allow the mill to work with local energy and process experts to find ways to use energy more efficiently.”

## ArcelorMittal Fos-sur-Mer improves waste gas management

ArcelorMittal’s Fos-sur-Mer mill completed a number of investments to improve waste gas management in 2015. The three projects, which collectively cost over €40 million to implement, will significantly reduce NO<sub>x</sub> and dust emissions, and

increase the level of coke oven gas desulfurisation.

Improvements were required as ArcelorMittal Fos-sur-Mer aims to increase production to more than 4.5 million tonnes per year in the near future. Once fully implemented, the changes will ensure the mill meets local and European targets for NO<sub>x</sub> and dust emissions when the production increase occurs.

The Mistral project, which began in 2014, will improve waste gas circulation at the sinter plant, saving fuel and reducing CO<sub>2</sub> emissions. “The field works started in January 2015 and will take 16 months,” explains Bernard Brun, the mill’s environmental manager. “We will complete final optimisation by the third quarter of 2016. Annual gains from the Mistral project are estimated at €7.5 million.”

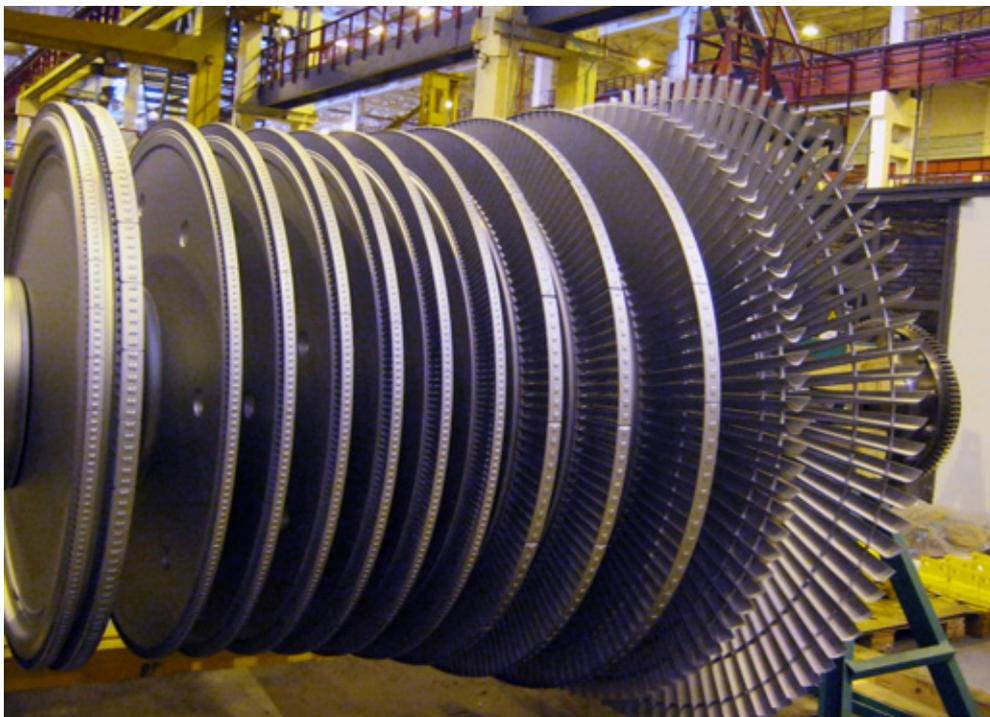
Low NO<sub>x</sub> burners were installed on the mill’s second walking beam furnace (WBF)

during 2015. The same type of burners were installed on WBF 1 during 2014. The improvements have reduced NOx emissions by 30%. Further reductions are anticipated when burners on the third WBF are replaced in 2019.

Fos-sur-Mer also implemented a project to de-sulfurise coke oven gas. Changes included installing a new hydrogen sulphide (H<sub>2</sub>S) column, a new de-acidifier column to produce enriched ammonia, and an increase in water cooling capacity. Implemented during 2015, the changes have seen the sulphur content of coke oven gas fall by around 30 percent.

### ArcelorMittal Galati improves energy profile

During 2015, ArcelorMittal Galati completed two investment projects which have reduced energy use and increased energy generation. The projects have seen the installation of a new variable frequency drive (VFD) exhaust motor on BOF 1, and the revamping of two turbo blowers and a generator.



Turbo blower parts waiting to be installed at ArcelorMittal Galati.

than a year," says Norel Corneliu Jantea, energy project manager.

During 2015, ArcelorMittal Galati also redesigned the air flow of two turbo blowers on blast furnace 5. A turbo

was acquired by ArcelorMittal in 2003. The changes have required large investments to improve the environmental profile of the mill. In 2015, ArcelorMittal Ostrava completed two major programmes to limit dust emissions and improve the performance of the energy generating boilers.

"The mill is located in an area of the Czech Republic which has a high concentration of industrial businesses," explains PhDr. Barbora Černá Dvořáková, head of communications. "The major concern locally is dust."

ArcelorMittal Ostrava implemented 13 separate projects to reduce dust, almost all relating to fugitive dust which enters the atmosphere during material handling operations. The €119 million programme also received support from the European Union as it will ensure ArcelorMittal Ostrava goes well beyond the requirements of the Industry Emissions Directive (IED). (The plant initially complied with the IED more than four years ahead of schedule.) It was the first time a private company in the Czech Republic had received this type of funding.

Another major programme has improved boiler efficiency, reducing emissions of NOx and SOx. NOx emissions have been cut by half, and SOx emissions reduced by 75 percent. Four existing coke-fired boilers have been replaced by a single fluidised bed boiler which cost over €55 million to install.



New fluid boiler being installed at ArcelorMittal Ostrava.

The quickest project was the installation of a new VFD motor which took just three weeks. The existing exhaust motor consumed between 2.2 and 2.4 megawatts (MW) of electricity per hour. By contrast, the new VFD motor only runs at high capacity during blowing, reducing energy consumption to 0.7 MW/h. "This investment has led to significant drop in energy use and emissions and will be paid back in less

generator, powered by steam produced with blast furnace gas, was included in the redesign and now produces up to 5,000 MWh of electricity. The changes will reduce the mill's energy costs and environmental footprint. Total cost of this project was €8.25 million.

### Greening ArcelorMittal Ostrava

ArcelorMittal Ostrava has undergone a major transformation since it