

ArcelorMittal Europe – Flat Products



ArcelorMittal

update

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In each edition of Update, an ArcelorMittal opinion leader speaks out. In this issue, we hear from Aditya Mittal, CFO of ArcelorMittal and CEO of ArcelorMittal Europe.

Introducing ArcelorMittal Europe

ArcelorMittal announced some organisational changes late last year, to simplify the structure of the company. The changes included the creation of a new entity for Europe which above all, will bring significant benefits to our customers – I want to take this opportunity to explain to you just what these benefits will be.

Historically we had three business lines, Flat Carbon Europe, Long Carbon Europe and Distribution Solutions: now these have come together under the banner of ArcelorMittal Europe.

While these changes are, on the face of it, internal, the principal aim in making these changes is to make ArcelorMittal a more efficient business partner.

The creation of ArcelorMittal Europe is part of a group-wide plan to simplify and speed up decision making. This, in turn, improves the efficiency and productivity of our European business which employs more than 100,000 people, in 230 sites and 14 countries; and which in 2013 generated revenues of €30 billion.

To ensure continuity for and proximity to our customers, the concept of the business divisions – each with their respective contact persons – has been maintained. The business divisions act as intermediary between the business and our customers, guaranteeing a strong link between our commercial and industrial teams – and we know from speaking to customers that you value this model.

But we recognise that some customers have both flat and long products in their portfolio: with long and flat products now under one roof with the same leadership – we think customers will see the benefits of this integrated approach between our European business lines.

The new structure also brings synergies that benefit our customers, by grouping together our knowledge of markets such as automotive, construction, energy and household appliances.

In many respects, despite these changes it is business as usual at ArcelorMittal. We continue striving to remain the number one in quality, innovation, service and products – and continue to invest in research and development. We also continue to create new products for our customers – with the added benefit of knowledge sharing between our many market specialists, thanks to the new ArcelorMittal Europe structure. Bringing together this market-leading expertise into one pool is a strategic move to ensure we stay ahead of the competition – and able to meet even the most cutting edge customer needs, through developing the next generation of steels.

Finally, Europe is a major employment base for us, as well as a very important market for our products – so I am excited about the creation of ArcelorMittal Europe and the opportunities it will bring for employees and customers alike.

Aditya Mittal

The strength of steel – the beauty of design

Grevenmacher bridge

The use of high strength steel met the architectural brief for the new bridge spanning the Moselle, linking Grevenmacher in Luxembourg and Wellen in Germany.

Opened in October 2013, the engineering structure had several constraints, such as the need to use strong, lightweight, custom-made materials to achieve the refined, streamlined design, not to mention a very tight, four-and-a-half month construction schedule to minimise traffic disruption. Mission accomplished for Poncin, the company responsible for the project's steel infrastructure, with ArcelorMittal supplying tailor-made plates for the construction of key bridge arch components, exploiting the full rolling capabilities of our Gijón mill.

A spectacular high-profile project

Poncin and ArcelorMittal have a long-standing partnership based on trust, but the

ability to deliver a quality result on time was crucial in winning the contract for this high-profile project because it presented an aesthetic challenge that spanned two countries and had to be completed speedily. "We needed reliable contractors, steelmakers capable of supplying custom-made products quickly," explains Benoît Comblin, Poncin's project engineer. "Despite the distance between the construction site and the workshops, the excellent service from ArcelorMittal's Gijón plant in Spain helped keep us bang on schedule."

Complete rebuild in four and a half months

The old Grevenmacher bridge was built from prestressed concrete back in the

1950s so the Luxembourg authorities decided it was time to replace it. For safety reasons, increased traffic on the bridge – with some 17,000 vehicles crossing daily – meant that it had to be entirely rebuilt. The old structure was demolished to make way for a 213 metre-long orthotropic deck bridge with four spans. One of the characteristics of the new structure is the absence of piers in the river to ensure the widest possible navigable clearance; the use of steel made this possible.

1600-tonne central span transported by water

The ArcelorMittal steel for the project had to be delivered within a very short and specific time frame and the Gijón teams were right on schedule. In January 2013 Poncin began to construct the steel frame of the bridge, which was assembled in the port of Merttert in March. While work was being completed on the central span



Picture © Gilles Martin - Infosteel

Tight deadline

- Early 2012: call for tenders
- July 2012: joint venture partners selected
- September 2012: materials ordered from ArcelorMittal
- December 2012: delivery of materials from ArcelorMittal's Gijón plant in Spain and start of manufacturing at Poncin
- March 2013: arrival and assembly of parts on site
- August 2013: installation of bridge started
- Mid-October 2013: bridge re-opened to traffic



Picture © Gilles Martin - Infosteel

stretching 113 metres from shore to shore, the old bridge was demolished during the annual lock closure, from 4 to 11 June.

The deck elements linking the ground level with the aerial section were transported by lighter barge then brought into position using jacks. The materials for the bridge were custom made. “We hardly used any rolled sections,” explains Benoît Comblin. “Some of the deck elements were constructed with S460N high strength steel supplied by ArcelorMittal, for greater strength and to minimise the thickness of the prefabricated components.” The coating for the bridge superstructure was poured directly onto the steel orthotropic slab.

In keeping with new architectural trends

Nicolas Dujardin, Account Manager ArcelorMittal: “This trend towards using high strength steel grades to build

engineering structures offers designers two advantages: lightness and elegance.” Benoît Comblin confirms this: “New bridges are increasingly characterised by their slender, streamlined design. A material like S460N is lightweight yet strong and is therefore particularly suitable for architectural applications. The fact that ArcelorMittal supplied sheets exceeding standard size – 20+ metres long and 3+ metres wide – for the bridge arches also proved crucial to keep the number of sections to a minimum.”

Now open to the public and boasting a modern and aesthetic design, the new Grevenmacher bridge is the pride of local residents, who use it daily and benefit from improved traffic flow.

Pictures © Poncin



Manufacture of the bridge structure at the Poncin workshops in Ocquier.



Transport of the bridge's central span by lighter along the Moselle.

An elegant design in harmony with the lush green surroundings of the wine route.

Roger Poncin at a glance

Blacksmith Roger Poncin set up business in 1943 in the beautiful village of Ocquier in the southern part of Belgium. After more than 70 years of constant growth and hi-tech investment, the company now exports its products worldwide and sets new standards in industrial steel structures and public works.

Recent projects include the new Lanaye lock complex in Belgium (bridge + lock gates), seven steel structures for the TGV Est high-speed rail link in France, two bridge projects, one over the A86 motorway and the other over the “Tangentielle Nord” suburban railway line in Paris, the SEMAPA railway line cover (Paris region) and the Térénez viaduct in Brittany.

- Annual production: 12,000 tonnes
- Personnel (Poncin Group): 26 employees and managerial staff and 74 workshop and production operators
- Production area: 45,000 m² available, including 21,000 m² under cover
- Website: www.poncin-construct.be



Third generation AHSS now available

First high formability grade is start of new range of steels that will make cars lighter and safer

ArcelorMittal has launched the first product in a brand new family of third generation advanced high strength steels (3rd Gen AHSS) for cold stamping. Currently known as HF1050, the new steel is the first in a series of highly formable (HF) 3rd Gen AHSS grades ArcelorMittal will release between now and 2017. The new grades combine excellent strength and formability and could lead to weight savings of between 10 and 20% in vehicle parts, compared to existing dual phase (DP) grades.

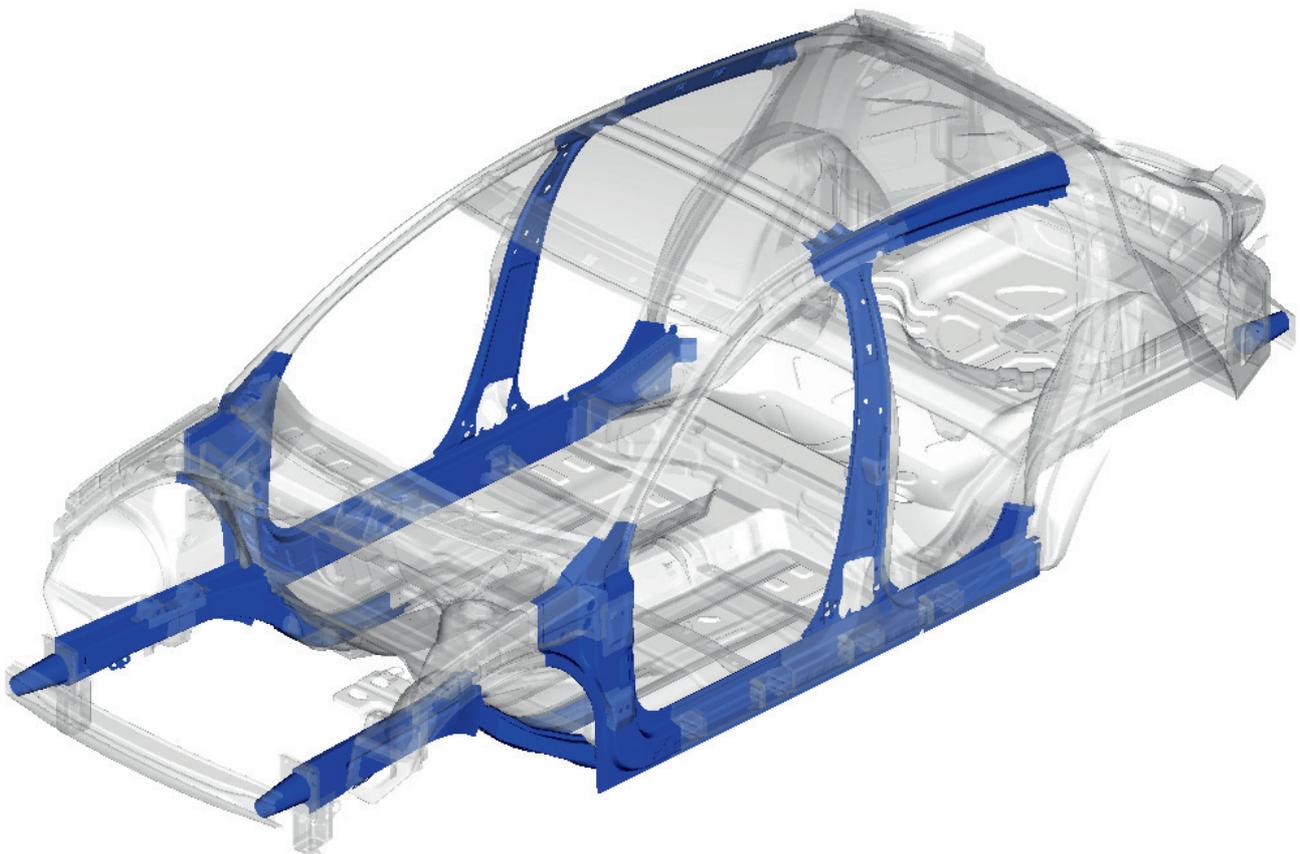
ArcelorMittal is the first steelmaker in the world to bring these advanced 3rd Gen AHSS grades to market in Europe. Carmakers are already using ArcelorMittal's advanced steels and solutions to lightweight automotive applications. The new HF grades will provide even greater weight savings than our existing dual phase grades.

Approved for use

Released at the end of 2013, HF1050 has already undergone formability and weldability tests with global carmakers who have approved its use. The first serially produced vehicles to utilise the new steel will roll off production lines in 2017.

Because of their superior properties, HF grades are able to absorb more energy with less steel. This property makes HF1050 suitable for use in many structural parts of the body-in-white (BIW) that may be affected during an impact. This includes front and rear members, B-pillars and windscreen pillars. The new cold stamped HF grades are ideal in these applications as they absorb more crash energy by deforming in a controlled manner.

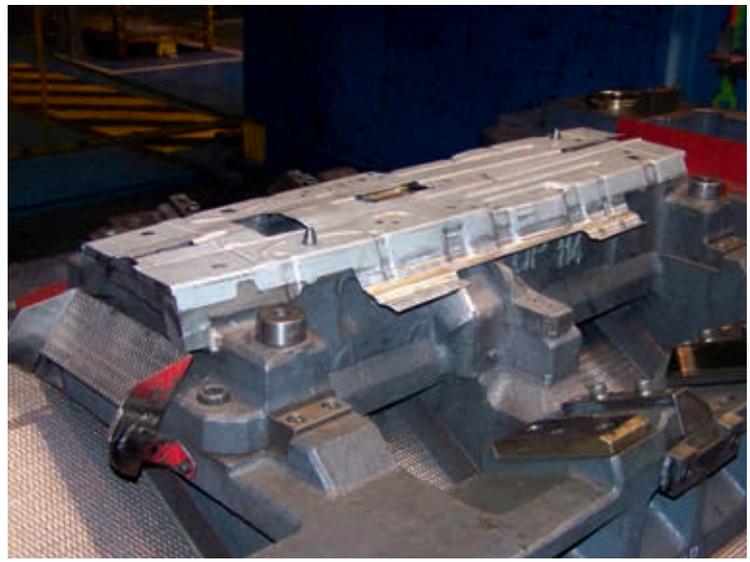
Our HF grades are also designed for use in laser welded blanks (LWBs) and with cold stamping technology. This ensures that the right steel is in the right place to control deformation. Using HF1050 in a front



HF1050 can already be utilised to create structural components of the BIW.

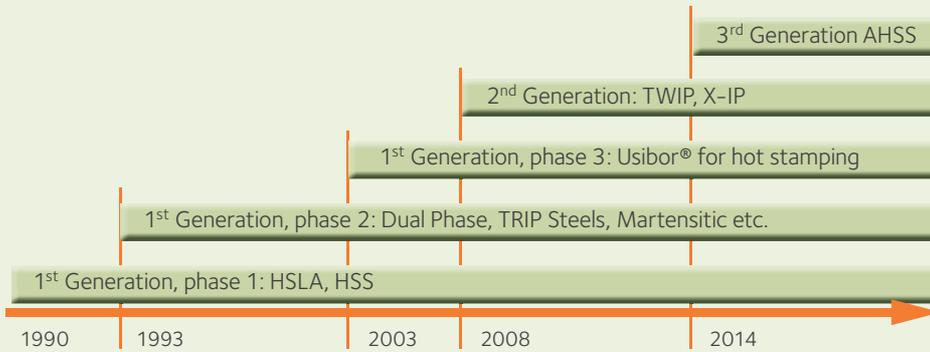


Prototype cold stamped windshield pillars after cutting and painting



ArcelorMittal's HF grades are suitable for LWB and cold stamping.

Why we need 3rd Gen AHSS



At the end of the 1970s, an average car body panel had a strength of around 120 MPa, while 'high-strength' steels were around 588 MPa. Today, body panels typically reach strengths of up to 600 MPa. By the end of 2014, ArcelorMittal's automotive customers will be working with steels at the 2,000 MPa level.

The more than three-fold increase in the strength of automotive steels in just 40 years has had a dramatic improvement on safety. By combining ArcelorMittal's advanced steels with technologies such as LWBs, automakers can ensure the right steel is in the right place to save lives.

ArcelorMittal Gent is initial production site

The process of making HF1050 involves a number of steps. After the HF steel is made, it is hot and cold rolled to finetune its properties.

The steel is then continuously annealed in a process that provides the precise control needed to obtain the final microstructure of the grade. If required, the grade can be electro-galvanised. After continuous annealing, the steel may receive an additional treatment to remove hydrogen and eliminate brittleness before delivery to the customer.

ArcelorMittal has undertaken an ambitious investment programme in Europe and North America to enable the new steel to be produced. Initially, the HF grades will be produced at ArcelorMittal Gent (Belgium) where €60 million will have been invested to support development of the new range. Further modifications at Gent will enable us to extend the dimensional capabilities of the line. This is just the first step in a more ambitious investment programme which will expand the development of third generation steels.

member for example, enables the carmaker to create a part which is thin at the front, but thicker at the back. This design ensures that, during an accident, the part will progressively absorb more energy at the front while remaining intact at the back. This reduces the chance of injury to the vehicle's occupants.

No additional costs

The new 3rd Gen AHSS family has been designed to replace existing DP grades. For example, the forming capability of HF1050 corresponds to the forming capability of DP780, but it offers better weight savings. The outstanding formability and strength of the new grades will allow OEMs to reduce the weight of individual parts by between 10 and 20%. Alternatively, manufacturers may choose to keep the same thickness as the DP part which will increase safety performance.

Samples of two additional products (HF980 and HF1180) will be made available for OEMs to test in 2014, with industrial production set to start in 2015. The grade number indicates the tensile strength of each steel in the range.

OEMs do not need to make significant changes to their production lines in order to accommodate the new HF steels. Some minor modifications to spot welding parameters are required. As less steel is required, the cost of implementing ArcelorMittal's HF grades on production lines can be almost zero.

For more information about our new range of HF steels for automotive, please visit: automotive.arcelormittal.com

Roofs for more than one generation

Granite® Storm extends ArcelorMittal's Nature range

ArcelorMittal has launched Granite® Storm, a new product in our Nature range of pre-painted steels for construction applications. Granite® Storm can be utilised to create high performance roofs which will endure year after year.

Granite® Storm's matt finish and unmatched UV resistance make it the perfect roofing solution. Thanks to a highly flexible coating, Granite® Storm exhibits excellent formability, making it an ideal alternative to traditional roof tiles. The paint system remains robust after forming and the paint layer is guaranteed not to peel.

With Granite® Storm, roofs can be built to last for more than a generation, and are able to resist whatever nature throws at them. This unparalleled performance is made possible by the combination of a thick and flexible organic coating combined with an optimised metallic steel substrate.

Compared to traditional roofing tiles, Granite® Storm offers superior performance in almost any environment. Following successful tests, ArcelorMittal is able to offer a 30-year guarantee in most environments against perforation of the steel substrate.

"With Granite® Storm, ArcelorMittal has broadened its range of solutions for roofs

with a long lasting, pre-painted steel with a deep matt textured aspect," explains André Lavaud, Product Lead – Coated Products, for ArcelorMittal Europe – Flat Products. "With this unique, top-of-the-range product which is supported by a guarantee of up to 30 years, we offer customers the opportunity to utilise steel in new environments, aesthetics and applications."

ArcelorMittal's Granite® Storm is available in a selection of colours which are designed to harmonise with urban or rural settings. Further colours are available upon request. For more detailed specification and aesthetic decisions, A4 samples of any Granite® Storm colour can be requested.

Granite® Storm has been tested in laboratories and exposed to the elements at different locations before being brought to market. It is guaranteed for up to 30 years, depending on the environment.

Designed for Nature



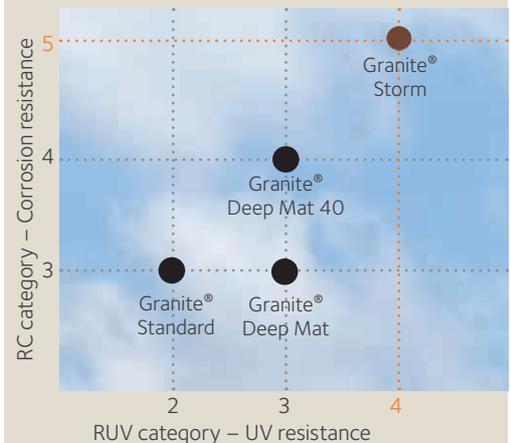
Like all of our Granite® products, Granite® Storm is part of the ArcelorMittal Nature range of organic coated steels for construction. Like all Nature steels, Granite® Storm is free of chromates and heavy metals.



Omega® roofing tiles made with Granite® Storm (©Blachprofil)



ARAD Premium roofing tiles made with Granite® Storm (©Pruszyński Sp. z o.o.)



Granite® Storm provides the best corrosion and UV resistance performance (EN 10169).

Granite® Storm	
Paint coating:	50 µm
Metallic coating:	Z275 g/m ² or equivalent
Width:	600 to 1,500 mm (depending on thickness)
Thickness:	0.45 to 1.2 mm
Corrosion/UV resistance:	RC5/RUV4
Resistance to cracking (T-bend):	≤ 2T
Scratch resistance (Clemen):	≥ 2.5 kg
Fire performance:	A1 in accordance with EN 13501-1
Guarantee:	Up to 30 years

For more information on the technical properties of Granite® Storm and durability guarantees, please contact your ArcelorMittal representative or visit: industry.arcelormittal.com

Engineering the cars of tomorrow

Global platforms meet OEM challenges

Carmakers are increasingly using global platforms and common module families (CMFs) to design the cars we will be driving in the next five to ten years. Among other benefits, platforms and CMFs enable automakers to quickly develop new models, standardise production methods and release new vehicles simultaneously around the world. Thanks to our global presence, product offer and technical support, ArcelorMittal is able to help carmakers achieve these goals wherever they are located in the world.

For the global platform model to work, OEMs require the same products in different regions – all with the same level of quality. As the only truly global steelmaker, ArcelorMittal is well placed to assist.

Automakers also need technical and logistics support to maximise the advantages of ArcelorMittal's steels for automotive applications. A global customer team ensures each OEM's technical, logistic and quality issues are addressed quickly. The customer team is led by a Global

Account Manager (GAM) and a Global Technology Coordinator (GTC) who liaise between the carmaker and ArcelorMittal. They are supported by a resident engineer who is usually located at the carmaker's design headquarters.

Our resident engineer as a carmaker's in-house steel expert

The resident engineer is the first technical contact for the OEM when new projects begin. Their duties include identifying and

anticipating customer needs for steel products or solutions.

When the OEM starts to design a new platform, the resident engineer can advise the carmaker on the newest and best steel solutions for the challenges they face. The resident engineer is backed-up by ArcelorMittal's technical and design teams.

ArcelorMittal's resident engineers also have an important role in the development and promotion of new products and services. They keep ArcelorMittal abreast of the latest challenges automakers face, ensuring that we develop solutions which solve these problems. By doing that they are already helping automakers develop the vehicles of the future.

Estimated number of vehicles based on global platforms for selected OEMs

(Source: IHS Automotive)

	PSA	Renault	VW	Volvo	Toyota	BMW
Segment:	C + D	C + D	C + D	D + E	C + D	B + C
Units/year (millions):	1.5	1.6	4.0	0.7	3.0	1.0

ArcelorMittal's worldwide presence can make the global platform model work.



Picture © Shutterstock – Nataliya Hora

Platforms and module families

Platforms are typically a horizontal segmentation of a vehicle, such as the underbody, and are used as the basis for a number of different vehicle models. Some OEMs break the platform down into smaller parts called common module families (CMFs). Both platforms and CMFs can be used across vehicle brands and segments.

ArcelorMittal estimates that 47% of all vehicles produced in 2013 were at least partially based on a global platform or CMF. By 2020, platforms and CMFs are expected to be used in more than 60% of all vehicles.

Investing in the environment

Ambitious actions in our road map to low impact steelmaking

In 2011, ArcelorMittal Europe – Flat Products launched an ambitious action plan to reduce CO₂-equivalent (CO₂-eq) emissions as part of our long-term commitment to lower the carbon intensity of steelmaking. To date ArcelorMittal Europe – Flat Products has identified opportunities to reduce emissions by 26 million tonnes in an investment programme which will cost more than €500 million to implement.

Some common initiatives to lower emissions have been identified including:

- Reducing the amount of hot metal required by using more scrap
- Energy recovery and re-use
- Monitoring and adjusting the fuel consumption of blast furnaces (BFs)
- Innovative technical solutions for scrap melting which reduce the amount of energy required

Some of these projects, which directly contribute to reducing CO₂-eq emissions, have already been implemented while others are under study or in the process of being deployed. In addition, each mill has identified its own action plan to reduce emissions and to improve energy efficiency, by deploying the Energize programme (see box) throughout our European sites.

Some examples of the emission reduction projects are detailed here.

Gent improves blast furnace process

Investments at ArcelorMittal Gent (Belgium) have focussed on increasing the capacity for pulverised coal injection (PCI) and other projects to improve blast furnace (BF) efficiency. Once these investments are completed, CO₂-eq emissions will be reduced by around 100,000 tonnes/year.

Eisenhüttenstadt targets 8% reduction

ArcelorMittal Eisenhüttenstadt (Germany) has launched 12 projects to increase energy efficiency and directly or indirectly lower CO₂-eq emissions. Our goal is to reduce energy consumption at the plant by



Assembly of the new synchronous motor for the cold strip tandem mill (left) and an old direct current motor (right).

8.2% between 2011 and 2015. Reductions in emissions are already being achieved through the following investments:

- Motors of the cold strip tandem mill have been modernised, reducing emissions by 7,800 tonnes/year.

ArcelorMittal Galati has invested more than €82 million to improve its environmental performance.





Off gases at ArcelorMittal Eisenhüttenstadt flow (left to right) through the green tubes, directly to the boilers of the external power plant.

Energize and LIS

As part of ArcelorMittal's commitment to improving energy efficiency and reducing CO₂-eq emissions, ArcelorMittal Europe – Flat Products has launched two initiatives: Energize (see *Update*, May 2012) and Low Impact Steel (LIS).

Energize aims to reduce energy costs by optimising the energy consumed in the processes, by reducing the energy losses and by sharing best practices across ArcelorMittal Europe – Flat Products. Energize concentrates on projects which can be implemented quickly and which have a maximum payback time of three years. Already the programme is showing results with a 3.4% reduction in energy consumption during 2013.

The LIS research programme is exploring emerging technologies to reduce CO₂-eq emissions and to capture and re-use CO₂ which has valuable applications in other industries. LIS will run until 2017 and is the result of a strong collaboration with the French Ministry of Research. Several French universities and ArcelorMittal's R&D Centre at Maizières-Lès-Metz are playing a key role in coordinating the project.

The LIS programme confirms ArcelorMittal's commitment to find breakthrough solutions to reduce greenhouse gas emissions in the steelmaking process. It fits with the European Commission's 2030 policy framework for climate and energy which aims to make the European Union's economy and energy system more competitive, secure and sustainable.

- BF top gas is now reused in a state-of-the-art external power station saving 60,000 tonnes of CO₂-eq/year. The power station operator intends to install a top gas recycling turbine between the BF and the station which will lower CO₂-eq emissions by a further 27,400 tonnes/year.
- The dedusting system at the sintering plant has been revamped saving 860 tonnes of CO₂-eq/year.

In total, the improvements from all 12 projects will reduce energy consumption at Eisenhüttenstadt by 99 GWh/annum.

Galati investments bring dividends

Since 2011, more than €82 million has been invested to revamp BF5 and improve the overall environmental performance of the ArcelorMittal Galati (Romania) plant. In 2013, this investment resulted in a reduction in CO₂-eq emissions of over 244 kg/tonne of liquid steel – a total saving of 465,000 tonnes of CO₂-eq. That's the equivalent of taking 180,000 cars off the road which is almost the same number of vehicles in Galati and nearby counties.

The next step is to install a Bell Less Top® Charging System and a profile-meter to improve processes. These improvements will result in an additional reduction in CO₂-eq emissions of 75,400 tonnes per year.

Energize wins 2014 ener.con award for environmental investments

ArcelorMittal Europe – Flat Products has been recognised for its ambitious Energize action to reduce the environmental impact of steelmaking. During the 2014 ener.con conference in Berlin on 20-21 March, Veronica Chiper, pilot of the Energize project at ArcelorMittal Europe – Flat Products, was handed the award for 'Energy efficiency strategy and management framework'. The award includes a cash component of €2,000 which was donated to the charity Weltfriedensdienst (World Peace Service) in Zimbabwe on ArcelorMittal's behalf.

The prestigious ener.con award recognises outstanding energy efficiency projects and innovations from companies around the world. ArcelorMittal Europe – Flat Products launched the Energize programme in 2012 as part of ArcelorMittal's commitment to improving energy efficiency and reducing CO₂-equivalent emissions.



The ener.con award

Veronica Chiper collects the ener.con award for Energy efficiency strategy and management framework



An oasis on the sea

World's largest cruise ship takes shape at record speed



Pictures © STX France

The new ship will be the largest cruise ship in the world in terms of size and the number of people it can carry.

With less than four years between signing the contract to build the world's biggest cruise ship and the expected delivery date, STX France faced an incredible challenge to meet their client's expectations. But thanks to a long and close working relationship between ArcelorMittal and the shipbuilder, the next vessel in the Oasis series – codenamed A34 – is rapidly taking shape at the STX France yard in Saint-Nazaire (France).

One of the major challenges of the project is the sheer volume of steel required to build the A34. As the sole steel supplier, ArcelorMittal will deliver over 33,000 tonnes of heavy plate and 9,000 tonnes of hot rolled sheets to complete the vessel. Thicknesses range from 5.5 up to 40 mm. Thinner plate is used to form the ship's decks while the thicker plate forms the hull.

On time and in full

Many of the plates have precise dimensions and formats. This places additional pressure on ArcelorMittal to deliver all orders on time and in full. "Even if just one or two plates are left out of an order, it can have a major impact on the project," explains Serge Hily, Sourcing Manager for STX France.

Steel deliveries started in September 2013 and will continue for just over a year. "It was important for us to have a steel supplier

that could commit to such a long contract," notes Serge Hily.

To ensure the ArcelorMittal mills, logistics and customer teams were on the same page, a series of meetings were held with STX France at the start of the project. This enabled the customer to explain how they

operate to ArcelorMittal and created strong links. "ArcelorMittal's close proximity is nice but not essential," notes Serge Hily. "More important are the direct contacts we have established. We can immediately contact the right ArcelorMittal people in Customer Service and the technical department at the mill."

Continuous improvement cycle implemented

Most of the heavy plates are delivered by ship directly from ArcelorMittal Gijón (Spain) to the STX France shipyard in Saint-Nazaire. Each delivery – there are one

A34 in figures

Length:	361 metres
Width:	66 metres
Height:	72 metres (20 decks)
Cabins:	2,700 with accommodation for 6,300 people
Crew:	2,100
Maximum capacity:	8,400 people (crew and passengers)
Gross register tonnage (GRT):	227,000 tonnes

All hands on deck

Support for the building of A34 is coming from all parts of ArcelorMittal's business. ArcelorMittal Fos-sur-Mer produces the hot rolled coils, Distribution Solutions (AMDS) de-coils and cuts them into sheets, and then delivers the sheets to STX France as required.

Most of the heavy and light plate is produced at ArcelorMittal Europe – Flat Products facility in Gijón and shipped directly to STX France. ArcelorMittal Galati, one of our other facilities producing heavy plate, is also part of the project, supplying plates in one particular dimension which is outside ArcelorMittal Gijón's usual product range.

ArcelorMittal's Industeel business unit is supplying specialty steels for A34. One of the largest orders was for stainless steel plates which will be used in the ship's water recuperation system and to create the hawse tube which holds the anchor chain.



Timeline

December 2012	STX France awarded contract to build A34
February 2013	First meeting between ArcelorMittal and STX France
June 2013	Steel supply contract signed
September 2013	First steel deliveries and start of construction
April 2014	Keel laying (first assembled blocks to dry dock)
April 2015	Launch of A34 and beginning of fitout
February 2016	Sea trials
Spring 2016	Commissioning and naming of A34

STX France increases capability with large gantry crane

In order to complete the A34 in the timescale required, STX France decided to build a new, very large gantry crane. With a lifting capacity of 1,400 tonnes, the new crane has enabled STX France to build A34 in bigger sections, reducing construction time.

The company utilised steel plate from ArcelorMittal Gijón for the main beam. The beam is 144 metres in length and 10 metres high. When fully extended, the crane provides 90 metres of working area.



Pictures © STX France

As the sole steel supplier, ArcelorMittal will deliver over 33,000 tonnes of heavy plate and 9,000 tonnes of hot rolled sheets to complete the vessel.

or two per month – brings between one and two thousand tonnes of steel which can be consumed by the project in as little as two weeks. Re-runs and urgent orders are delivered by truck using the regular Gijón to Saint-Nazaire ferry service known as the 'maritime highway'.

ArcelorMittal has implemented a continuous improvement cycle to iron out any issues as they arise. "Each time there is a problem we undertake a full analysis to determine why it has occurred, and how we can prevent it happening in the future," explains Laurent Castro, ArcelorMittal's Key Account Manager for the project. For example, deliveries were affected by the bad weather which hit Europe in the early part of 2014. "We created a plan to recover from the delays and everything is now back on track," notes Laurent Castro.

Tailored for growth

Market for laser welded blanks set to increase thanks to new ablation technology

The market for hot stamped laser welded blanks (LWBs) has grown enormously over the past few years with some vehicles containing more than 14 LWB parts. The combination of hot stamping and LWB is a winning formula – enabling OEMs to lightweight even the most challenging car parts. Recently, ArcelorMittal has joined with ANDRITZ Soutec, a specialist welding system designer, to commercialise a new partial laser ablation technology which ensures the long-term integrity of LWBs and will see their use expand.

To make a LWB, steels of different thicknesses and/or with different properties are laser welded to create thinner and lighter steel parts while maintaining or improving crash performance. LWBs can include different steel grades including ArcelorMittal's range of advanced high strength steels (AHSS) and enable car-makers to reduce vehicle weight and improve safety by putting the right steel in the right place for each part of the car.

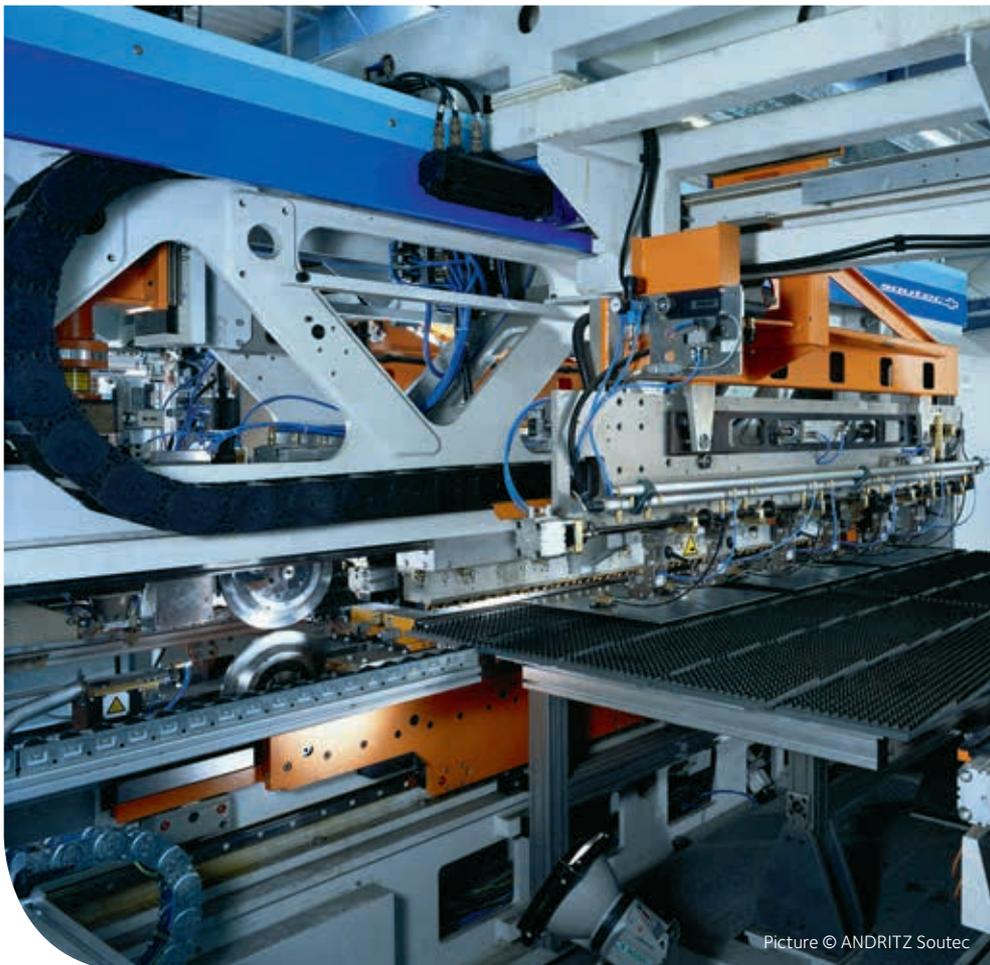
To further increase the strength of the part, the LWB can be hot stamped. AHSS such as Usibor® and Ductibor® have been specifically designed for this process.

Light and cost-efficient parts

ArcelorMittal's innovative and patented partial laser ablation technology provides a superior weld for LWB and maintains corrosion protection (see box).

To commercialise the technology, ArcelorMittal Tailored Blanks has joined with ANDRITZ Soutec to automate the partial laser ablation process. The partnership with ANDRITZ Soutec will enable this cutting-edge technology to be rolled out around the world. This development will increase the availability of laser welding technology for hot stamping steels. LWB are increasingly in demand from carmakers as they strive to make cars lighter, and therefore more fuel efficient, and safer.

ArcelorMittal's partnership with ANDRITZ Soutec will further increase the global use of laser welded blanks.



Picture © ANDRITZ Soutec

“By cooperating with ANDRITZ Soutec, a leader in welding technology, we are reaching a new step in developing cost-efficient solutions for carmakers,” comments Philippe Baudon, CEO of ArcelorMittal Tailored Blanks. “We are continuously supporting automakers to reduce car weight and improve crash resistance.”

“ArcelorMittal has developed a superior laser ablation process guaranteeing the quality and productivity of the welding process of steels for hot stamping, an increasingly developing technology,” explains Domenico Iacovelli, CEO of ANDRITZ Soutec. “Thanks to this cooperation, we will offer an efficient solution which will further support the growth of LWB for hot stamping.”

“Thanks to laser ablation, hot stamping and LWBs are a winning combination for lightweighting the most challenging car parts,” concludes Philippe Baudon.

LWBs and Mercedes-Benz – a winning combination

The new Mercedes-Benz S-Class body-in-white contains 14 LWB parts. The vehicle won first place at EuroCarBody 2013, a global benchmarking conference for car bodies held annually in Germany. A jury and technical audience assessed the vehicles in five categories including development and construction concepts, material development, and production efficiency amongst others.

LWB parts in the Mercedes-Benz S-Class

- B-Pillar – 2 LWB parts per vehicle
- B-Pillar reinforcement – 2 hot stamped LWB parts
- B-Pillar closing plates – 2 LWB parts with 2 welds each
- Rear rails – 2 hot stamped LWB parts
- Roof cross member – 1 LWB part with 2 welds
- Roof rails – 2 LWB parts with 2 welds each
- Panel under rear seats – 1 LWB part with 2 welds
- Tunnel – 1 LWB part
- Tunnel reinforcement – 1 LWB part



The Mercedes-Benz S-Class in production at the Mercedes-Benz Sindelfingen plant

Partial laser ablation – how it works

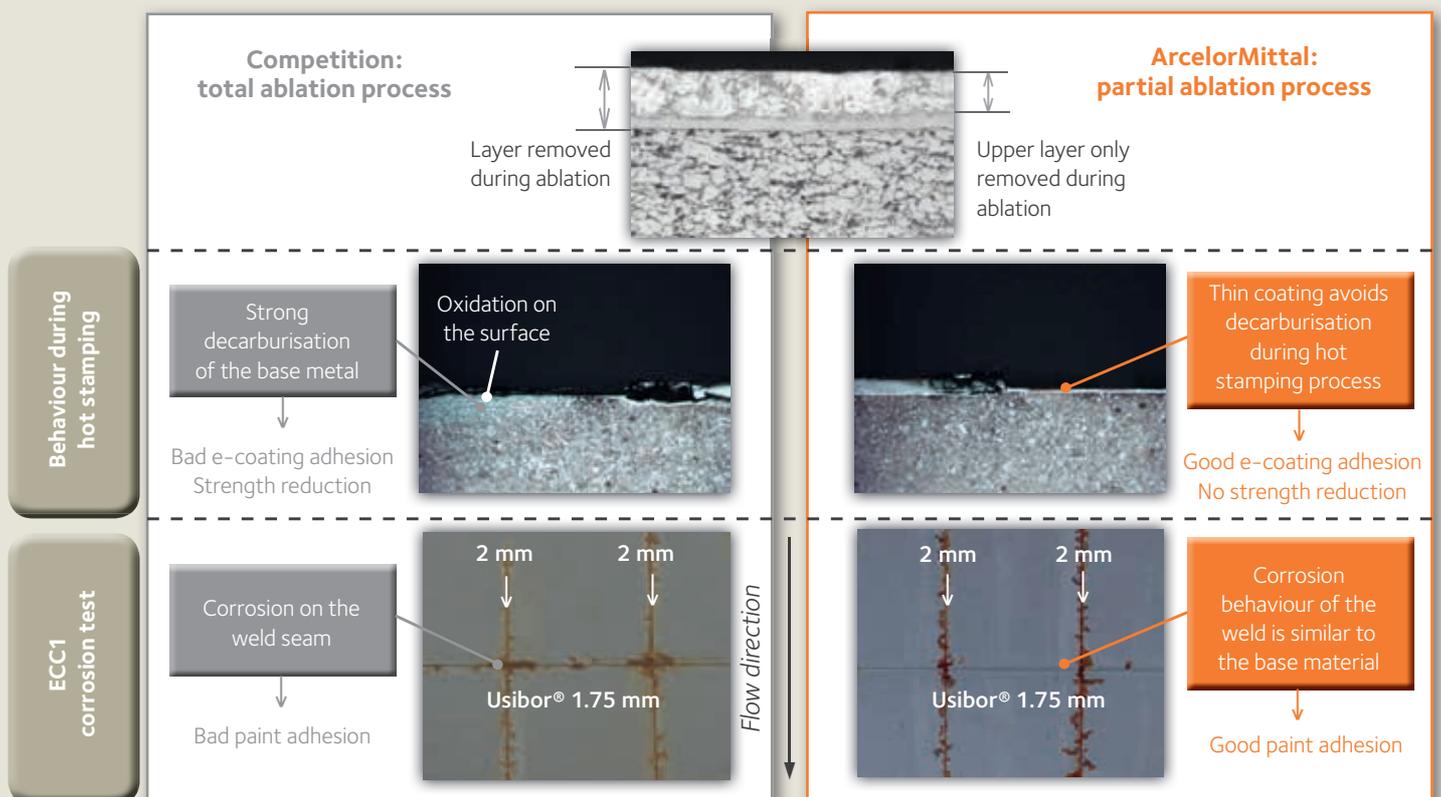
Steels for hot stamping such as Usibor® and Ductibor® are delivered with an aluminium-silicon coating. The coating prevents scale formation and surface decarburization during the hot stamping process. It also helps to protect the final part against corrosion.

the aluminium-silicon coating near the edge is partially ablated by laser. The process removes the top layer, avoiding excessive aluminium in the weld. The intermetallic layer is intentionally kept to guarantee corrosion protection.

connection. “We use the most advanced, ultra-short laser pulses with the highest power range available on the market,” explains Wolfram Ehling, Senior Manager Operations at ArcelorMittal Tailored Blanks. “This is a sign of ArcelorMittal’s technological leadership in the important developing market for laser welded blanks.”

In the process ArcelorMittal has developed,

If the aluminium is not removed it can migrate into the weld, weakening the



Steel - the natural choice for wind energy

ArcelorMittal demonstrates its offer for the global wind energy industry at EWEA

The 2014 European Wind Energy Association (EWEA) Fair was held in Barcelona at the beginning of March and ArcelorMittal was there to demonstrate our portfolio of steels for every part of the wind turbine. But it is not just about steels. During EWEA, ArcelorMittal also took the opportunity to show how we can assist our wind energy customers with our extensive knowledge of material design and industry leading co-engineering services.

ArcelorMittal's offer includes steels for every part of the wind turbine – both onshore and offshore. Whether it is heavy plate for towers and jackets, high-tech electrical steels for the generator, or special bar quality steels for the foundations, ArcelorMittal has an optimised solution available.

Strategic global coverage

With its global footprint, ArcelorMittal is able to support wind turbine manufacturers wherever they are located. Customers with worldwide operations are managed through a single point of contact within ArcelorMittal to ensure the quickest

response possible. Our mills are strategically located and many have easy access to sea ports, ensuring low emissions during transport.

One of ArcelorMittal's greatest strengths is our proactive approach to helping customers solve the problems they experience. Whether it's assistance with material selection, or more complex technical questions, our Global R&D team is there to help.

For customers who want to develop and expand their wind energy expertise, such as component suppliers and service

Steel – the most sustainable solution for renewable energy

Steel is used to create more than 80% of the components required to build a typical wind turbine. Valued for its strength, flexibility and durability in the field, steel is also 100% recyclable, making wind energy truly renewable.

ArcelorMittal is constantly developing new technologies which improve the sustainability of our products and business practices. We work in close partnership with our customers to help them achieve their environmental goals through innovative steel solutions.

As an international company, ArcelorMittal is fully engaged in global efforts to reduce greenhouse gas emissions and mitigate their impact. As a natural, permanent material, steel is the ideal product to meet the challenge of providing sustainable energy solutions for the future.



Picture © Shutterstock – Pedrosala



© Gerardo Alonso

centres, ArcelorMittal is more than willing to pass on our knowledge – we know a lot about steel and a lot about wind turbines.

Full engineering support

ArcelorMittal's full engineering approach covers concept design, numerical modelling, welding solutions, mechanical testing, fatigue and bending performance evaluation, and qualification of materials. We can also assist manufacturers to upscale their operations from the laboratory to semi-industrial and industrial scale production.

ArcelorMittal also works with industry leaders to introduce innovative new solutions to the wind energy market. Our Global R&D teams are helping these manufacturers to develop the next generation of wind turbine designs including non-welded towers.

Creating the wind power solutions of tomorrow

At ArcelorMittal we know a lot about steel. Our R&D department includes more than 1,300 world-class researchers located in 11 laboratories around the globe. Their experience and knowledge of steel enables ArcelorMittal to support our customers who are developing new solutions to meet the challenges they face.

ArcelorMittal provides a multidisciplinary and specialised range of expertise for wind turbine towers and foundations. Our integrated knowledge of materials, design and fabrication processes is available to our customers.

ArcelorMittal's full engineering approach begins with characterisation of materials and continues through to component testing. In-house equipment is available to test new techniques such as improved welding methods.

ArcelorMittal customer event at EWEA



More than 50 ArcelorMittal customers attended a special presentation on the second day of EWEA. After a welcome and introduction from senior ArcelorMittal management, participants were briefed on our latest products and technical support offers for the wind energy sector.

A lively question and answer session followed, enabling customers to explore issues of concern to them with ArcelorMittal's leading technical experts. The event was judged a great success by all who participated and it is highly likely that similar sessions will be held at future wind energy events.

With our modelling and simulation tools, ArcelorMittal can offer solutions for any design and engineering challenge to ensure your wind turbines achieve maximum efficiency.

ArcelorMittal's active collaboration with certification institutes helps to ensure the relevance of our research.



© Gerardo Alonso

ArcelorMittal's complete offer for wind energy

- Wide range of steels for all components of a wind tower
- Global footprint
- Engineering support
- Dedicated research and development teams and facilities
- Sustainable steels for sustainable business

For more information about ArcelorMittal's complete offer for the wind energy sector, please visit industry.arcelormittal.com/energy

Substrate of the future is here

Optigal™ optimises protection for pre-painted steels.

Optigal™ is ArcelorMittal's new substrate for its extensive range of pre-painted construction steels. A unique alloy of zinc, aluminium and magnesium, Optigal™ offers long-term corrosion resistance coupled with flexibility and lightness thanks to a coating thickness which is half that of traditional hot dip galvanisation.

Optigal™ forms a highly compact and stable protective layer which leads to a much slower corrosion rate on cut edges and scratches compared to hot dip galvanisation. Thanks to its lower density and reduced metallic coating, Optigal™ is up to 4% lighter than comparable solutions.

Better by Nature

ArcelorMittal's Nature Granite® and Estetic® applied on Optigal™ substrate demonstrate superior formability. The products are ideally suited for manufacturing techniques such as roll forming or bending. They can be used in applications such as roofing and roofing accessories, and cladding panels or profiles.

Steels made with Optigal™ comply with the European Union's REACH Regulation and contain no hazardous materials such as hexavalent chromium compounds and other heavy metals.

Ready to build

Optigal™ has been certified for use by leading construction bodies such as France's Centre Scientifique et Technique du Bâtiment (CSTB) and the Deutsches Institut für Bautechnik (DIBT). The substrate has passed a battery of tests to ensure it is suitable for external applications.

Optigal™ was first produced in May 2013 with commercial production starting at ArcelorMittal Liège (Belgium) in September the same year. The first shipments of products based on Optigal™ have already been dispatched to ArcelorMittal customers across Europe. Customer feedback has been very positive.

Coating weight reduction

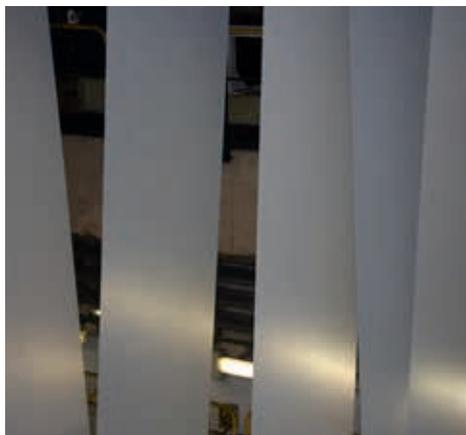
Optigal™ can reduce coating thickness by up to 50% per side compared to hot dip galvanisation (HDG).

Classic HDG	Optigal™
Z100 (7 µm per side)	ZM60 and ZM70 (5 µm per side)
Z140 (10 µm per side)	ZM80 (6 µm per side)
Z200 (14 µm per side)	ZM90 (7 µm per side)
Z225 (16 µm per side)	ZM100 (8 µm per side)
Z275 (20 µm per side)	ZM120 (10 µm per side)

Results of corrosion resistance tests on Optigal™

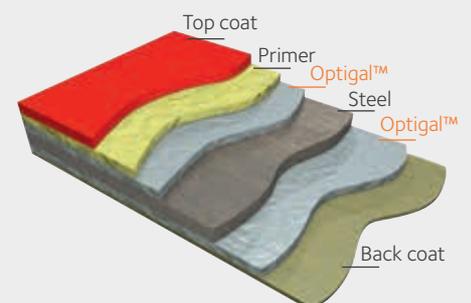
ArcelorMittal's automatic guarantee applies to most of our coil-coated steels based on the Optigal™ substrate.

Test	Duration	Results
Salt spray test (ISO 9227)	500 hours	Granite® Standard on Optigal™ exceeds Z, ZA performance.
ISO 12944-6 (ISO 6270, condensation)	1,500 hours	Granite® Standard on Optigal™ complies with the standard and does not blister.
Outdoor exposure EN 13523-19 on C5M accredited corrosion site	2 years	Granite® Standard on Optigal™ exceeds Z, ZA performance.



Key advantages of Optigal™

- Improved corrosion resistance
- Best formability
- Lighter than hot dip galvanisation
- Environmentally friendly



Optigal™ is applied to both sides of the steel strip to form a long-lasting barrier against corrosion.

■ For more information about Optigal™, please liaise with your regular ArcelorMittal contact person or visit industry.arcelormittal.com

Co-engineering safer roads

ArcelorMittal showcases offer for traffic safety products



By the end of 2013, two safety barriers developed during the partnership with Mieres Tubos had received the CE marking which indicates the product complies with European road safety regulations.

© Mino Surkala

The Intertraffic Fair in Amsterdam at the end of March provided an opportunity for ArcelorMittal to demonstrate its extensive range of solutions for road safety and infrastructure applications. The ArcelorMittal Europe – Flat Products stand featured real-life products developed by our customers including a lighting pole from Safety-Product (Belgium), safety barriers from Mieres Tubos (Grupo Condesa, Spain) and ArcelorMittal Ostrava, and an acoustic wall developed by CIR Ambiente (Italy).

The European market for road safety infrastructure such as barriers, lighting poles and signs is innovating rapidly due to the recent introduction of new standards. Rather than prescribing the material to be used, the new regulations are performance-based. This allows manufacturers to use technically

superior materials such as ArcelorMittal's range of advanced high strength steels (AHSS).

All new products must be tested to ensure they meet the safety standards defined in the regulation. ArcelorMittal works closely with its clients to ensure

that products manufactured from our steels will pass the tests with flying colours.

Database of simulations

ArcelorMittal's Intertraffic stand featured a safety barrier designed and manufactured by Mieres Tubos (Grupo Condesa). The co-engineering partnership which led to the development of the new barrier dates back to May 2011.

Co-engineering enables customers to take advantage of ArcelorMittal's safety experience, gained through our long

involvement in the automotive market and which is now being applied to road infrastructure applications.

Certified safety barriers

By the end of 2013, two safety barriers developed during the partnership with Mieres Tubos had received the CE marking which indicates the product complies with European road safety regulations. Both utilise ArcelorMittal's high strength low alloy steels (HSLA) and unique zinc-magnesium-aluminium coating Magnelis®.

HSLA steels are ideal for safety barriers because they provide:

- Better control over mechanical properties compared to conventional structural steels
- Higher mechanical properties which enable significant weight reduction (up to 25% per metre compared to structural grades)
- Higher productivity during installation and reduced maintenance costs.

The CE certificate confirms that ArcelorMittal's high strength low alloy (HSLA) steels meet the requirements of the standard. It also demonstrates the benefits of the co-engineering approach to product development which ArcelorMittal champions.



© Renaud Barthelemy

Magnelis® reduces maintenance

To further reduce maintenance costs and extend the life of its products, Mieres Tubos opted to coat its new safety barriers with Magnelis® (ZM310). As well as offering long-term corrosion protection, Magnelis® is able to self-heal on cut edges and perforations. The superior performance of Magnelis® means that ArcelorMittal can offer a 20-year warranty.

More info

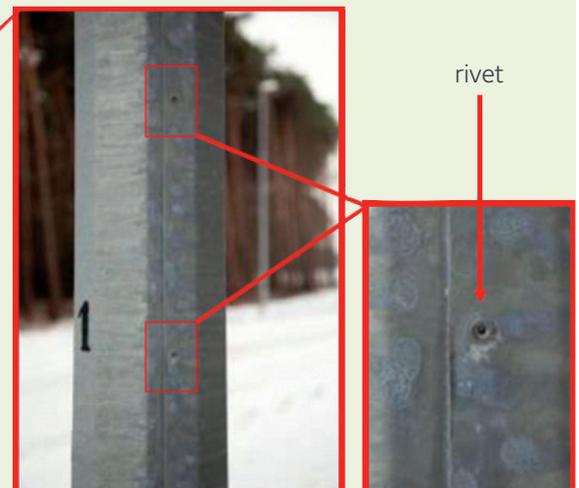
ArcelorMittal's steels, coatings and know-how offer road infrastructure makers a unique package of solutions. Why not find out how we can help you? Get in touch with your regular ArcelorMittal contact or visit industry.arcelormittal.com.

ZIPpole controls deformation with advanced steels

Lighting poles are an essential safety feature on roads. But if you hit them whilst driving, they can turn into lethal obstacles.

Safety-Product, a Belgian maker of safe road infrastructure solutions, has created ZIPpole®, a new type of lighting pole using ArcelorMittal's advanced high strength steels. Unlike traditional poles, the ZIPpole® is designed to wrap around a vehicle during a crash to reduce its momentum in a controlled manner. The pole absorbs the energy of the crash, limiting the forces transmitted to the occupants of the car.

During the manufacturing process, the steel is bent and then riveted together. This forms a column which is vertically strong, but which is weak in the horizontal direction if hit. In an accident the rivets break one-by-one, like a zip. The strong shape loses its strength and the steel bends around the vehicle.



The ZIPpole® is designed to 'zip' open on impact.

© Safety-Product

ArcelorMittal wins 2014 Intertraffic Innovation Award

The combination of ArcelorMittal's HSLA and the unique zinc-magnesium-aluminium coating Magnelis® won the Infrastructure category of the 2014 Innovation Awards. Speaking after the event, Patrick Le Pense, ArcelorMittal Europe – Flat Products Head of Business Development Infrastructure said: "The Intertraffic award recognises the benefits of this innovative solution. It's a fantastic example of the added-value that ArcelorMittal brings to our co-engineering projects."



© Renaud Barthelemy

Indaten® keeps Italy's A14 Highway quiet and beautiful

ArcelorMittal's stand at Intertraffic included an Indaten® acoustic wall developed for Italy's A14 highway by CIR Ambiente. The company specialises in systems that contain noise in civil and industrial applications.

When exposed to the natural environment, Indaten® develops a beautiful patina which serves as protective armour and, over time, creates the steel's trademark natural purplish-brown colouring. The colours blend with the surrounding landscape to minimise the visual impact of the highway and acoustic wall.

Noise is reduced by the rough finish of the perforated steel panels which provide excellent acoustic performance when combined with insulation material.

In addition to its environmental and visual credentials, Indaten® offers significant economic advantages. The steel does not need to be galvanised or painted as it weathers naturally, so there is very little need for ongoing maintenance after installation. In fact, the Indaten® finish can last for up to 80 years without maintenance.



When exposed to the natural environment, Indaten® develops a beautiful patina which serves as protective armour and, over time, creates the steel's trademark natural purplish-brown colouring.

© Images courtesy of CIR Ambiente

Bringing energy to Europe

ArcelorMittal gears up to support vital new energy pipelines

ArcelorMittal has provided steels for the global oil and gas pipeline industry for more than 30 years. In the past five years alone, we have supplied more than two million tonnes of steel to the industry. ArcelorMittal's success in this highly demanding sector is largely due to our ability to consistently produce quality steels with the required properties, time and time again.

Steel quality is a critical issue for oil and gas pipelines which are subject to very high operating pressures, atmospheric conditions along their route, and corrosion from the gas and liquids they carry. Any failure in the steel can lead to catastrophic consequences. Ensuring this does not occur requires special attention at every stage of the steelmaking process.

Fine control

It starts during steel production where the chemistry of the steel and alloying elements are finely controlled. During slab production, special attention is paid to cleanliness and segregation control – important factors for pipe welding and toughness. In the last step, rolling at the hot strip mill, a reliable thermo-mechanical process is used to guarantee the final properties of the steel.

Thanks to ArcelorMittal's high-quality steels for energy pipes we have been listed as a qualified supplier for one the largest oil and gas pipeline projects in the world – the Trans Anatolian Natural Gas Pipeline (TANAP). Together with the Trans Adriatic



Picture © TransCanada Corporation

ArcelorMittal pays special attention to the chemistry of our steels for energy pipes to ensure good weldability and toughness.

Pipeline (TAP), TANAP will stretch for 2,800 km from the Caspian Sea to Italy. Construction is due to begin in late 2014.

Each project is unique

Anticipating the future needs of TANAP and other global pipeline projects, ArcelorMittal

Bremen celebrates 10 years of support for oil and gas

Since completing its first production trials in 2004 and first industrial production in 2005, ArcelorMittal Bremen has increased deliveries of steels for oil and gas pipelines by an average of 10% a year. The mill has the capacity to produce 500,000 tonnes of oil and gas pipe steels annually.

To meet customer demands for high quality energy pipe steels ArcelorMittal Bremen has made further investments including:

- A new downcoiler for steels up to 24.5 mm thick
- Heavy cropshear capable of shearing transfer bars up to 76 mm thick, improving toughness on heavy walls, especially for heavy gauge steels
- Dedicated packaging line for high strength, heavy gauge coils
- Fully automated sampling station for energy pipe grades (to be commissioned in late 2014)

has optimised our existing X70 heavy gauges and collaborated with the Global R&D centre in Ghent to develop a new X80 grade which is 24 mm thick and guaranteed at temperatures below -20°C.

Heavy gauge coils ready for shipment



ArcelorMittal's hot rolled coils offer for linepipe applications

	Grade		Yield strength (pipe)
	API 5L (ISO 3183)	EN 10208-2	
X80		L555	555 MPa
X70		L485	485 MPa
X65		L450	450 MPa
X60		L415	415 MPa
X52		L360	360 MPa
X42		L290	290 MPa

Coils have a yield strength about 50 MPa higher than required for the finished pipe to compensate for losses during forming and sampling.



Picture © Corinth Pipeworks



Picture © TransCanada Corporation

Pipes for TransCanada's Keystone oil pipeline ready to be laid.

Recent pipeline projects delivered from Europe

ArcelorMittal steels for oil and gas pipes have been utilised in the construction of pipelines in Africa, the Americas, Asia and Europe including:

- TransCanada's Keystone XL oil pipeline (36" OD in X70 at 11.8 and 13.7 mm thick) – spiral welded pipe produced by Welspun Tubular (USA)
- Denbury's Greencore CO₂ pipeline (20" OD in X70MS sour resistant grade at 11.2 mm thick) – HFW pipe produced by Corinth Pipeworks (Greece)
- TIGF's Artère du Béarn pipeline (32" OD in X65 and X70 in thicknesses of 14.5 and 22.5 mm) – spiral welded pipe produced by Siderúrgica del Tubo Soldado (Spain)
- Petronas' Sabah Sarawak gas pipeline (36" OD in X70 at 14.23 and 16.27 mm thick) – spiral welded pipe produced by Petropipe Sabah (Malaysia) for their customer Mitco (Japan)
- Chevron's Escravos offshore pipeline (20" OD in X52 at 12.7 mm thick) – spiral welded pipe produced by SCC Nigeria (Nigeria)

ArcelorMittal can produce X80 in heavy coils (up to 45 tonnes) and in thicknesses up to 25.4 mm. We apply the strictest safety standards in order to handle these heavy gauge coils.

Recognising that each pipeline project has its own unique requirements, ArcelorMittal has a make-to-order strategy. Steels are produced according to the customer's technical requirements for each project.

The combined TANAP and TAP pipelines will stretch over 2,800 km and bring natural gas to Europe from the Caspian Sea.



Thanks to ArcelorMittal's high-quality steels for energy pipes we have been listed as a qualified supplier for one the largest oil and gas pipeline projects in the world – the Trans Anatolian Natural Gas Pipeline (TANAP).

Coil weights and product dimensions are chosen to optimise productivity.

ArcelorMittal produces hot rolled coils for energy pipes at three locations in Europe: Bremen (Germany), Fos-sur-Mer (France), and Krakow (Poland). Heavy plates for oil and gas pipes are produced in Gijón (Spain) and Galati (Romania). Globally ArcelorMittal supplies steels for oil and gas applications from our mills in Brazil, Canada, Mexico, South Africa and the USA.

More info

Customer satisfaction is our key priority. To discuss your project or obtain further information about our energy pipe solutions, please contact your usual ArcelorMittal representative or e-mail: energypipes.flateurope@arcelormittal.com. You can also visit our website at: industry.arcelormittal.com/energy

Our steel for packaging: the fabric of modern life

ArcelorMittal demonstrates sustainable steel solutions for packaging at Metpack



Picture © Jeroen Op de Beeck



ArcelorMittal's stand at the Metpack fair, held in Essen (Germany) during early May, demonstrated how our steel for packaging is an integral part of the fabric of modern life. The stand featured our complete range of lightweight steels for the packaging industry. ArcelorMittal also participated in a technical conference at the show, outlining

how numerical simulations can be used to lightweight easy-open ends and other steel packaging products.

Growing environmental pressures across all parts of the packaging chain have triggered a strong renewed interest in steel solutions for packaging, largely because of its green credentials. Classed as a permanent material by the European Union, steel is 100%

recyclable and is easily extracted from waste streams with a magnet.

ArcelorMittal's stand at Metpack highlighted our offer for the packaging industry, including:

- Steels for easy-open and standard ends such as Maleis® and Creasteel®
- Steels for 3-piece can bodies – the thinnest product (0.1 mm) is made using an innovative TS520 solution
- Low and ultra-low carbon steels for drawn wall ironed (DWI) beverage cans

During Metpack, Olivier Beigneux, Packaging Team Research Manager at ArcelorMittal, participated in the Modern Global Canmaking conference. Olivier's presentation focussed on how ArcelorMittal uses finite element analysis to efficiently select the best steel specifications to open the way for further downgauging. This could result in weight reductions of up to 30% for products such as easy-open ends.

One of Metpack's highlights was the canmaking demonstration carried out by Soudronic – a developer of welding systems for metal packaging. ArcelorMittal provided Soudronic with 0.12 mm thick steel which was welded to form a 3-piece can during the show.

Apeal at InterPack



The Association of European Producers of Steel for Packaging (APEAL), of which

ArcelorMittal is a member, was represented at the InterPack fair held in Düsseldorf, also at the beginning of May. APEAL's stand invited visitors to 'Take a fresh look at Steel for Packaging', demonstrating why steel is the most sustainable packaging solution for the future. The APEAL team also organised the dedicated 'Steel Day' held during InterPack.

For more information about APEAL, please visit: www.apeal.org

For more information about ArcelorMittal's complete offer for the packaging industry, please visit: packaging.arcelormittal.com