

ArcelorMittal Europe – Flat Products



ArcelorMittal

update

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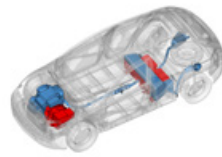
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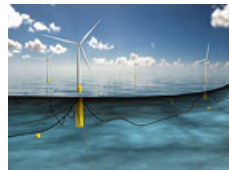
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Why the circular economy matters

Many steel industry observers have been quick to speculate whether steel has a future in Europe, given the many challenges we face today. Unlike some, I don't just believe that the steel industry has a future in Europe, I believe that having a strong European steel industry is vital to the future of manufacturing here in Europe.

Each edition of Update features an article from an ArcelorMittal opinion leader. In this issue we hear from Geert Van Poelvoorde, CEO of ArcelorMittal Europe – Flat Products and president of the European Steel Association (EUROFER).

Without a highly efficient and innovative steel sector, European industry would be at a significant disadvantage compared with other regions. If steel production moves outside Europe we would lose control of the supply chain, meaning that quality cannot be guaranteed.

This does not need to happen, if the right measures are put in place to protect steelmaking. I believe that the European steel industry's future should be built on two foundations: innovation, and recognising steel's central role in the circular economy which includes the production, consumption, re-use and recycling of materials.

The European steel industry is a major innovator. Across ArcelorMittal we employ 1,300 researchers who work on innovation every single day. For example, we work with our automotive partners for years before a car goes into production. In fact, thanks to world-class R&D we co-design and engineer cars together with automotive companies. In 2015, we invested more than US\$200m in research and development, around 80% of which was dedicated to Europe.

But innovation isn't just about making new grades of steel – our production processes are also continually being improved to make them more efficient, leading to a dramatic increase in the productivity of Europe's steel industry in the last five years. At the same time we have continued to reduce our impact on the environment and find new and beneficial uses for our by-products.

And this is where the second foundation for the future of European steel – recognising steel's role in the circular economy – comes into play.

Europe's steel industry has a major part to play in the circular economy. Thanks to its unique properties and 100% recyclability, steel is fundamental to the closed loop approach of the circular economy, which includes the production, consumption, re-use and recycling of materials. The concept of the circular economy also includes an industry's wider value to society. In the case of steel, every euro of demand for steel products creates additional demand worth €3.10 to society, of which €2.10 goes to other suppliers. This powerful leverage arises from long value chains across a range of economic activities including transport, construction, automotive, aeronautics, and electronics.

The EU's legislative proposal – the so called 'Circular Economy package' – supports the introduction of new definitions which clarify the value of various recovery operations along the waste hierarchy. Using those definitions, we can see that making steel produces around 0.86 tonnes of CO₂ per tonne on a life-cycle basis. That's 57% below the two tonnes of CO₂ generated if a tonne of steel was never recycled. With recycling rates in Europe above 85% in most sectors, factoring this type of information into decision making will help drive demand for steel long into the future, as customers increasingly make decisions that consider the carbon footprint of what they are buying.

The statistics strongly support steel as a sustainable material for the future. As well as producing strong, sustainable steel for our customers we, as ArcelorMittal Europe, must continue to spread the message that steel innovation, and the central role of steel in the circular economy, are key to the long-term future of our industry.

Geert Van Poelvoorde



Electrifying efficiency

New partnership sees ArcelorMittal electrical steels included in world's most advanced modelling tool

As one of the world's leading suppliers of electrical steels, ArcelorMittal has recently partnered with JMAG – a very advanced software modelling tool for electrical machines developed by Japan's JSOL Corporation. The partnership will ensure machine manufacturers have access to the latest data on ArcelorMittal's fully processed electrical steels, enabling them to create more efficient and compact motors.

Demand for highly efficient electrical motors is growing rapidly. The main drivers behind this growth are increased demand for electric vehicles and new regulations on machine efficiency. To achieve these targets, a complete redesign of electrical machines is necessary. This includes new geometries, new materials, and new types of machine.

ArcelorMittal data available for simulations

In the past, new electrical machines were developed using a series of mathematical calculations which were proven by prototyping. The higher the precision of the calculations, the fewer prototypes were needed to achieve the final design.

The JMAG suite of software facilitates these calculations and reduces the number of prototypes required. "Advanced material information enables our customers to make successful and accurate simulations, but

it is not always easy for them to obtain the latest data," notes Yusaku Suzuki, marketing manager at JMAG. "Now all manufacturers can access the ArcelorMittal information they need and use it to perform simulations."

JMAG selected ArcelorMittal as a partner due to our advanced research work, especially in modelling finite elements analysis. "ArcelorMittal's geographical presence is also important for us, especially in the development of electrical vehicles," explains Dr Yamada, product leader for JMAG. "ArcelorMittal's electrical steels are primarily produced in Europe, where electric vehicle development is proceeding very quickly. Through our partnership, JMAG can offer the most advanced and accurate level of simulation for hybrid and fully electric vehicles."

JMAG includes many modules and features which allow designers to analyse the

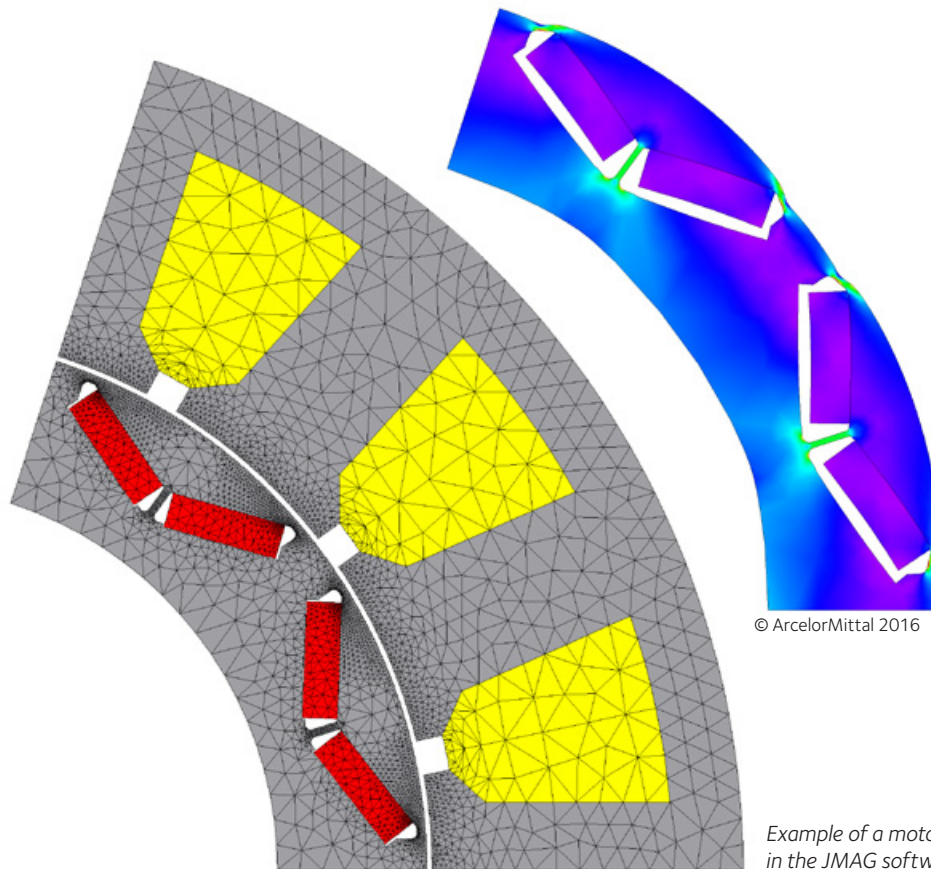
electromagnetic, thermal, and mechanical aspects of machines. This allows manufacturers to create compact machines with higher power density.

Data on magnetic and electrical fields, stress distribution, vibration, and a range of other criteria can be analysed. "You can even integrate the control mechanisms required to drive the machine into the JMAG modelling tool. Using other software, this step has to be done manually," explains Sigrid Jacobs, electrical steels portfolio director for ArcelorMittal Global R&D.

Collaboration announced at CWIEME

The collaboration between ArcelorMittal and JMAG was announced at the CWIEME coil winding expo held in Berlin during May 2016. ArcelorMittal's booth featured posters showing calculation examples, and the beneficial effect of ArcelorMittal's electrical steels on machine efficiency. During a conference presentation, JMAG also unveiled its latest technical assistance for electrical machine modelling.

"JMAG provides very advanced technical assistance for modelling," notes Sigrid Jacobs. "It can simulate both the magnetic and



Improved mechanical stress calculations in JMAG allow designers to create smaller electrical machines

© ArcelorMittal 2016

Example of a motor model created in the JMAG software

© ArcelorMittal 2016



mechanical behaviour of an electrical steel in a machine. But it can also account for the effects of manufacturing on the electrical steel. That way the OEM knows how the real machine will behave during use."

Fostering communication

Information on ArcelorMittal's fully processed electrical steels was added to JMAG on 1 May 2016. "Customers with a JMAG licence can access this information now," notes Sigrid Jacobs. "They can then contact us for additional information or support."

Dr Yamada believes this will foster communication between machine engineers and ArcelorMittal's R&D specialists: "JMAG creates a community of users who have a lot of ideas for improving electrical machines. We recommend our customers make direct contact with ArcelorMittal to discuss these concepts."

Non-oriented (NO) offer

ArcelorMittal's non-oriented fully processed electrical steels have guaranteed magnetic properties which meet or exceed the requirements of EN 10106:2015. We also offer a fully processed high frequency grade with guaranteed magnetic properties in accordance with EN 10303:2015. This norm defines standards for thin electrical steels used at frequencies above 100 Hz.

ArcelorMittal's complete NO offer includes low alloy grades which have excellent magnetic permeability, thermal conductivity, and punchability. We also offer alloyed grades with very low losses, even at higher frequencies. A wide range of coatings are available, allowing manufacturers to enhance punchability, reduce inter-laminar losses, and improve corrosion protection.

iCARE® electrical steels for mobility

While JMAG now includes details of ArcelorMittal's fully processed grades, our range of electrical steels is far more extensive.

iCARE® is ArcelorMittal's dedicated range of electrical steels for mobility solutions. Produced at ArcelorMittal Saint-Chély d'Apcher (France), the range includes:

- iCARE® Save: steels with very low losses.
- iCARE® Torque: steels with high permeability.
- iCARE® Speed: steels for high-speed rotors.

ArcelorMittal is already working with OEMs on the second generation of iCARE® grades which are tailor-made to meet OEM requirements. Many of these new electrical steels will start to appear in production vehicles around the end of the decade. ArcelorMittal will add the most promising solutions to our catalogue of electrical steels in the near future, enabling OEMs to develop the next generation of highly efficient electrical mobility solutions.

More info:

automotive.arcelormittal.com/icare

More info:

jmag-international.com

More info:

industry.arcelormittal.com/electricalsteels

Products & Solutions

Product list

Please select the language of your choice:

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[Selection guide \(products per application\)](#)

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More info

Should you have a specific question/remark on a specific product data sheet, just click on the e-mail address below each product data sheet. By clicking on that link, your remark will automatically be forwarded to the relevant product manager.

[Data sheets can download either catalogue](#)

New resources help customers find the right steel

Discover and explore our new product catalogue

ArcelorMittal Europe – Flat Products has recently updated its entire online catalogue for industrial applications. This includes hot and cold rolled, enamelled, electrical, organic, and metallic coated steels and plates. The revamped product catalogue gives customers access to the technical information they need to make informed decisions about our steels and solutions. And we've incorporated customer feedback to ensure that information is as clear and easy to understand as possible.

The catalogue includes all steels and coatings which have proven themselves in long-term use – a range ArcelorMittal Europe – Flat Products can guarantee. Each is listed with details of its advantages, applications, brand correspondence, dimensions, mechanical properties, chemical composition and much more. “Brand new products are only added once we have verified that they are robust,” explains Alain Parent who manages the product catalogue.

Existing product sheets in the catalogue are updated whenever there are major developments notes Alain: “As we are constantly reviewing and improving our offer, we ask our customers to always check the online product sheet for the most up-to-date technical data. For example, when a new standard for hot dip galvanisation (EN 10346) was published recently, all of the data sheets for our metallic coated products were updated.”

‘AM FCE’ stands for added value

As well as products which meet the minimum standards and norms, the product catalogue includes a selection of steels which bear the ArcelorMittal quality label. You can easily recognise them as the product name is followed by the letters ‘AM FCE’. This ArcelorMittal quality label ensures that the properties of the product exceed the minimum European standard.

For each steel grade, the full dimensional feasibility is included in the product catalogue. “It’s important to note that this is just a snapshot of what is available,” notes Alain Parent. “Developments in mill flexibility enable us to modify the dimensional range of our products constantly. If you have a requirement that is not listed, check with your local ArcelorMittal commercial and Client Technical Support (CTS) teams.”

Direct contact with experts

ArcelorMittal’s Global R&D teams and product specialists are available to answer your questions or work with you to co-engineer your next generation of products. “There is a form at the end of each data sheet which puts customers in direct contact with the experts,” says Alain Parent. “ArcelorMittal is at the forefront in Europe when it comes to technical assistance, so contact us today to find out how we can help.”

The selection guide from the previous product catalogue has been replaced with a completely new tool – Steel Advisor (see next page). The product catalogue search engine has been overhauled, allowing customers to do a text query to find the exact product they require. “Once you’ve found the data sheets of your choice, you can download a PDF of your own personal catalogue to share with customers or colleagues,” notes Alain Parent.

More info

The ArcelorMittal Europe – Flat Products’ catalogue is available in English, French, German, and Spanish. It can be accessed at: industry.arcelormittal.com/catalogue











Find the right product with Steel Advisor

© Aware

To support our new product catalogue, ArcelorMittal Europe – Flat Products has launched Steel Advisor for Industry. This new online product selection guide helps our customers to find the right steel solution for their applications. Steel Advisor is available as an app (for both iOS and Android devices) or it can be accessed from the industry.arcelormittal.com website.

With **Steel Advisor**, customers can locate the latest information on ArcelorMittal's wide selection of steels for eight very diverse industrial sectors including:

-  Building and construction
-  Domestic appliances
-  Electrical machines
-  Energy
-  Industrial equipment
-  Infrastructure
-  Shipbuilding
-  Yellow and green goods

You can locate information quickly through the intuitive menu. A list of the best-in-class ArcelorMittal solutions is also shown for each application.

Colour and aspect search criteria

The app also features a palette selector for applications where colour or surface aspect are important. This includes many of ArcelorMittal's products for building and construction or home appliances such as the Granite® and Estetic® ranges. A project gallery is available to inspire product designers and specifiers such as architects.

"Steel Advisor is the easiest way for ArcelorMittal's industry customers to find the exact steel solution they are looking for," says Tabrez Ahmad, product marketing lead for hot and cold rolled products.

"At their fingertips they have all the information they need to find the best-in-class products and coatings for their application," notes André Lavaud, who is responsible for coated products. "And we have new content and features to be added in the coming months."



More info

industry.arcelormittal.com/industry/app/steeladvisor

Download the App:



Apple App Store



Google Play Store



A new water distillation column at ArcelorMittal Fos-sur-Mer has reduced H₂S 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_x and SO_x, 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_x 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_x 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 CO₂ 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.”

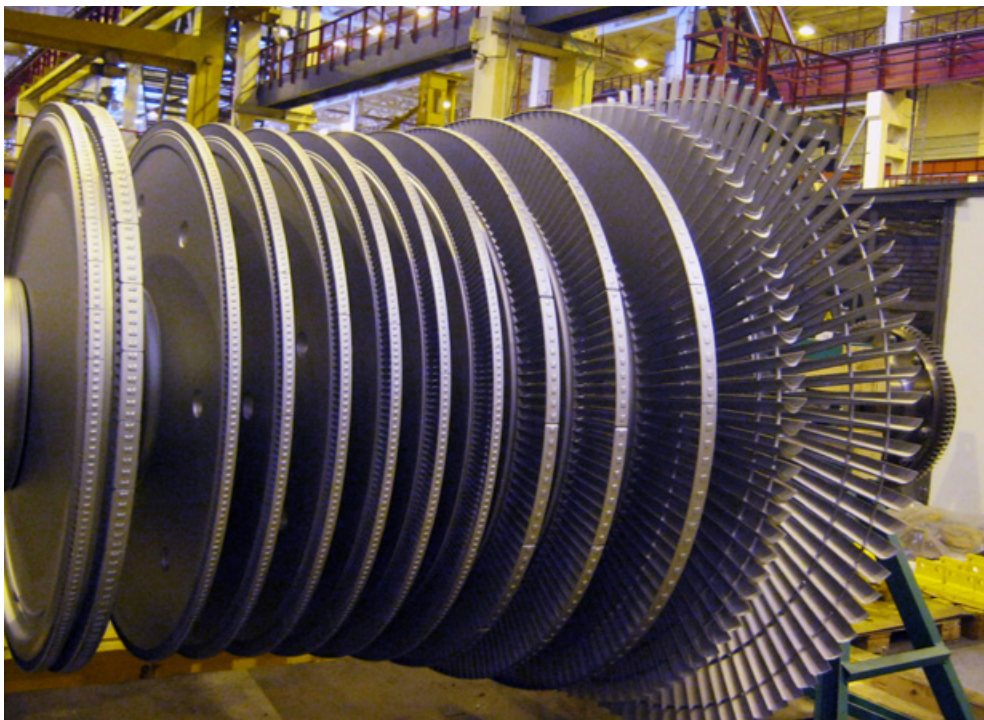
Low NO_x burners were installed on the mill’s second walking beam furnace (WBF)

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 (H₂S) 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.



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

"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.



© Rittheth Kitsirvoraphanh

Steel Envelope leads to success

Granite® HDS is a perfect solution for industrial and marine locations.

Putting ArcelorMittal products in architects' hands results in new look for waste and energy plant

The Sittomat incineration and waste disposal plant in Toulon (France) generates steam and energy from household rubbish, providing electricity and heating to the nearby community. In July 2013, the plant's owners decided to replace the existing zinc roof and facade cladding which was aging rapidly due to the local marine environment. But in May 2015, ArcelorMittal Europe – Flat Products presented its Steel Envelope to the director of the company responsible for the renovation – and everything changed!

During the meeting with Vinci's director Pierre Bourgoïn, the ArcelorMittal team demonstrated our innovative steel solutions for roofs and facades. Following a discussion about the Sittomat plant, Pierre Bourgoïn and his team expressed an interest in realising the 8,000 square metre roof of the Sittomat plant in **Granite® HDS**. The architect's original plan had been to fabricate the roof in zinc. Offered with a double-sided 35 micron organic coating, Granite® HDS was a perfect solution for the industrial site and marine location.

Strength and coating make Granite® HDS the right choice

While Granite® HDS was not his initial choice of material, the architect was quickly convinced by the steel's thick paint coating which includes a 15 micron primer and 20 micron top coat. Granite® HDS was lighter and much more cost effective than zinc. The use of Granite® HDS allowed Vinci to realise the architect's detailed curved roof design thanks to its double-sided coating and strength.

Granite® HDS offers very good corrosion and UV resistance as it is designed for use in cladding and roofing applications. It is also easy to form. As part of **ArcelorMittal's Nature range**, all Granite® products are free of hexavalent chromium and heavy metals. "I was surprised and pleased that Granite® HDS from ArcelorMittal could be the answer for such a curved roof, which I originally imagined in another material," said Thomas Fogacci from FOGACCI + FOGACCI ARCHITECTES who designed the renovation.

Short timeframe, quick response

In June 2015, Vinci (who is usually our customer's customer) placed an order directly with ArcelorMittal for 80 tonnes of Granite® HDS, with first deliveries required in July. Due to the tight timeframe for the project, 2.5 tonnes of the Granite® HDS coils were delivered from ArcelorMittal

More info:

industry.arcelormittal.com/steelenvelope



© Rithideh Kitisrivoraphanh

The curved roof of the Sittomat incineration and waste disposal plant takes shape.



© Rithideh Kitisrivoraphanh

This industrial facility gets a clean modern look thanks to Granite® HDS.

Atlantique and Lorraine (Montataire, France) to the Sittomat plant in Toulon. This was the first time ArcelorMittal Europe – Flat Products has had to deliver material straight to a construction site. Once onsite, the coils were converted to roof profiles in an innovative mobile unit operated by a sub-contractor to Triverio Construction.

By using the portable profiling unit, the project team saved valuable time and money as there was no need to use a specialised profiler. Panels could be erected just after profiling, allowing Vinci to closely control the quality and technical aspects of the profiles. This was particularly important due to the curved shape of the roof. The environmental impact of the project was also lowered as the Granite® HDS did not need to be sent to Triverio's plant in Italy for processing, and then back to Toulon.

The high complexity of the project and the innovative design meant a number of changes were made to the order during construction. These changes required flexibility from ArcelorMittal's entire organisation. The customer was extremely pleased with ArcelorMittal's quick response times, flexibility, sharp price, product quality, and the overall handling

of the order. "ArcelorMittal demonstrated leadership and closely monitored our specific needs – especially in terms of delivery time, flexibility, and product quality," noted Yann Lambert, manager of the Sittomat project for Vinci.

Final deliveries of steel were made by ArcelorMittal in late September 2015. Work on the roof and facade of the Sittomat plant was finished by November,

Products. "Steel, and especially our Granite® HDS, was an out-of-the-box solution for this project, but one that would not have come to the architect's attention without Steel Envelope. The success of the project shows the strength of Steel Envelope, and that great teamwork inside ArcelorMittal Europe makes it possible to do something differently, positively and quickly, even in the current economic environment."



© Rithideh Kitisrivoraphanh

The use of steel allowed the renovation to proceed quickly.

in time for winter. The traditional panels for the building's facade were processed and delivered by our customer Bacacier.

Creating dialogue with architects

"This project shows that it is possible to promote steel successfully to key players in the building process including architects, contractors, and design offices," notes Gilles Lacroix, key account manager for ArcelorMittal Europe – Flat

Steel Envelope is continuing to help ArcelorMittal teams around Europe promote our extensive range of aesthetic products to architects, contractors, design offices, and construction companies. It has created a direct dialogue between steelmaker and key players in the building process and enabled ArcelorMittal to gain a good understanding of the problems they face.



The Arcus campus is formed as a Venetian square and features Granite® HDX throughout.

Impressive steels transform our built environment

ArcelorMittal's Granite® range of steels for facade and roofing solutions is available in an amazing array of colours and textures. Colours can even be tailor-made to transform our built environment into a work of art. As they are part of our Nature range and ECCA Premium® certified, you can be assured that ArcelorMittal's Granite® products are free of harmful chemicals and heavy metals. Good for the environment, good for life.

Granite® HDX allows Arcus College to reach for the sky

Arcus College in Heerlen (the Netherlands) provides vocational training for up to 4,000 students each year. The College completed construction of its new campus using Granite® HDX from ArcelorMittal Europe – Flat Products. By utilising Granite® HDX, the architect achieved the unique combination of colour and finish the customer required, but at a significantly lower cost.

IAA Architecten initially designed the building to be completed in a gold-coloured aluminium facade which is highly fashionable, but actually found everywhere across the Netherlands. Instead Jack Muller BV, a leading steel service centre in the Netherlands, proposed a truly unique solution – ArcelorMittal's Granite® HDX in a champagne-gold finish.

Guarantee unmatched by alternative materials

Granite® HDX comes with a guarantee of up to 35 years thanks to its 55 micron coating. "This guarantee was highly attractive to both IAA Architecten and the customer, and could not be matched by the proposed aluminium solution," notes Anita van Stiphout, commercial manager at Jack Muller BV which sourced the Granite® HDX



The champagne-gold colour of the Granite® HDX was specially created for Arcus.

Photography: ©Little Planet

coils from ArcelorMittal and cut them into sheets. Jack Muller BV then sent the cut sheets to ZND Nedicom who arranged for them to be finished in Germany.

Each panel was created in a complex pressing operation. "The architect chose this look to create a unique design," says Jack Muller, director and owner of Jack Muller BV. "It was created in a single step by a specialised company in Germany. The resulting long lines look like they are

reaching for the sky, emphasising the strength and height of the buildings." The lines also give the panels uniformity, further reinforcing the cohesive look across the entire site.

Another factor that swung the decision in favour of Granite® HDX was cost, explains Coen van Gorp, key account manager for ArcelorMittal in the Netherlands: "Normally when someone proposes an alternative material to an architect it is more

expensive, but the Granite® HDX solution we suggested was more cost effective."

Living colour adds complexity

Colour flexibility was also very important for the architect. The champagne-gold colour used to coat the Granite® HDX changes subtly in different lights, adding complexity to the building facade. "It's a living colour, not a flat metallic surface," notes Glenn Muller, chief technical officer at Jack Muller. "The colour had to be created by ArcelorMittal, so it is completely unique and makes the Arcus College campus stand out. The architect and builder ZND Nedicom only approved the finish after the third colour match."

"Everyone is impressed by the colour and the material," notes Coen van Gorp. "That was only possible thanks to the magnificent teamwork between all parties involved." It's a sentiment that is echoed by Glenn Muller: "The architect would not have opted for Granite® HDX without the support of ArcelorMittal, Jack Muller BV, and ZND Nedicom. We are very proud to have been involved in creating such a beautiful, practical, and durable building."



Each panel was formed in a complex pressing operation to create long, clean lines.



© Kurp-dach

St Bartholomew's in Troszyn (Poland) features a new Granite® Impression roof.

Granite® Impression gives new life to St Bartholomew's church

Granite® Impression from ArcelorMittal Europe – Flat Products has been used to create the new roof of St Bartholomew's fieldstone church in Troszyn (Poland). The organic coated steel was selected to replace the existing roof which had deteriorated significantly.

ArcelorMittal's Granite® Impression – Brown Agate was chosen for the new roof due to its authentic look, excellent corrosion resistance, light weight, and low cost compared to traditional solutions such as copper or clay tiles. It has a 35 micron coating and is offered with an automatic guarantee of up to 15 years.



© Kurp-dach

Granite® Impression is suitable for deep drawing into the most extreme profiles.

Finishes inspired by Nature

Developed specifically for roofing and facade applications, Granite® Impression provided the perfect combination of aesthetics and functionality for this sensitive roof renovation project. It is available in five different finishes which are inspired by elements from nature including: Agate, Cloudy, Elephant, Snake and Wood. All colours are stable over time thanks to the excellent UV resistance (RUV4) of Granite® Impression. With its brownish-red shade, Granite® Impression – Brown Agate includes polished patterns which imitate the surface of copper, but at a significantly lower cost.

The solution was selected by Kurp-dach, a local Polish fabricator of steel roofs and long-time ArcelorMittal customer. ArcelorMittal supplied Kurp-dach with almost 16 tonnes of Granite® Impression – Brown Agate steel.

Flexible paint system simplifies forming

Two different metallic substrates were utilised: S250 Z275 and S320

Z275. Almost 12 tonnes of S250 was supplied in coils 0.6 mm thick and 1,250 mm wide. Around 4 tonnes of S320 was supplied in coils 0.7 mm thick and 1,222 mm wide.

The roofing profiles were manufactured by Kurp-dach and then transported to the site. Granite® Impression has been specially developed for deep drawing into the most extreme profiles without any damage. This ensured the panels used on St Bartholomew's roof could be formed without affecting the paint layer.

Granite® Impression is unique in Europe thanks to its aesthetic characteristics. It was recently certified with the ECCA Premium® label, a quality and sustainability certification which is awarded by the European Coil Coating Association (ECCA). The ECCA Premium® label gives users of pre-painted steel a guarantee that the product has been made to the highest possible standards and with respect to the environment, people, and health.

Keeping our canned food safe

Steels for packaging keep food nutritious and tasty for longer



Every part of a metal can is recycled, making steel the most recycled packaging material in Europe.

In 2014, European consumers purchased more than 68 billion metal packages containing everything from food to health and beauty products. This figure is expected to increase by five billion units by 2018. One of the most popular segments is processed food where steel is the leading material, accounting for 70% of all packaging containing fruit and vegetables, fish and seafood, and pet food. There are good reasons why consumers are making this choice – steel simply protects food better than other materials. It's also very cost-effective for food producers, and 100% recyclable.

Research carried out in 2015 by the SGS Fresenius Institute (Germany) has shown that the vitamin and mineral content of canned vegetables are just as high as that of freshly cooked vegetables. The study also showed that steel cans help to retain product freshness and flavour for up to three years, and without the need for added preservatives or refrigeration.

Complete offer for food packaging

ArcelorMittal Europe – Flat Products has a complete range of steels for food packaging. Our offer includes **Creasteel®**, a new line used to create eye-catching drawn cans. We also offer **Maleis®**, a state-of-the-art steel specifically designed for use with easy-open ends. The higher strength and elongation of Maleis® improves the consumer's experience.

By working closely with can makers, ArcelorMittal is able to answer their demands for lightweight steel cans which are affordable to produce. Steel food cans are now 46% lighter than they were 30 years ago.

We also help can producers to make life easier for consumers by improving packaging convenience with solutions such as easy-open ends and microwavable containers which go directly from oven to table.

ArcelorMittal's footprint closely matches that of our customers, ensuring high reactivity and logistics efficiency.

Protecting today, preserving tomorrow

Steel offers a perfect solution to food waste and food security. Fruit and vegetables are typically canned within three hours of being harvested, limiting spoilage. Once canned, the contents are protected against light, air, and liquids by the steel. This protects the nutritional value of the contents and prolongs shelf life. Steel packaging is also impact- and puncture-resistant in the supply chain and single portion dispensing options are widely used. This reduces product loss and consumer waste even further.

Steel is also the easiest packaging material to recycle, and the most recycled packaging material in Europe. As a permanent material, steel can be recycled over and over again without losing any of its properties. That makes steel packaging an ideal solution for a circular economy.



Steel preserves the nutritional value of canned food.

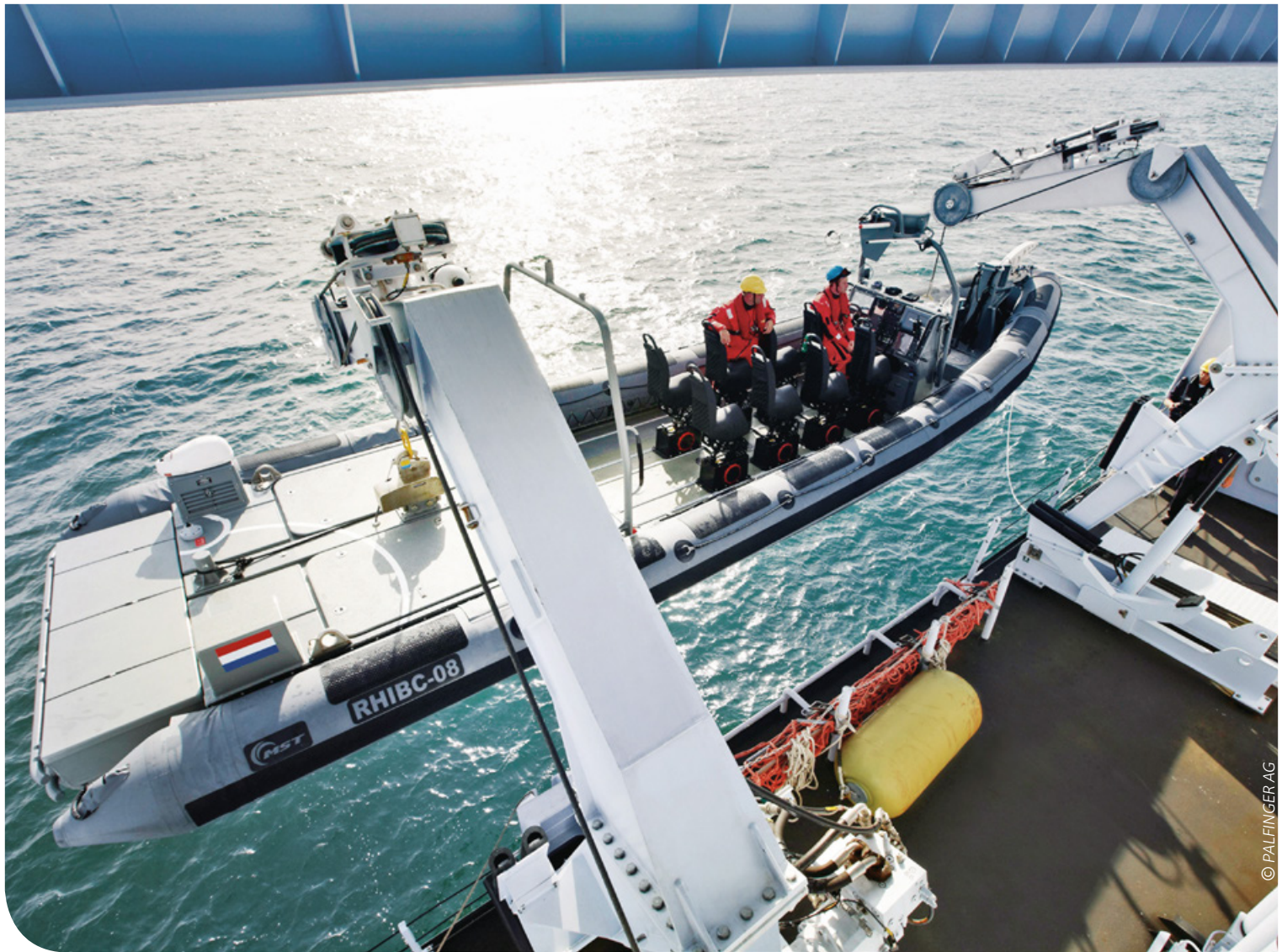


Easy-open ends have simplified life for the consumer.

More info:

Visit our dedicated steels for packaging website for more information about our offer. You can also find out more about packaging and steel's important role in preservation through the videos in the Multimedia section:

packaging.arcelormittal.com



© PALFINGER AG

Palfinger specialises in maritime and mobile lifting solutions

Extending lifting capacity and reach

New high strength grades for yellow and green goods give OEMs the strength to innovate

Palfinger is already a leading supplier of mobile and maritime lifting solutions, and a long-term ArcelorMittal customer in Europe. But new products from ArcelorMittal are helping Palfinger develop innovative cranes which can reach further and lift heavier loads. The company has recently tested new grades in our [Amstrong® Ultra range](#) of high strength steels which are specifically designed for yellow and green goods.

“Innovation is critical to the success of our business,” explains Palfinger’s global strategic purchasing manager. “We are the market leader and we need to adapt our offer to maintain that leadership position.”

Increased reach leads to success

Palfinger’s ability to innovate has seen the company increase the reach of its

cranes significantly over the past decade. In 2006, Palfinger cranes had an average of 4.8 booms – the arms that allow the crane to reach higher or further. By 2016 this figure had risen to between 6.8 and 8 booms per crane.

This increase has been achieved through improved design, made possible by

the use of high strength steels such as ArcelorMittal’s Armstrong® Ultra range. Armstrong® Ultra grades start at 650 MPa, rising to 1,100 MPa for the latest ultra high strength grades.

Palfinger has recently completed testing of Armstrong® Ultra 900 and 960. “These grades are produced by very few mills in the world,” notes the Palfinger purchasing manager. “It was a typical technical project for us. We tested our laser cutting, folding, and bending operations on the trial pieces ArcelorMittal supplied, and then exchanged our experiences with the steelmaker.”

New steels allow profile innovation

The higher strength of the 900 and 960 MPa grades has enabled the Palfinger team to develop a new profile for booms as Palfinger's purchasing manager explains: "The existing profile had six edges per boom, but the new profile now has 13. This is closer to a perfect circle and will give our cranes additional lifting capacity and reach." Palfinger expects to begin integrating the new grades into the main booms of its cranes later this year.

"Our latest heavy duty and TEC cranes are the first to use a new design for the extension boom system – the P-profile (the P stands for polygon)," says Palfinger's purchasing manager. "The P-profile offers enhanced stability compared to conventional extension booms. At the same time, the revolutionary design dramatically reduces the crane's dead weight."



The mobile lift shows the main boom (red) and additional booms (black) which increase the reach of the crane.

ArcelorMittal steels are only utilised at Palfinger's European plants. The company has manufacturing sites worldwide and would like to take advantage of ArcelorMittal's global footprint where possible. "It is important for us to have a local steel supplier," says the Palfinger purchasing manager. "We're working with ArcelorMittal to improve the quality of the steels produced in places like South America. If they can get the quality at those mills up to the European level, we would be a worldwide customer."

Homogenous mechanical properties increase yield

The main advantage of ArcelorMittal's Armstrong® Ultra high strength grades are their guaranteed mechanical and in use properties which meet and exceed the requirements of the standard. "This is achieved through tight chemistry and



Palfinger lifting solutions are used in a wide variety of applications.

stringent control of the metallurgical process and parameters at the hot strip mill," explains Dirk Sauer, ArcelorMittal's business development manager for yellow and green goods. "The homogeneous mechanical properties over the length of the coil enable customers to adjust their machines and tools for the first sheet, and then process the rest of the batch without changing a parameter. This increases productivity significantly."

Another advantage of working with ArcelorMittal is our ability to produce plates with a larger width than the competition. As the purchasing manager notes, this also has a big impact on Palfinger's processes: "Larger plates reduce scrap. Other suppliers can only provide plates which are 1,500 mm wide. ArcelorMittal can provide 1,800 mm. That means we can produce our largest parts from a single plate."

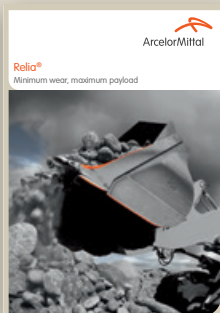
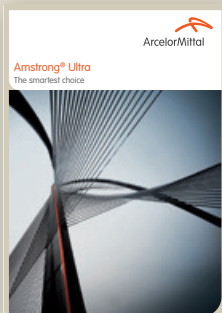
The excellent mechanical properties of Armstrong® Ultra are already enabling OEMs like Palfinger to create innovative and market-leading solutions. The additional strength of these grades also allows manufacturers to lighten the weight of their products through down-gauging.

To find out how ArcelorMittal can help your business co-engineer the next generation of yellow and green goods visit:

industry.arcelormittal.com/equipment

New Armstrong® Ultra and Relia® offer launched at BAUMA

bauma
2016



ArcelorMittal Europe – Flat Products launched its new **Armstrong® Ultra** and **Relia®** brands at the BAUMA trade fair held in Munich during April. The new high strength steels are designed specifically for yellow and green goods such as agricultural equipment, earth moving machinery, and mining vehicles.

The Armstrong® Ultra range of high strength steels combine excellent

formability with toughness at low temperature, and fatigue resistance. The range includes steel grades with a minimum yield strength ranging from 650 up to 1,100 MPa. Armstrong® Ultra grades are available as thermomechanically rolled coils, sheets/plates or as quenched and tempered sheets and quarto plates.

Relia® is ArcelorMittal's range of high hardness, low-alloyed martensitic steels. Relia® grades obtain their hardness through intense water quenching during manufacturing. As a result, Relia® offers outstanding resistance to abrasion – typically three to six times higher than construction steels in the 355 MPa range. Our Relia® grades were developed in conjunction with ArcelorMittal subsidiary Industeel which offers a complete range of steels for high wear applications.

PALFINGER

LIFETIME EXCELLENCE

About Palfinger

Founded in 1932, Palfinger creates a range of innovative, reliable, and cost-effective lifting solutions for use on commercial vehicles and in maritime applications. Palfinger's core product is the Loader Crane which has close to 150 models and a market share of more than 30 percent.

Palfinger is headquartered in Austria, but sells its lifting solutions into more than 130 countries worldwide. The company has 34 manufacturing plants around the world. In 2015, Palfinger employed almost 9,000 people and had sales revenue of €1,230 million.

More info: www.palfinger.com

Hybrid vehicles get S-in motion[®] weight savings



New study demonstrates lightweight potential of advanced steels in hybrid vehicles

Tighter emissions regulations have led carmakers to explore different powertrain options for their vehicles. Despite an early focus on fully electric vehicles, most automotive analysts and manufacturers now agree that they will make up less than 10% of the global fleet by 2020. Instead, hybrid powertrains will offer the best cost-benefit compromise for OEMs while meeting consumer demand for unlimited range.

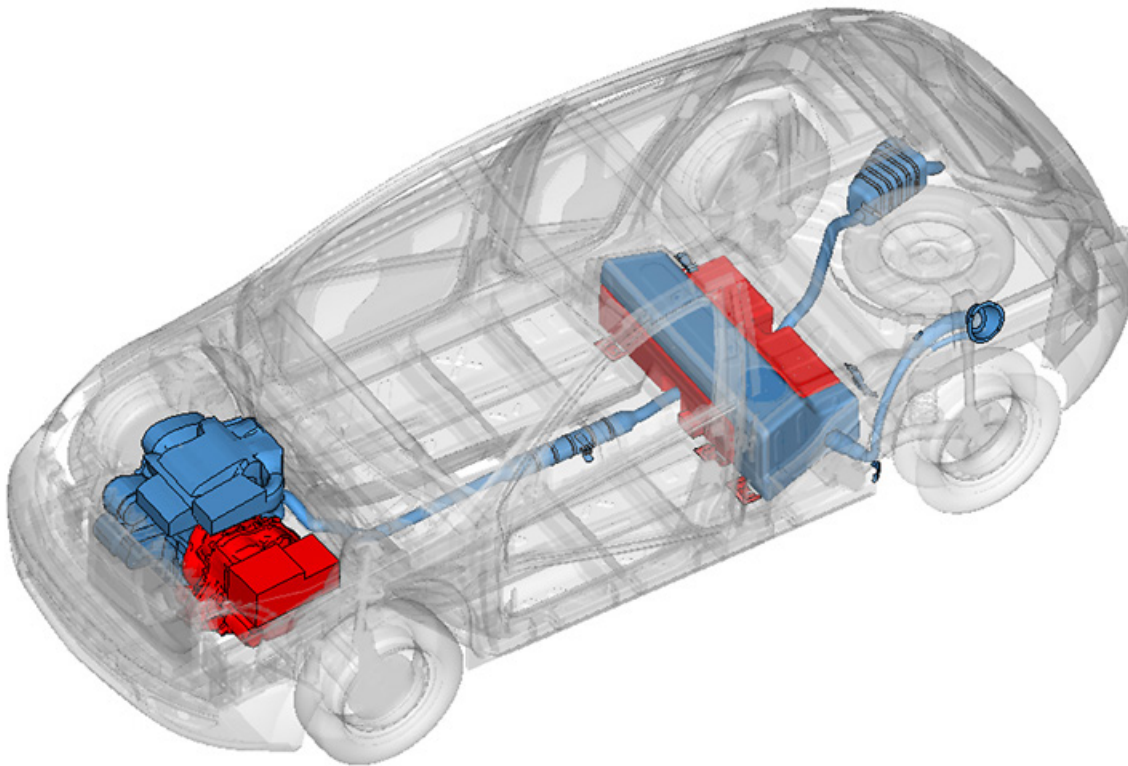
Hybrid powertrains present unique challenges for car designers. As well as accommodating a conventional internal combustion engine (ICE), the vehicle also has to carry a battery and electric motor. This adds almost 200 kilograms to the weight of a typical C-segment vehicle and requires additional reinforcement in the body-in-white (BIW) structure.

S-in motion[®] applied to plug-in hybrids

These constraints led ArcelorMittal to adapt our **S-in motion[®] solutions** to plug-in hybrid electric vehicles (PHEVs). S-in motion[®] has already proven that significant weight savings are possible in the BIW of conventional ICE vehicles and pick-up trucks through the use of

advanced high strength steels (AHSS) and technologies such as laser welded blanks (LWBs).

The **S-in motion[®] PHEV study** showed that it was possible to decrease the BIW weight by increasing the use of AHSS (including hot stamped press hardened steels) to 57%, up from 37% in the baseline vehicle. The number of LWBs was more than doubled to 18 parts (up from 8) and hot stamping was utilised in 31% of the BIW (up from 6%). LWBs are an effective way to reduce weight while still maintaining performance by putting exactly the right steel in the right place.



Two powertrains – a conventional ICE engine (blue) and an electric motor and battery (red) – add significant weight and complexity to the BIW of a PHEV.

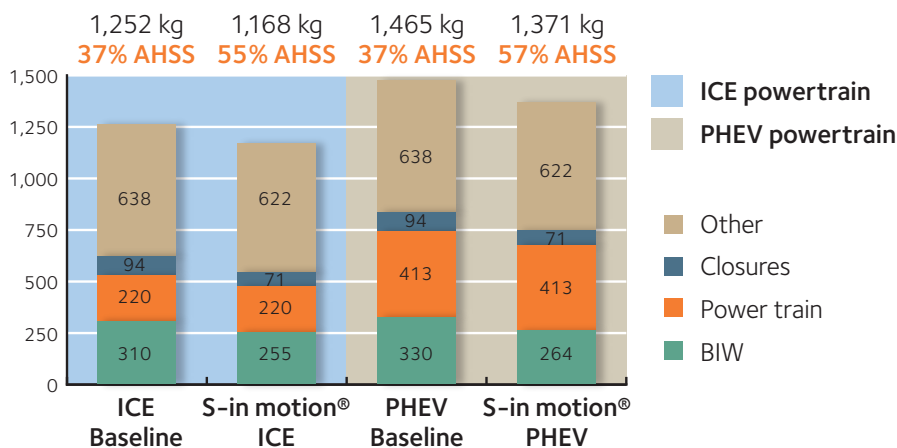
The final results of the S-in motion® Plug-in Hybrid Electric Vehicle (PHEV) study showed that ArcelorMittal's advanced steels and solutions have the potential to cut 55 kg (17%) from the BIW, leaving it just 9 kg heavier than the lightest ICE BIW.

Press hardened steels (PHS) are utilised for 24 parts of the PHEV BIW, mainly Usibor® 1500 and Ductibor® 1000. PHS offer high mechanical resistance for complex geometries without springback.

Weight saving at little cost

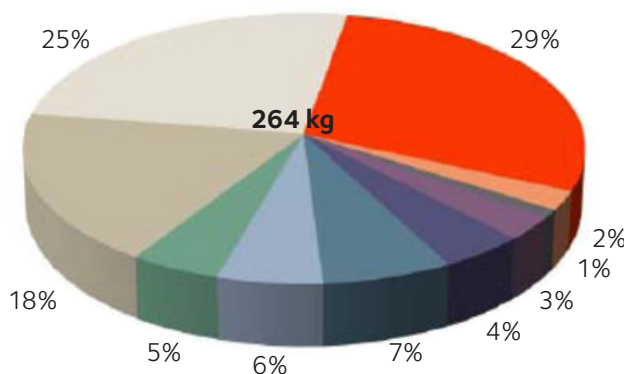
A significant challenge was ensuring that the optimised PHEV could meet 2015 Euro NCAP load cases in side, pole, and front offset crash scenarios. The pole crash test is one of the most difficult to satisfy as the PHEV has additional weight in the front (electric motor) and the back (battery pack). The solution was to make a hot stamped cross member from Usibor® 1500. This offers outstanding protection against side impacts.

The final results of the S-in motion® PHEV study showed that ArcelorMittal's advanced steels and solutions have the potential to cut 55 kg from the BIW, leaving it just 9 kg heavier than the lightest ICE BIW. S-in motion® again proves that advanced steels have the potential to dramatically reduce vehicle weight while improving safety, and at neutral cost to the carmaker despite the higher cost of PHS and LWBs.



The BIW of the S-in motion® PHEV weighs just nine kilograms more than that of an optimised S-in motion® ICE solution.

Baseline weight breakdown / final weight breakdown



The increased use of ArcelorMittal's advanced high strength steels can reduce the BIW weight of a PHEV by 55 kilograms, resulting in a very light BIW and structure weighing just 264 kg.

57% AHSS Processes

Hot stamping..... 24 parts
Stamping of LWB. 18 parts
Roll forming..... 3 parts

Tensile strength

- PHS > 1,300 MPa
- PHS > 450 MPa
- AHSS > 1,500 MPa
- AHSS 1,180 MPa
- AHSS 900 MPa
- AHSS 780 MPa
- AHSS 590 MPa
- AHSS 450 MPa
- HSS
- Mild Steel

More info:

automotive.arcelormittal.com/Sinmotion

Quality and sustainability guaranteed

Granite® pre-painted steels for outdoor applications qualify for ECCA Premium® label

Launched in 2014, the ECCA Premium® label certifies the quality and sustainability of pre-painted metals for outdoor applications. In February 2016, the last ArcelorMittal Europe – Flat Products coil coating line received the ECCA Premium® label. That makes us the first pre-painted steel manufacturer to have all coil coating lines qualified. And all of our Granite® products are certified!

One of the main advantages of the label for ArcelorMittal's customers is the high quality level it guarantees. "Standards for pre-painted metals vary widely," notes Yvonne Barcelona, director of the European Coil Coating Association (ECCA). "For example, **ECCA Premium®** requires the coil coater to have tested the product in outdoor conditions for corrosion and ultraviolet (UV) exposure. Not everyone is doing this."

Durability and sustainability proven

In addition to corrosion and UV resistance, the label also guarantees other properties of the final product including the thicknesses of the paint and the underlying galvanised coating. "In Italy many customers demand coated steel with a thin zinc coating or paint layer to minimise costs," notes Sergio Stecca, quality department manager at ArcelorMittal Piombino which recently completed the certification process. "We want to differentiate products such as our Granite® range with the ECCA Premium® label and prove to our customers that they are both durable and sustainable."

The label also ensures the coated steel meets the requirements of European legislation such as REACH. "Products with the ECCA Premium® label do not contain substances of very high concern," explains Yvonne Barcelona. "It's not just suppliers from outside the EU which are failing to meet this requirement."

To qualify for the label, each coil coating line is certified by an external auditor. "The audit checks the quality of the final product, not just the processes," notes



The new ECCA Premium® ad campaign will raise awareness of this quality label for pre-painted metal.

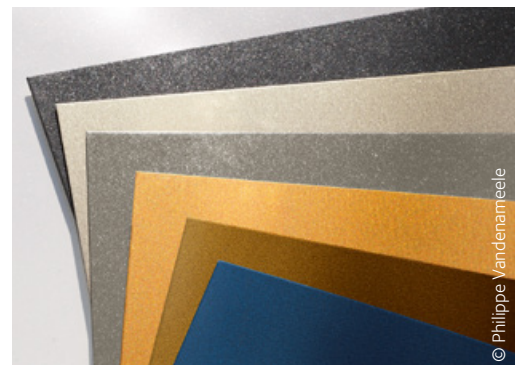
Sandrine Abisset Delobel, manager of operational quality at ArcelorMittal Atlantique and Lorraine. "As well as evidence of testing, we had to provide samples of the products."

At ArcelorMittal Eisenhüttenstadt, the local quality team did its own internal audit before the assessor arrived as quality manager Martin Lohoff explains: "The external audit gave us a chance to check we had the correct processes in place. One minor change was needed to formalise a quality step. We were carrying out that step, but we hadn't documented it before."

First pre-painted steel producer with label

Four companies now hold the ECCA Premium® label, though three are producers of pre-painted aluminium. ArcelorMittal Europe – Flat Products is the only steel producer to be fully qualified so far.

Customers will be seeing a lot more of the ECCA Premium® label, as the organisation gears up for a new ad campaign. "Ads will be published in selected industry magazines and on various websites," notes Yvonne Barcelona. "We're targeting architects and other specifiers such as profilers and sandwich-panel manufacturers. Our goal is to increase the use of pre-painted metals which meet the ECCA Premium® standard."



ArcelorMittal's newborn Granite® Silky Shine, a pre-painted steel for facade with a high-gloss luxurious skin

More info:

www.eccapremium.com

Download our certificates:

industry.arcelmittal.com/ECCAPremiumlabel



Harmony on the seas

© STX

ArcelorMittal logistics and steels help STX France meet demanding schedule

The world's largest cruise ship has been a hive of activity for the past three years as it was constructed at the STX France shipyard in Saint-Nazaire. The Harmony of the Seas is the third and largest cruise ship in Royal Caribbean's Oasis class. As the sole supplier of flat steel, ArcelorMittal has played a leading role in this extraordinary industrial adventure.

There's a saying that the longest journey always begins with the first step. For the construction of this giant of the seas, it all started with the cutting of a steel sheet in September 2013.

Between that date and December 2014, ArcelorMittal delivered over 47,000 tonnes of steel plates and sheets to STX France. The steel was used to construct the hull and decks of the Harmony of the Seas: a giant puzzle of over 400,000 metal parts.

Supplier and partner

ArcelorMittal had to demonstrate an impeccable operating performance over time to satisfy the requirements of STX France. The project challenged ArcelorMittal on punctuality, regularity, reliability, and quality... a challenge that ArcelorMittal Gijón (plates), ArcelorMittal Fos-sur-Mer (coils), and ArcelorMittal Distribution Solutions Saint-Nazaire (sheets) were more than prepared to meet.

Their cooperation enabled STX to complete construction of the ship's steel shell on schedule in June 2015.

On Thursday 10 March 2016, the Harmony of the Seas left port for the first time to test control, propulsion, and other systems that could not be tested at the dock. By May 2016 the ship had been delivered to Royal Caribbean International and was taking passengers on its first cruise around the Mediterranean.

"Establishing long-term relationships with suppliers is a key driver of performance," says Serge Hily, metal purchasing director at STX. "The partnership we have initiated with ArcelorMittal demonstrates the relevance of this strategy. The personal and close cooperation we have developed with ArcelorMittal's commercial and logistics teams, and the technical support we have received, enabled us to face the main challenges of this project in a very effective way. Both ArcelorMittal and STX can be proud of the result."

As an acknowledgement for this result, STX awarded ArcelorMittal for 'Long Term Cooperation' on their Supplier Symposium on 3 May 2016 aboard of the 'Harmony of the Seas' cruise ship. It was Reiner

Blaschek, CMO Business Division North ArcelorMittal Europe – Flat Products, who accepted this prestigious award in the name of all ArcelorMittal entities involved in this success story.

The partnership between the two companies led to STX France selecting ArcelorMittal as the sole supplier of flat steel for the construction of three new ships.

In total ArcelorMittal will deliver 116,000 tonnes of steel for these projects. First deliveries began in January 2015 and will go on into 2018.

ArcelorMittal will continue to put our full range of solutions at the disposal of our partner STX France to ensure the company can seize every opportunity in the cruise ship market and remain at the top of the wave.

Harmony of the Seas in figures

The Harmony of the Seas is the largest cruise ship ever built as the numbers show:

- **Length:** 362 metres
- **Width:** 66 metres
- **Passenger capacity:** 6,300 in 2,700 cabins
- **Crew:** 2,200
- **Work time:** 10 million hours



Corinth Pipeworks plant at Thesvi.

Securing Europe's energy supply

ArcelorMittal to supply over 375,000 tonnes of steel for pipelines which will safeguard region's access to natural gas

Construction of the 870 kilometre Trans-Adriatic Pipeline (TAP) will begin mid this year, when the first pipe is laid in Thessaloniki (Greece). When construction is completed, TAP will bring 10 billion cubic metres of natural gas directly to Europe each year when Shah Deniz begins first deliveries in 2020. TAP is the final European leg of the Southern Gas Corridor which will transport natural gas from the giant Shah Deniz II field in the Caspian Sea, improving Europe's energy security.

TAP connects to the 1,840 km Trans-Anatolian Natural Gas Pipeline (TANAP) which is being built in parallel. ArcelorMittal is already supplying around 300,000 tonnes of hot rolled coil (HRC) to TANAP. TAP will connect to TANAP at the Greek/Turkey border and then crosses through Greece and Albania, ending in Southern Italy, where it will then connect to Snam Rete Gas into Europe's existing gas distribution network.

ArcelorMittal Bremen to produce TAP coils

ArcelorMittal Europe – Flat Products was selected to supply more than 75,000 tonnes of HRC for TAP. The steel coils are produced at ArcelorMittal Bremen (Germany) and then shipped to our partner Corinth Pipeworks. Based in Greece,

Corinth will produce around two-thirds of the pipes for TAP, confirming their position as one of the most advanced oil and gas pipe producers in the world.

ArcelorMittal Bremen was selected to produce the HRC because of the mill's long experience in pipeline steels. In 2011, the mill installed the world's largest heavy duty crop shears on the hot rolling mill. This equipment enables ArcelorMittal Bremen to produce heavy wall and super-heavy wall pipeline steels which meet the most stringent requirements.

Tough environment requires tough steels

Those requirements are being tested due to the strict specifications for pipes used



Pipes undergoing helical submerged arc welding (HSAW) at CPW.

on the TAP line. They have a wall thickness of 18 mm and must pass strict mechanical testing requirements and dimensional tolerances.

ArcelorMittal Bremen began shipping the first coils to Greece late last year, following the signing of the Corinth contract with TAP. Deliveries will continue on a regular basis until the first quarter of 2017.

All of the steel for TAP and a majority of the pipes will be produced in Europe. ArcelorMittal Europe – Flat Products is proud to be a part of this vital strategic project which is creating value for local communities as well as securing Europe's future energy supply.

More info:

[Related projects: TANAP](#)

industry.arcelormittal.com/energy



A series of steel rings form two watertight compartments which provide flotation and stability.



Each floating turbine is anchored by a series of mooring lines.

Into deeper waters

New technology generates energy from floating wind turbines



The world's first floating wind farm is currently under construction off the east coast of Scotland. The turbines float on the surface of the sea thanks to large steel cylinders which extend around 100 metres below the surface of the sea. The new technology, first demonstrated by the energy firm Statoil in Norway, will enable wind turbines to be deployed in deeper waters, vastly increasing the areas available to generate clean energy.

Floating offshore wind farms were only a concept until Statoil successfully demonstrated the technology would work in the Norwegian Sea. The company is now building the pilot floating wind farm which will be positioned at Buchan Deep, approximately 25 km east of Peterhead (Scotland).

The five floating turbines that make up the pilot project will be produced by Siemens and have a nominal capacity 6 megawatts each. Statoil's proprietary Hywind pitch controller is integrated into the turbine to mitigate excessive motion. Hywind also minimises energy losses due to aerodynamic or hydrodynamic movements, maximising output from the turbine.

Heavy plate creates floating foundation

The floating foundations – each with a diameter of 14.4 metres at their widest point – will be constructed using heavy naval plates (grades NV36D and NV36E)

from ArcelorMittal Europe – Flat Products. The foundations are being built by Navantia-Windar in Spain. ArcelorMittal Gijón (Spain) is supplying around 5,300 tonnes of the heavy plate for this part of the project.

“ArcelorMittal was chosen as the customer appreciates our short delivery times, and has confidence in the quality of our steels and ability to react swiftly to unexpected challenges which arise in a project of this size and scale,” says Luis Rodríguez Hevia, heavy plate account manager for ArcelorMittal Asturias. “ArcelorMittal Gijón is also close to the customer's own premises which will help to eliminate delays.”

Each foundation is composed of a series of ring sections with internal reinforcements. They form two watertight compartments and extend 100 metres beneath the sea surface. The lower compartment holds water and rock ballast, and is designed

to provide stability in severe weather conditions.

Bright new future for wind energy

The structure is floated into position and anchored to the seabed with mooring lines attached to anchors on the seabed. Construction of the foundation structures began at Navantia during January 2016. The last unit is expected to be delivered in February 2017.

Floating structures offer cost-effective clean energy generation in a wider range of locations. While monopile and jacket foundations can be successfully utilised in shallow waters (up to 50 metres deep), floating wind turbines can be deployed in deeper waters such as those found off Europe's Atlantic coast or in the Mediterranean Sea. The increased flexibility of floating turbines offers a bright new future for clean and renewable wind energy.

More info:

industry.arcelormittal.com/windtowers

www.navantia.es



The FAST Nomination was held at VW's headquarters in Wolfsburg (Germany) on 2 March 2016

In the FAST lane

ArcelorMittal selected as Steel partner for new VW supplier programme

Volkswagen (VW), one of the world's leading carmakers, has announced a new programme which will change the way the company works with its suppliers. Known as FAST (Future Automotive Supply Tracks), the initiative will see VW's supplier network play a much more significant role in future vehicle development. ArcelorMittal's industry leading steels and global footprint have guaranteed our involvement.

Globalisation and the increasing speed of innovation cycles are presenting the automotive industry with unprecedented challenges. FAST is VW's answer and aims to ensure the company remains a driving force in future mobility solutions.

Supplier network key for future

FAST recognises that the supplier network will play a much more significant role in the future. It will see VW engage in a strategic and technological dialogue with selected suppliers. Not only will this occur earlier in the development of a new solution, it will also be more intense. Dr. Francisco Javier Garcia Sanz, member of the Volkswagen Aktiengesellschaft Board of Management responsible for Procurement, is optimistic: "We now have a total of 55 partners, each of them outstanding in their respective

field. We want to shape the automotive future together. I am looking forward to the dialogue to make these partnerships even more efficient and sustainable for both sides."

ArcelorMittal was formally nominated as a FAST Supplier during a short ceremony held at VW's headquarters in early March 2016. During the event, Axel Müller, Volkswagen's Purchasing Group Commodity Manager Metal, explained ArcelorMittal was: "a reliable partner which has accompanied the Volkswagen Group throughout the different stages of a vehicle's lifecycle." He noted that ArcelorMittal had brought innovations to Volkswagen such as hot stamping technology. "This has helped Volkswagen achieve our car weight targets. I expect

that ArcelorMittal's involvement in FAST will enable us to intensify this cooperation."

ArcelorMittal's selection in the Steel supplier category is the result of a process started last year. During 2015, ArcelorMittal helped VW to optimise the use of our steels and solutions. This enabled the carmaker to achieve maximise the value of ArcelorMittal's steels.

"For a long time Volkswagen has led the industry when it comes to implementing new technologies in automotive," explains Brian Aranha, executive vice president of ArcelorMittal Automotive. "We are keen to strengthen our relationship with this Group which is always at the leading edge of innovation."

Closer collaboration will drive research programme

ArcelorMittal's FAST nomination marks the beginning of a closer collaboration with VW. "From a technical point of view, this nomination is a very important step in our automotive research programme," notes Jochen Gruenewald, automotive area manager for ArcelorMittal. "We will be able to tune our product development cycle with VW's milestones for new vehicle development."

VW has carried out the supplier selection process across the Group using standardised, transparent, and objective criteria. Examples of specific evaluation criteria include how well suppliers collaborate with VW in the field of innovation and how well their global location strategy fits with that of the carmaker. There will be regular reviews of the selected circle of suppliers.

ArcelorMittal is extremely proud to be selected to participate in the FAST project. With our global footprint, complete product range, and dedicated network of automotive R&D centres, ArcelorMittal is ready to meet the expectations of VW's brands.

Since the launch of FAST in March this year, ArcelorMittal has been actively involved in talks with VW about future mobility solutions. With our global footprint, complete product range, and dedicated network of automotive R&D centres, ArcelorMittal is ready to meet the expectations of VW's brands.