



ArcelorMittal – the leading supplier of steel solutions for the global wind energy industry

ArcelorMittal makes renewable energy even more sustainable

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

As an international company with industrial operations in more than 20 countries, ArcelorMittal recognises the impact that climate change will have on many regions in which we work. That's why we are **fully engaged in global efforts to reduce greenhouse gas emissions** and mitigate their impact.

Across the whole steel sector, CO₂ emissions per tonne of crude steel output are now 50% lower than 40 years ago. ArcelorMittal has committed to reduce its CO₂ emissions further – by 8% per tonne of steel by 2020 compared to our baseline emissions in 2007.



Why steel is the green choice for wind energy

Wind turbines are already generating more than 240 gigawatts (GW) of clean energy globally. That's enough to meet the needs of more than 18 million households. While significant, more capacity is required to meet the ever increasing demand for electricity in modern society. As a natural, permanent material, steel is the ideal material to meet this challenge.

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

Within its first year of operation, a steel wind turbine will pay back the energy required for its production.

Wind energy set to contribute more to the mix

According to statistics from the European Wind Energy Association (EWEA), wind represented 10% of the EU's power mix in 2011. Wind power is capable of supplying a much larger share of Europe's electricity demand. The potential for wind is comparable to the levels currently being met by conventional technologies such as fossil fuels – coal (26%), gas (23%) –, nuclear (14%) and hydro-electric (14%).

The use of renewable sources of energy is seen as a key element in the EU's energy policy. The policy aims to:

- Reduce the EU's dependence on fuel imported from non-EU countries
- Reduce emissions from the use of fossil fuels
- Decouple energy costs from the price of oil

Europe's 'Climate and Energy Package' sets a target for 2020 that would see 20% of the EU's gross energy needs coming from renewables.

Source: EWEA, European Commission



Steels for every part of your wind tower

Along with Long Carbon, ArcelorMittal Europe – Flat Products produces steels which are suitable for all major parts of a wind turbine installation.

ArcelorMittal can supply a full range of **electrical steels** for the medium- and high-power generators which sit at the top of the wind tower (in the nacelle). These steels possess all of **the required magnetic properties to maximise the amount of energy each turbine can produce.**

The optimal generator type depends on whether the turbine is designed to function with or without a gearbox. For direct drive machines (no gearbox), electrical steels with very high permeability are required. However, for geared solutions, lower losses are more important.

As well as steel grades which meet the EN 10106 standard, ArcelorMittal offers electrical steels with high permeability, or low losses. Different thicknesses are available to meet the requirements of all machine designs.

Nacelle

Around 85% of all wind turbine towers are built with **quarto plate steel**, also known as heavy plate. ArcelorMittal can also supply coils for towers with larger dimensions.

ArcelorMittal Europe – Flat Products is already a highly respected supplier of quarto plate. One of our largest mills is ArcelorMittal Asturias in Gijón (Spain) which has supplied quarto plate for more than 3,000 wind towers since 2005.

ArcelorMittal is actively working with leading wind turbine manufacturers to create innovative tower designs which do not require welding, making them even quicker and easier to install.

Quarto plate specifications

ArcelorMittal delivers quarto plates in accordance with the EN 10025 standard using structural steel grades including S275, S355, and from S420 up to S460 (including J, J2, JR, M, ML, N, and NL specifications).

Quarto plates can be supplied with the following dimensions:

Thickness:	Up to 80 mm
Width:	Up to 3,800 mm
Length:	Up to 15,000 mm

Specific treatments including shot blasting or bevelling are also possible.

Tower

ArcelorMittal's support adds value at all stages

ArcelorMittal's experience in the wind power sector has enabled us to develop a **service programme** which is specifically **oriented to meet the needs of the industry.**

That experience enables us to add significant value for our wind energy customer.

ArcelorMittal's global customer teams work closely with our customers to respond quickly to the new and changing requirements.

The teams include technical experts, mills, marketing and sales personnel in order to ensure every possible eventuality is covered – imperative in such a challenging supply chain.

While our efforts have concentrated on reducing lead times between customer order and final delivery, ArcelorMittal also undertakes R&D activities in order to maximise cost savings for our customers. We can also help wind energy suppliers develop and implement entirely new supply chains if required. Through our relationships with external partners, ArcelorMittal is able to supply processed and prefabricated steel components to reduce assembly time.

Creating the wind power solutions of tomorrow

ArcelorMittal's **Global R&D team** includes more than 1,300 world-class researchers located in 11 laboratories around the world. Their experience and knowledge of steel and the wind power industry enables ArcelorMittal to **support our customers and develop new solutions to meet the challenges they face.**

ArcelorMittal is actively working with wind power suppliers to develop the next generation of multi-megawatt tower designs using our high added value steels. With our global presence, ArcelorMittal is uniquely positioned to supply the wind industry with the steel solutions they require.

Credits

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