



INTERPIPE

Interpipe Steel – the green steel experience in Ukraine



Climate challenges for steel industry

In 2019, in line with the Paris Agreement, the EU adopted a set of climate initiatives named the European Green Deal, with the aim of turning Europe into a carbon-neutral continent by 2050. That plan also set a target for the EU's greenhouse gas emission reductions by 2030 to at least 50% and towards 55% as compared with 1990 levels.

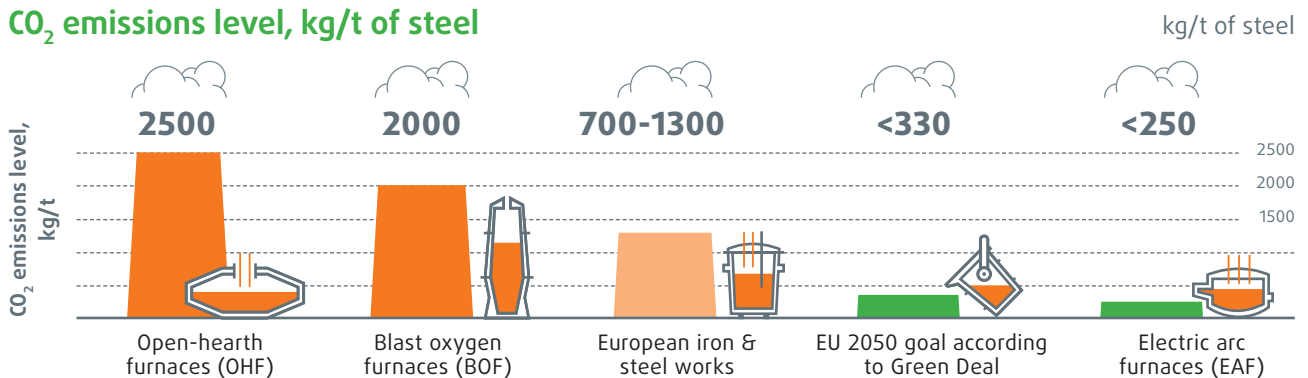
The European Green Deal envisages the decarbonization of the EU economy, i.e. the transition of industry, energy, and transport sectors to fossil-fuel-free technologies that eliminate or significantly reduce CO₂ emissions.

In terms of the steel industry, meeting this goal means the abandonment of coal used in the conventional steelmaking process, and replacing it with more innovative technologies like electric arc steelmaking or utilization of hydrogen.

According to Worldsteel, steelmakers worldwide account for 7-9% of global CO₂ emissions. Each ton of steel produced in the world generates 1.83 tons of CO₂ on average. Therefore, the industry confronts the critical task reducing emissions to net zero in the coming decades to reach Paris Climate Agreement goals.

The country of Ukraine is going to face the same challenges as well. In April 2021, the Ukrainian Government launched its Nationally Determined Contribution 2 (NDC2) - a commitment to reduce CO₂ emissions by 2030 by at least 65% as compared with 1990 levels. Respectively, the minimum volume of investments needed by all sectors of the Ukrainian economy is estimated at 102 billion euros. And the steel industry is expected to be at the forefront of the decarbonization process.

CO₂ emissions level, kg/t of steel



The Green Deal envisages the decarbonization of the EU economy

Electric arc furnaces – the most environmentally safe way to reduce CO2 emissions in steelmaking

Presently, there are only three types of steelmaking technologies in the world: open-hearth furnaces (OHFs), blast oxygen furnaces (BOFs) with converters, and electric arc furnaces (EAFs). OHFs have the highest level of CO2 emissions at 2,500 kg of CO2 per ton of steel on average. The BOF with converters process emits slightly less – approximately 1,800-2,000 kg of CO2, but its emission volumes are still quite considerable. EAFs, on the other hand, emit significantly less CO2 – less than 250 kg.

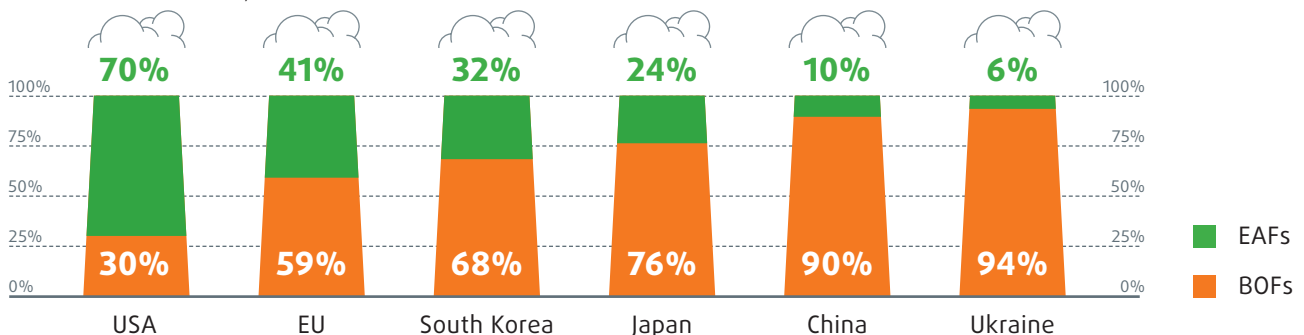
Thus, electric arc furnaces are the most environmentally friendly and actually effective method to cut down greenhouse gas emissions while making

steel. Ferrous metal scrap is the main raw material for EAFs, which is melted by huge volumes of electricity. This technology provides a realistic opportunity to meet the strictest standards imposed by the European Green Deal.

However, replacing BOFs and OHFs with EAFs requires significant investment from companies and governments. According to Eurofer estimations, European steelmakers must spend approximately 144 billion euros for their transition to green steelmaking technologies. This figure is comparable to the investment required for the Ukrainian steel industry to reach net-zero levels of CO2 emissions.

Green EAF steelmaking in Ukraine and globally

Data: Worldsteel Association, 2019



Ukrainian steel industry must spend approximately 140 billion euros to reach net-zero levels of CO2 emissions

Interpipe Steel – the green mill, built 7 years before the European Green Deal

Interpipe, a Ukrainian industrial company, is one of the top global exporters of steel pipes and railway wheels. The Company supplies its products to customers in 80 countries around the world – oil and gas companies, construction groups, leading mechanical engineering enterprises, and national railway operators.

Until 2012, to ensure its production process, Interpipe used the in-house open-hearth steel and also purchased some quantities of steel billets. But in the early 2000s, the Company made the strategic decision to close its dirty open-hearth production facilities and build a brand new, modern plant from scratch with an innovative philosophy centered on environmental safety best practices, and management based on the continuous improvement principles that put people first as a core value.

In 2004, the Company determined the site for the future mill. In 2007, Interpipe signed a contract for the turnkey construction of the facility with Danieli, a world leader in the design and manufacture of metallurgical equipment. The Italian export credit agency Sace was involved to finance this landmark project, which represented the largest investment with the most favorable terms in Interpipe's history. One of the lending conditions was strict adherence to European environmental standards. The project was divided into stages, and before each new financial installment was approved, an environmental audit was required by independent expert Fichtner.

The innovative Interpipe Steel plant was launched in 2012, with USD 1 billion invested in its construction.



Interpipe NTRP open-hearth production shop was closed in 2012.



Interpipe Steel – one of the most advanced electric steel-making plants in Europe launched in 2012

Interpipe invested USD 1 billion into green technologies

Interpipe Steel is the largest green investment in Ukrainian industry. In addition, the complete decommissioning of the open-hearth production facility significantly improved the air quality in and around the city of Dnipro where the plant was located.

Interpipe Steel is equipped with state-of-the-art and highly efficient technologies that virtually eliminate any negative environmental impacts.

These technologies include:



Underground high voltage cable line

This first-ever buried cable line to be built in Ukraine, which removed unsightly transmission lines in order not to affect the daily life of local communities.



Closed cycle of water supply system

The advanced closed-loop system not only reduces the plant's water requirements by recycling the water needed for industrial processes, but also ensures there are no industrial effluent emissions into the Dnipro River.



Ultramodern gas collection and purification system

Dust and gases are captured by the powerful gas purification system, accumulated in filters, and then taken out of the facility for disposal.



Efficient noise insulation system

The noise level during the melting of scrap metal is safe for employees and local residents thanks to the comprehensive sound insulation.



Environmental monitoring station

Data on the concentration of dust and harmful substances are monitored on a continuous basis.



Ecological Benefits of Interpipe Steel

Interpipe Steel is the largest “green” investment in Interpipe’s history. The complete decommissioning of the open-heart furnace production in the 4th quarter of 2012 provided significant environmental improvements, including:

CO₂ < 250 kg/t 10 time reduction of CO2 emissions

Zero discharge of processed water – over 4 mln m³ had been discharged annually while using open-hearth production method

18 m³/t consumption of the natural gas – 8 time reduction



The water in the technological process is constantly purified and reused



Interpipe Steel discharges purified gases into the atmosphere

New production philosophy

Interpipe Steel is a mill where human values and personnel needs come first.

A "World-class Manufacturing" system has been established

The ideology of the enterprise is continuous improvement using the world's best practices (for example, 5S, safety and environmental protection, etc.). As we train and upskill our workforce to embrace this new culture and its corresponding best practices in safety, the efficiency of the whole mill itself also is improving.

Up-to-date living, working, and administrative space

An innovative zoning system is used in the personnel service premises of the plant, which includes a division of the entire space into a zone of home clothes, a zone of hygiene, and a zone of working

wear. The administrative staff works in a modern open office space. Employees are provided with everything necessary for their comfortable work – from personal protective equipment to dining at a state-of-the-art canteen.

Young, highly skilled employees

Interpipe Steel employs the best personnel with the most promising potential. In advance of the facility opening, the staff was given intensive training by leading experts and the opportunity to refine their skills using the best new equipment. Already in 2018-2019 it was the employees of Interpipe Steel, together with Danieli, who showcased their expertise by launching a program to debug modern metallurgical plants, sharing best practices all around the world – from Turkey to Mexico.



On-site cafeteria of the mill



Personal service rooms of the mill have an innovative zoning system arranged



The mill has introduced a unique production culture to ensure that employees feel comfortable at work



High-quality steel for customers worldwide

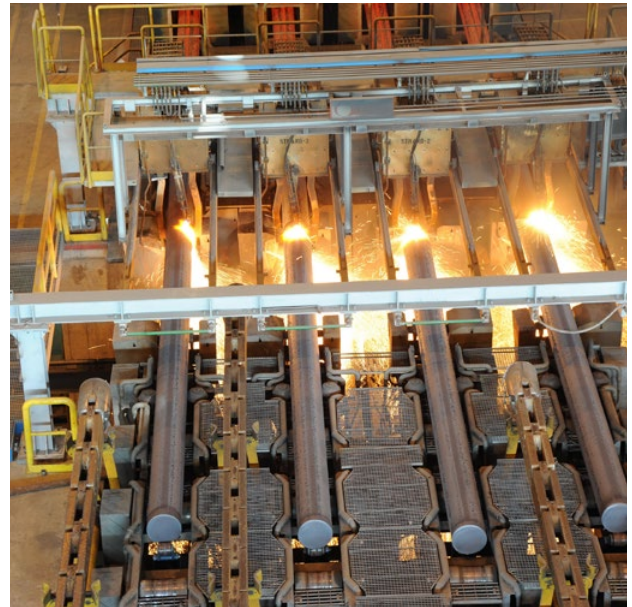
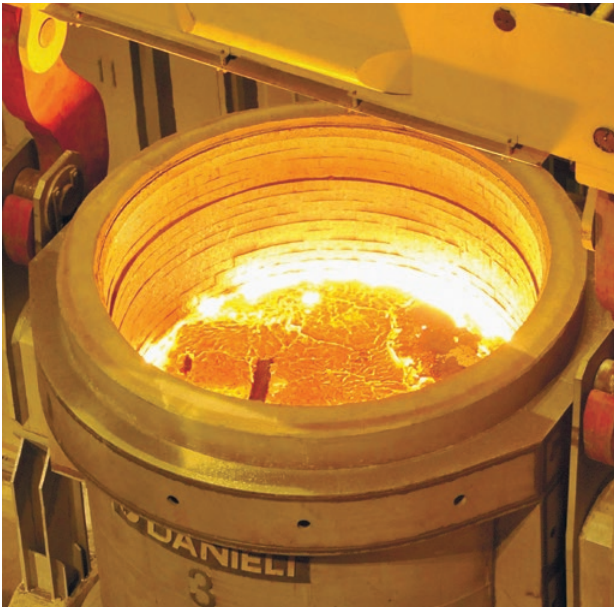
At present, Interpipe Stee is one of the most innovative steel-making facilities in Europe

The plant covers 100% of Interpipe's needs for steel billets for the production of seamless pipes and railway wheels

The product portfolio contains more than 500+ steel grades

The steel produced is of high quality and purity

Exports of steel billets include clients from Germany, France, Italy, Spain, Poland, Czech Republic, Romania, Belgium, Turkey, Hungary, Saudi Arabia, and India.



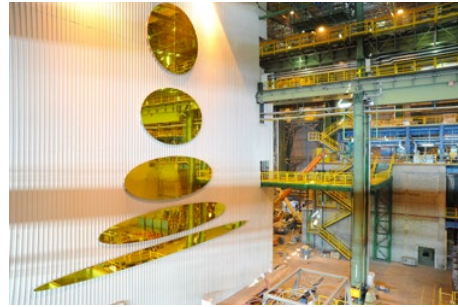
Modern art as a part of the workspace

Interpipe Steel combines innovative technologies and contemporary art. Five large-scale art installations created by the world-famous artist Olafur Eliasson have become an integral part of the facility.



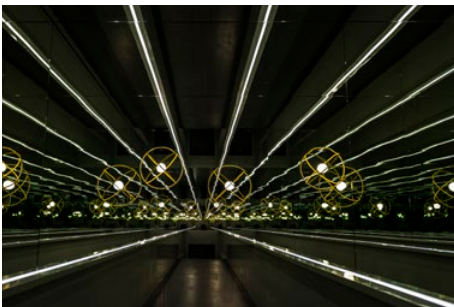
“Dnipro sunrise”

A 60-meter-tall artificial sun, which can be seen from the central embankment of the city. It is a symbol of the industrial revival of Ukraine.



“Material is movement”

An installation inside the main workshop of the mill, which creates the illusion of a disk spinning in space.



“Your thinking bridge”

The 22-meter walkway, connecting the personnel service area with the production hall, is covered with mirrors and metal, which create the illusion of endless space.



“Your time tunnel”

An art object including a series of arches is located at the entrance to the enterprise. The appearance of the tunnel changes depending on the perspective from which it is viewed. It is impossible to instantly comprehend the installation as a whole – it takes time to catch changes in connections.



“Your heat mural”

A group of abstract paintings on the facade allows one to imagine what happens inside the workshop during the steelmaking process.

Interpipe Steel is open to Ukrainian and foreign guests



Visit of the social activist and former British Prime Minister Tony Blair



Visit of Nobble prize winner Dan Shechtman



Visit of a famous Ukrainian former boxer Vladimir Klitschko



Visit of the US Ambassador to Ukraine



Visit of worldwide workout sportsmen



Visit of the EU Ambassador to Ukraine