

# Ovako: creating synergies for climate-smart steel products

In January 2022, Ovako went carbon neutral in all operations.

In June 2022, Ovako, a leader in long, low-alloy, high-performing steel products, announced that it is investing EUR 7.3 million in the rolling mill in Hällefors to strengthen productivity and further reduce carbon emissions. With four new state-of-the-art rolling stands to be installed in the rolling mill, the Swedish steelmaker set the priorities right to achieve the goal of a sustainable industry and realise the personal vision of innovative steel for a better engineered future. During a conversation with the Green Steel World, Ms. Katarina Kangert, Head of Sustainability and Safety at Ovako Group, highlighted some key elements that set the company with 500 years of steelmaking legacy apart and what makes it passionate about offering specialty steels that bring huge benefits to customers and society.

By Tanya Rudra

“Ovako wants to be at the forefront of the transition towards a sustainable society”, Ms. Kangert stated to set the tone for the rest of the discussion. Interestingly, driven by an ambition to make an even bigger impact, under its initiative called “Carbon Neutral Now”, the subsidiary of Sanyo Special Steel and a member of Nippon Steel Corporation group, decided to sell products based solely on carbon-neutral steel production since the beginning of this year.

“At Hällefors, we process billets, carry out hot rolling and heat treatment to produce bar products for the automotive, mining and energy sectors. Under the new investment, we’re planning to install

Ovako has reduced its relative carbon emissions by 57 percent since 2015 and by 2040, the company plans to reduce carbon emissions in own operations by 90 percent and in cradle to gate

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the rolling equipment that will enable us to reduce the temperature of our hot rolling process by 50°C to save a significant amount of energy, while maintaining productivity and quality”, Ms. Kangert explained.

by 70 percent. So as a logical next step, Ovako has committed to having its long-term climate targets validated by Science Based Targets initiative (SBTi). The climate targets and roadmaps validated

by SBTi are aligned with science-based requirements to fulfill the Paris Agreement and limit global warming to 1.5°C.

“We have set ourselves some tough targets for sustainability but in 2021 we successfully reduced CO<sub>2</sub> emissions from our operations by 57% from 2015 baseline”, Ms. Kangert elucidated.

She emphasized that dedicated sustainability work in the form of switching to 100 percent fossil-free electricity sources and converting heat treatment operations from fossil fuels to electricity have enabled Ovako to make a considerable progress in reducing the environmental impact. Moreover, it presents an opportunity to the customers to reduce their own carbon footprint by two tonnes of CO<sub>2</sub> per tonne of product.

### The curious case of Voluntary Emission Reductions

Simply put, a Voluntary Emission Reductions is reduction or removal of emissions of carbon dioxide or other greenhouse gases made in order to compensate for emissions made elsewhere.

As of January 2022, Ovako is using Voluntary Emission Reductions to counterbalance the carbon emissions that arise in production. These are all Scope 1 and Scope 2 emissions according to the Greenhouse Gas Protocol and ISO 14064:2018. These are verified either by the Gold Standard or Verified Carbon

Standard (VCS) initiatives. Calling it a way of counterbalancing Scope 1 and 2 emissions, Ms. Kangert stressed that for Ovako, Voluntary Emission Reductions comes into play only after everything possible to reduce climate impact using current technology has been done.

Looking ahead, Ovako has plans in place to reduce its carbon footprint by 80 percent by 2030 and 90 percent by 2040, primarily by converting rolling mill furnaces to run on hydrogen and this will eventually phase out the use of Voluntary Emission Reductions.

As far as reporting is concerned, Ovako prefers “cradle to gate” approach, which includes all emissions from Scopes 1, 2 and-3 upstream according to Green House Protocol and publishes Environmental Product Declarations for hot rolled bars.

“Many steelmakers share figures for CO<sub>2</sub> per tonne of crude steel and include only Scope 1 and 2 emissions, which cover direct and indirect emissions from the steelmaking itself. In such comparisons, we have a very strong position, with an average carbon footprint of less than 90 kg CO<sub>2</sub> per tonne of steel”, Ms. Kangert added.

Elaborating on the topic, Ms. Kangert said that Ovako is working actively with its suppliers to find the best sources for all

incoming material in order to include upstream emissions from production of alloys, use of recycled scrap material and lime, in the future reporting of Scope 3.

### Hydrogen: a gamechanger

In March 2020, in a historic development, Ovako proved that carbon dioxide emissions from



Ms. Katarina Kangert, Head of Sustainability and Safety at Ovako Group

rolling can be eliminated provided the right financial support and infrastructure are in place.

Ovako conducted a full-scale trial using hydrogen to heat steel before rolling at the Hofors mill and became the first in the world to do so.

“Our plan is to build Sweden’s largest electrolyzer in partnership with Volvo, Hitachi Energy, H2 Green Steel and Nel. The new hydrogen plant in Hofors will make Ovako the first in the world to heat steel with hydrogen prior to rolling and to enable large-scale and cost-

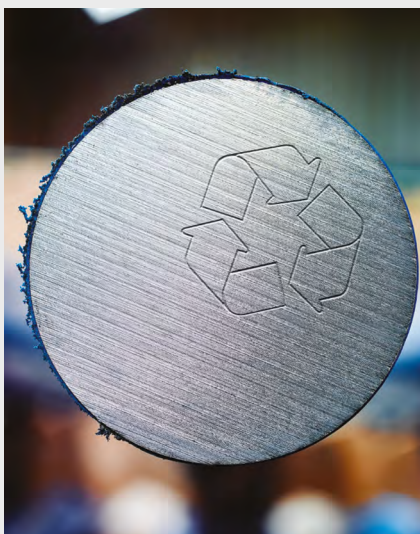


effective production of hydrogen for applications like fossil-free freight using fuel-cell trucks. In addition, we plan to use the excess heat from the furnaces to provide district heating for nearby communities. It will make us the first steel company to eliminate CO<sub>2</sub> emissions when heating steel before rolling”, Ms. Kangert elaborated.

Although the company has switched to fossil-free alternatives in major stages of production, the process of heating steel before hot-rolling and forging, continues to be a massive concern.

However, the aforementioned trial is a massive step in tackling the challenge.

During production trials, Ovako studied the difference between a propane-oxygen and hydrogen-oxygen mix as fuel for the furnaces used to heat steel prior to hot rolling. Although propane molecules contain significantly more energy,



Ovako steel products can be re-melted to produce material of the same quality an infinite number of times.

but hydrogen's low density helps it flow faster to achieve the same level of heating in the furnace.

“The use of hydrogen in our solution will also provide support to balance the power grid. Thanks to our development of technology to switch between fuels within a millisecond. This flexibility is important as we will be using intermittent renewable energy to produce hydrogen through electrolysis. It gives us confidence that we can switch to propane as a backup fuel without interrupting our furnace operations, even in the case of a sudden drop in renewable power generation. As a result, we will be able to make use of intermittent renewable production to provide support to the power grid”, Ms. Kangert added.

### Contributing to the circular economy

Ovako's production is based on using steel scrap as input material instead of virgin iron ore. As steel is the most recycled material in the world, by basing its production on steel scrap and actively pursuing projects to reduce or eliminate concerns related to increasing levels of copper in scrap, Ovako is enhancing circularity in the steel industry.

Owing to 97 percent of recycled content in steel, Ovako is managing to maintain a vastly lower amount of CO<sub>2</sub> emissions in comparison to the global industry estimates.

“We source most of our scrap domestically through well-established recycling systems. In some cases, we have a supply agreement in place with customers that includes the return of our own scrap material. Together, these measures have ensured tight control over scrap quality over the years”, Ms. Kangert explained.

Ovako has a process in place to qualify, rate and assess that helps it identify suppliers with the largest carbon footprint.

“The challenge for the future is that we improve the design of the product so it can be more recyclable, easier to dismantle and sort the different items from a product such as iron, copper and aluminium to mention some of the important materials that needs to be recycled. With good product design we could be able to even reuse the product without re-melting”, she added.

In addition, Ms. Kangert stressed that it is an absolute necessity for the entire supply chain to become sustainable in order to reach the goals of the Paris agreement.

“Although steel is an essential component in society and enhances industrial productivity and efficiency, its production is energy intensive. We believe in promoting continuous improvements at all stages of the value chain, from our suppliers, product development to end products”, she said.



“As society, we face the common threat of global warming and as public awareness of this grows, we are seeing increased pressure on governments and businesses to make faster environmental progress. This has accelerated the steel industry’s progress to implement climate neutral technology and circular practices. These can be achieved through partnerships as the technologies and infrastructure for carbon neutrality cross multiple industries and policy areas”, she added.

### Customer-centric approach

Together with its customers, Ovako’s actions can have a strong impact on making the world more sustainable. The demand for sustainable steel is on a rise and by switching to carbon-neutral production in January, Ovako has definitely become a trendsetter.

“We have to keep in mind that the main sustainability benefits can be achieved with advanced materials that provide long life and require little maintenance in end-user products. Therefore, we invest in research and development to improve performance and production efficiency. For example, design engineers can use the enhanced properties of high-performance steel to design lightweight and long-lasting systems. These use fewer materials and require less energy and emissions for transport and operation. In other developments, careful control during manufacture

enables us to produce products to extremely tight dimensional tolerances. This cuts waste and processing steps for customers, saving power and order sizes”, Ms. Kangert explained.

Ovako has collaborated with Volvo to enable fossil-free, long-haul trucking based on fuel cell technology. Here, the energy source will be fossil-free hydrogen generated cost-efficiently at Hofors facility.

Ovako has published Environmental Product Declarations (EPDs) that cover the full environmental impact

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of hot-rolled steel bar as well as climate declarations that shows the carbon footprint.

“The EPDs and Climate Declarations enable comparisons between the global average and Ovako’s carbon footprint from cradle to gate. This information helps customers to make accurate calculations and informed decisions about their steel purchases. The EPDs shows that Ovako’s products have an 80 percent lower carbon footprint than the global average for hot-rolled steel products”, Ms. Kangert added.

### A responsible player

For Ovako, environment, social impact and business ethics go hand-in-hand, and it has

demonstrated a commendable level of commitment by achieving carbon-neutral production in 2022 rather than in 2050 like most steelmakers.

“ESG is not just a matter of carbon footprint. We work in all areas of sustainability and have many different activities ongoing. Employee safety is a main priority at Ovako, and our long-term target is a workplace with zero accidents and occupational illness. Through dedicated and systematic safety work we have seen great improvements in our safety records. We are proud that our

number of lost time injuries (LTI) has decreased by 93% since 2015, and our LTIFR (Lost Time Injury Frequency Rate) is 0.8 - among the lowest in Europe”, Ms. Kangert said.

“Ovako is often the largest employer in locations where the company operates and is thus an important player in the local community, which means it is important for the company to get involved in developing these communities. Ovako gets involved in several ways and works closely with various stakeholders where the company operates. The company cooperates with education institutions, local authorities, and local organizations”, she concluded.

