

PRESS RELEASE

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voestalpine produces the world's first hydrogen-based rail

voestalpine has produced the world's first hydrogen-based rail at its Donawitz site as part of a pilot project. The "green" rail consists of a mix of scrap and hydrogen-reduced pure iron, which was produced in the HYFOR pilot plant in Donawitz. The raw material was melted down in the company's own TechMet research steelworks in Donawitz and then processed into the finished rail in the neighboring rail rolling mill. Like all rails produced by voestalpine, the hydrogen-based rail is particularly hard and highly wear-resistant. The first rail of this type has now been laid at Linz Central Station.

As the global market leader for railway infrastructure systems, voestalpine Railway Systems supplies track systems, turnout systems, and signaling technology for renowned international railway projects. They offer both the "hardware" (rails, turnouts, mountings, and sleepers) as well as the "software" in the form of signaling technology and fully digital monitoring applications for the entire railroad line and train from a single source. Now, with the production and delivery of the world's first hydrogen-based rail, voestalpine is setting new benchmarks in sustainable steel production as part of a research project.

"The production of the world's first hydrogen-reduced rail at our Donawitz site is a historic milestone. With greentec steel, we are pursuing a clear phased plan to transform our steel production. Starting in 2027, one green-powered electric arc furnace will be put into operation at each of our sites in Linz and Donawitz. Our long-term goal by 2050 is net zero CO₂ emissions in steel production. To this end, we are already conducting research into several new processes and investing in pilot and presentation projects that demonstrate new steel production possibilities," says Herbert Eibensteiner, CEO of voestalpine AG.

Hydrogen-based steel production uses—ideally green—hydrogen from renewable energy sources to separate oxygen from iron ore. Unlike conventional methods, this process does not generate CO₂, only water vapor as a byproduct. The hydrogen-reduced pure iron was produced in the HYFOR pilot plant, and the melt was carried out in the company's proprietary research facility Technikum Metallurgie (TechMet), a one-of-a-kind miniature full-scale steelwork.

"The production of high-quality, CO₂-reduced steel grades is one of the biggest technological challenges in the transition to green steel production. As the world's leading provider of complete railway infrastructure systems, our mission is to create sustainable and trendsetting solutions for the mobility of tomorrow," says Franz Kainersdorfer, Head of the Metal Engineering Division and Member of the Management Board of voestalpine AG.

Metal Engineering Division

With its Railway Systems business unit, the Metal Engineering Division of the voestalpine Group is the global market leader for railway infrastructure systems, diagnostics and monitoring solutions for infrastructure and rolling material as well as software solutions for maintenance management. With its Industrial Systems business unit, the division is also the European market leader for quality wire and global provider of full welding solutions. And it supplies seamless tubes all over the world from the Kindberg location in Austria. Customers come from the railway infrastructure industry, the energy industry, the mechanical engineering, automotive and construction industries, as well as the renewable energy sector. As part of the greentec steel program, the Metal Engineering Division is already intensively working on and researching various innovative, climate-friendly technologies and production processes. In the business year 2024/25, the division generated about EUR 4.2 billion in revenue with its Railway Systems and Industrial Systems business units; over 45% of this revenue was generated outside Europe. The division recorded an operating profit (EBITDA) of EUR 461 million and employed around 15,100 people worldwide.

The voestalpine Group

voestalpine is a globally leading steel and technology group with a unique combination of materials and processing expertise. voestalpine, which operates globally, has around 500 Group companies and locations in more than 50 countries on all five continents. The voestalpine Group has been listed on the Vienna Stock Exchange since 1995. With its premium products and system solutions, voestalpine is a leading partner to the automotive and machinery industries, as well as to the aerospace and energy industries. The company is also the global market leader in railway systems and special sections. voestalpine is committed to the global climate goals and has a clear plan for transforming steel production with its greentec steel program. In the business year 2024/25, the Group generated revenue of EUR 15.7 billion, with an operating result (EBITDA) of EUR 1.3 billion; it has around 49,700 employees worldwide.

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