

PRESS RELEASE
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HYBRIT: Successful trials using fossil-free fuels in the pellet process

Trials using fossil-free fuels in LKAB's pellet plant have produced successful results within the framework of the HYBRIT initiative. The world's very first fossil-free iron ore pellets are within touching distance. SSAB, LKAB and Vattenfall intend to be the first in the world with a value chain for fossil-free steel.

Fossil-free steel production starts in the mine, and the development of the next generation of pellet plants is under way. LKAB's biggest challenge and contribution to HYBRIT is to develop fossil-free pellets, which requires a change of heating technology in the process.

"Achieving positive results from different heating technologies represents an important milestone on the road to delivering the world's very first fossil-free iron ore pellets and further on in the value chain for fossil-free steel. The HYBRIT initiative is a key to achieving LKAB's goal of being a leading supplier of fossil-free iron ore, initially in a fossil-free value chain from mine to fossil-free steel, and in the long term totally carbon dioxide-free," says Markus Petäjaniemi, Senior Vice President Market and Technology at LKAB.

Three alternative fuels for industrial pellet production have been tested on a pilot scale: pyrolysis oil, hydrogen and plasma. All require further development before full-scale implementation is possible. At the same time, full-scale trials are under way with bio-oil in HYBRIT's pilot plant at LKAB's industrial estate in Malmberget. Using biofuel as a heat source for one of LKAB's existing pellet plants will result in fossil carbon dioxide emissions for operations in Malmberget being cut by up to 40 per cent during the trial period. The full-scale trial period will last until 2021 and is one part of HYBRIT's pilot phase, the long-term goal being to be first in the world with a fossil-free value chain from mine to finished steel product.

The results from the pilot-scale fuel tests are already showing that all fossil-free fuels can achieve the desired result. This is a necessary step towards the goal of producing fossil-free steel for the global market from mine, using fossil-free electricity and hydrogen, to finished steel product, thereby cutting Sweden's carbon dioxide emissions by ten per cent.

"More steel will be needed as the world's population increases and cities grow. But current steelmaking generates vast amounts of carbon dioxide emissions. It's not sustainable. With the HYBRIT initiative, we're revolutionizing an entire industry and introducing a new technology for



fossil-free steel on an industrial scale. SSAB's goal is to be able to offer fossil-free steel to the market as early as 2026 and to be totally fossil-free as a company by 2045," says Martin Pei, CTO at SSAB and the initiator of the HYBRIT initiative.

"It's very pleasing that our joint HYBRIT project is constantly taking important steps forwards, steps that will enable us to produce fossil-free steel, which has a natural place in a fossil-free society. We're working in a focused way to make it possible to live a fossil-free life within a generation," says Andreas Regnell, SVP Strategic Development at Vattenfall and Chairman of HYBRIT.

Construction of the pilot plant for fossil-free sponge iron (DRI/HBI) in Luleå will be completed during the summer, and preparations are under way to build a temporary hydrogen storage facility to store fossil-free hydrogen in caverns.

About HYBRIT

Hybrit Development is a joint venture formed by the steel manufacturer SSAB, the mining company LKAB and the energy company Vattenfall. The purpose of this partnership is to develop the world's very first fossil-free, iron ore-based steelmaking process. The by-product created when using fossil-free electricity and hydrogen instead of coke and coal in steelmaking is water instead of carbon dioxide. The project has the potential to cut Sweden's total carbon dioxide emissions by ten per cent. The HYBRIT project has been granted financial support from the Swedish Energy Agency.

www.hybritdevelopment.com

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