
Press Release

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First, Large-Scale CO₂-Capture Plant in Cement Production Halves Emissions

MAN Energy Solutions to supply compressor system for carbon-capture-and-storage plant (CCS) in Norwegian cement factory

Using Aker Carbon Capture's proprietary carbon-capture technology, HeidelbergCement Norcem will realize the world's first carbon capture facility for large-scale cement production. From the summer of 2024, 400,000 tons of CO₂ will be captured annually from the Norwegian cement factory in Brevik – corresponding to 50% of the factory's overall emissions. The carbon will be compressed and liquefied with technologies from cooperation partners, Aker Carbon Capture and MAN, and then transported by ship to an underground storage location.

The cement factory in Brevik will be the first to use the 'Carbon Capture Heat Recovery' technology (CCWHR[®]) developed by MAN and Aker Carbon Capture. A new process allows the heat emerging from the compressor system to be recovered and used as steam to meet approximately one third of the total heat demand from the Aker Carbon Capture plant. Consequently, the system solution demands significantly less energy compared with conventional carbon-capture technologies.

"We are delighted to realize the world's first carbon-capture plant on an industrial scale in a cement-production facility," commented Erik Langholm, Executive Vice President, Projects, at Aker Carbon Capture. "Carbon capture and storage plays a big part in cutting European CO₂ emissions, and hard-to-abate industries like the cement sector are integral to our '10 in 25' strategy. Aker Carbon Capture has set a target to secure contracts for capturing 10 million tonnes of CO₂ annually by 2025."

"CO₂ emissions are currently unavoidable in cement production with the sector accounting for almost 6 - 7% of the world's carbon-dioxide emissions. This is why the cement industry is key on the road to a decarbonized future," added Dr. Uwe Lauber, CEO of MAN Energy Solutions. "We are very proud to be able to deliver such an energy-efficient solution for HeidelbergCement Norcem, which is the result of our successful pioneering work in the CCS field together with Aker Carbon Capture."

The scope of work by MAN Energy Solutions includes the supply of an electrically-powered compressor train – type RG 63-7 with integrated CCWHR[®] technology – which allows the compression heat of the recovery compressor to be exploited. The steam generators cool the CO₂ mixture between the compressor stages and generate steam that is in turn used for capture.

Thanks to the use of innovative digital tools, the compression system for the CCS application has been significantly simplified. Dr. Alexander Sobolyev, Head of Standardization & Solutions at MAN Energy Solutions, said: "As part of the Norcem

project, the digital-twin-based engineering approach of MAN Energy Solutions has led to concrete optimizations. The dynamic process simulation showed that originally planned system components, including heating, valves and additional pipes for safe plant operation, were not required. The time taken for a cold start of the plant can thus be reduced from around 12 hours to 20 minutes – an important characteristic as quick-start capability is always a central criterion for renewable energies."

MAN Energy Solutions enables its customers to achieve sustainable value creation in the transition towards a carbon neutral future. Addressing tomorrow's challenges within the marine, energy and industrial sectors, we improve efficiency and performance at a systemic level. Leading the way in advanced engineering for more than 250 years, we provide a unique portfolio of technologies. Headquartered in Germany, MAN Energy Solutions employs some 14,000 people at over 120 sites globally. Our after-sales brand, MAN PrimeServ, offers a vast network of service centres to our customers all over the world.



Illustration of the Carbon Capture Heat Recovery system



Aerial view of the cement factory in Brevik, Norway