Press release

Steel Europe

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thyssenkrupp Steel awards a contract worth billions of euros to SMS group for a direct reduction plant: one of the world's largest industrial decarbonization projects gets underway

- thyssenkrupp Steel places an order with SMS for the engineering, delivery and construction of a hydrogen-powered direct reduction plant, two innovative melters, and the associated auxiliary units at the Duisburg location.
- One of the world's largest industrial decarbonization projects gets underway with an order volume for SMS alone of over 1.8 billion euros.
- Groundbreaking concept: direct reduction plant with Midrex technology combined with two innovative melters, with a capacity of 2.5 million metric tons of directly reduced iron.
- The startup is planned for the end of 2026.
- Significant step for industrial climate protection in Europe: annual saving of over 3.5 million metric tons of CO_2.

Duisburg, March 1, 2023. thyssenkrupp Steel places an order with SMS group, Düsseldorf, for the engineering, delivery and construction of the first hydrogen-powered direct reduction plant at the Duisburg location. This marks the start of one of the biggest industrial decarbonization projects worldwide, which at one stroke will avoid more than 3.5 million metric tons of CO_2 per year in the future. The order volume for SMS amounts to over 1.8 billion euros, and also marks the largest single order in the history of the company. Moreover, significant additional structural building services will be required in addition to infrastructure and media connections. The preliminary tasks can be started immediately, under the scope for an earlier start to work that has been approved. The plant will have a capacity of 2.5 million metric tons of directly reduced iron (DRI),

and is scheduled for completion by the end of 2026. The overall project remains subject to European Union approval under state aid provisions, as well as the final funding decision. Both are expected in the coming months. The state of North Rhine-Westphalia and the German government have already signaled substantial financial support for the project.

Replacement of CO_2-intensive primary steel manufacture begins

The contract award marks a decisive technological turnaround for Germany's biggest steelmaker in its more than 200-year history: As part of the tkH2Steel transformation concept, the replacement of CO_2-intensive steel production by climate-friendly technologies is now beginning. Up to this point, coal-based hot iron production in the blast furnace always involved emitting large amounts of CO_2, amounting to about 20 million metric tons per year from the Duisburg location alone. Hydrogen-based processes in direct reduction plants offer a significant basis for manufacturing carbon-neutral steel in the future. thyssenkrupp Steel is already planning to avoid as much as 6 million metric tons of CO_2 by 2030, representing well in excess of 30 percent of its emissions. The transformation to carbon-neutral production should be completed by 2045 at the latest.

Order is awarded to SMS group: a globally active plant builder based in North Rhine-Westphalia

SMS group, a company from North Rhine-Westphalia, has been awarded the contract for the ground-breaking plant at thyssenkrupp Steel. SMS employs a good 14,500 people at around 100 locations. As a specialist for steel industry production plants, it is actively helping shape the transformation of the industry. The order that has now been placed is also historic for SMS: It is the largest single order in the company's history spanning more than 150 years.

High-tech for carbon-neutral steel production

In pursuit of the best technological solution, thyssenkrupp will be the first steelmaker in the world to combine a 100-percent hydrogen-capable direct reduction plant with innovative melters. Positioning the two melters immediately adjacent to the direct reduction plant allows the solid input stock produced there to be converted into molten iron immediately; this makes the entire process particularly efficient. In addition, the spatial requirements and constraints a complex iron and steel plant involves can be taken

into account. The direct reduction plant is based on MIDREX Flex technology. SMS will also deliver the innovative melters, slag granulation and other auxiliary equipment, for example water recycling. SMS is building the plant on an EPC basis. This means the company bears overall responsibility for the engineering, procurement and construction of the plant. In addition, significant further work is required relating to structural and civil engineering, infrastructure and media supply.

The innovative concept ensures consistently high product quality. This is because it is seamlessly integrated into the existing iron and steel plant, thereby allowing all subsequent process steps from the steel mill onward to be maintained. As a result, the existing plant structure can be used efficiently. Customers will continue to receive the complete, high-quality product portfolio with the premium quality they are accustomed to.

Major step toward innovative, industrial climate change mitigation

The cooperation between thyssenkrupp Steel and SMS also sends a strong signal for North Rhine-Westphalia as an industrial center. In building the direct reduction plant, the two companies are forming a partnership for innovation and efficient industrial climate change mitigation. At the present time, thyssenkrupp Steel is still responsible for 2.5 percent of Germany's CO_2 emissions, but the first direct reduction plant alone will save over 3.5 million metric tons of CO_2. This corresponds to 20 percent of the company's current emissions, more or less, and underlines thyssenkrupp Steel's leading role in the steel industry's transformation. At the same time, the underlying technological concept can serve as a model for many other decarbonization projects in the industry in Europe and beyond.

Moreover, this step into the transformation will preserve many thousands of high-quality and highly qualified jobs. The innovation alliance between thyssenkrupp Steel and SMS will also call for new qualifications, in addition to the jobs created during the construction of Germany's biggest direct reduction plant.

The detailed planning and preparatory work for construction of the direct reduction plant will commence immediately, under the scope for an earlier start to work approved by the German government. One of the tasks on

the list involves getting the construction site ready on the plant premises of thyssenkrupp Steel.

In parallel to the project, thyssenkrupp Steel will enter into an open and transparent dialog with neighborhood residents, politicians and the general public, to explain the pioneering project that is now being developed to decarbonize steelmaking at the Duisburg site.

Quotes:

Hendrik Wüst, Minister President of North Rhine-Westphalia: "One of the most important projects for the industrial transformation in North Rhine-Westphalia is going to be implemented: The contract award to the Düsseldorf-based SMS group represents a great decision for the climate, for thyssenkrupp and for the location of North Rhine-Westphalia. It shows: in our federal state, there is not only the knowledge to produce basic materials carbon-neutrally, but also the competence to build the necessary plants. In this way, we are combining climate change mitigation with sustainable industry and its high-quality jobs, and are taking a major step toward becoming a carbon-neutral industrialized country. We are supporting this project with conviction and to the tune of up to 700 million euros, thus contributing to the preservation and transformation of an important value chain for the entire economy in the state."

Martina Merz, CEO thyssenkrupp: "At thyssenkrupp, we are doing everything in our power to accelerate the green transformation. This is also the reason why, despite all the challenges and uncertainties, we are already launching the direct reduction plant. We cannot wait until all the issues have been resolved. We must act now and invest now if we want to achieve our climate targets and secure the future of this industrial location. That is why today is a great day, both for the climate and for the industrial transformation in our federal state."

Bernhard Osburg, CEO of thyssenkrupp Steel: "With this contract award, we are now embarking on the implementation and industrialization of our transformation. It is a historic day for thyssenkrupp Steel and good news for industrial climate change mitigation – since, just by itself, our first direct reduction plant will enable us to avoid emitting 3.5 million metric tons of CO_2. We are very pleased that we have SMS as our partner for the technological leap into hydrogen-based steel production. Together, we intend to demonstrate that an innovative and sustainable transformation of the steel industry is possible in Germany and Europe. We are thus creating the basis for tomorrow's green steel markets."

Burkhard Dahmen, CEO SMS group: "This project means a great deal to us. thyssenkrupp and SMS have been working together closely for many decades now. We are looking forward to taking responsibility for this forward-looking project as well. We are also delighted that our technology, know-how and expertise in project management will support the green transformation at Germany's biggest steel producer. We all know: this is an important milestone on the road to a green metals industry."

Tekin Nasikkol, Chairman of the General Works Council at thyssenkrupp Steel: "Today marks the start of the green, carbon-neutral future for thyssenkrupp Steel Europe AG. This marks a historic day for all of our more than 26,000 colleagues, and one on which we are sending several powerful messages at once. Firstly: As the beating heart of North Rhine-Westphalia's economy, the steel industry has a CO_2-free future. Secondly: We are creating long-term job security for the Duisburg location, for our workforce and indirectly for tens of thousands of jobs in processing companies in North Rhine-Westphalia. And thirdly: We are proving that we are not an "old economy" – we are becoming pioneers for the "green economy" in Germany and ensuring that our customers also become more sustainable."

Sören Link, Mayor of Duisburg: "This historic investment is a giant step on the road toward green steel. At the same time, it represents a commitment to Duisburg as a business location, and a commitment to innovation and climate change mitigation. We in Duisburg

are continuing to work on becoming the most climate-friendly industrial city in Germany!"

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