Europe Green Steel Market is Set for Major Expansion, Projected to Hit US$ 12.01 Bn by 2032

Europe green steel market set to grow at a 75.3% CAGR, driven by stringent environmental policies and advancements in hydrogen-based steelmaking technologies.

Europe Green Steel Market

LOS ANGELES, CA, UNITED STATES, February 21, 2025 /EINPresswire.com/ -- The European green steel market is witnessing an unprecedented transformation as the steel industry pivots toward sustainability and carbon neutrality. According to Persistence Market Research, the Europe green steel market is expected to reach US$ 236.2 million by 2025 and is forecasted to grow at a remarkable CAGR of 75.3%, reaching a valuation of US$ 12,004.3 million by 2032. This rapid growth is fueled by stringent environmental regulations, technological advancements, and increasing investments in clean steel production.

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Market Growth & Size Projections

The green steel market in Europe is experiencing a monumental shift, driven by the need to reduce carbon emissions from one of the most energy-intensive industries. With a projected CAGR of 75.3% between 2025 and 2032, the market is set to scale up rapidly as steel manufacturers transition to sustainable production methods. This growth is primarily propelled by heightened awareness regarding climate change and a strong regulatory push from the European Union.

A significant factor in this expansion is the increasing demand for green steel from industries such as automotive, construction, and renewable energy. As steelmakers adopt cleaner production technologies like hydrogen-based direct reduction and electric arc furnaces, the

industry is moving closer to achieving full decarbonization, positioning Europe as a global leader in sustainable steel production.

Government Policies & Regulations

Europe's aggressive climate policies are a major driver behind the rise of the green steel market. The European Green Deal, which aims for carbon neutrality by 2050, has spurred substantial investments and incentives for low-carbon industrial processes. The Carbon Border Adjustment Mechanism (CBAM) is another regulatory tool being implemented to impose carbon pricing on imported steel, ensuring that European producers investing in green steel maintain a competitive edge.

Subsidies and tax benefits further incentivize green steel production. The EU's Fit for 55 package includes ambitious targets to reduce greenhouse gas emissions by 55% by 2030, pressuring steel manufacturers to accelerate their decarbonization strategies. Additionally, national governments are providing financial support to companies investing in hydrogen-based steel production and carbon capture technologies.

Key Players & Investments

Leading steel manufacturers in Europe are spearheading the transition to green steel through significant investments in sustainable technologies. Companies such as SSAB, ArcelorMittal, and Thyssenkrupp are at the forefront of this movement, developing hydrogen-based steel production methods to replace traditional blast furnaces.

SSAB has launched the HYBRIT initiative in collaboration with LKAB and Vattenfall to produce fossil-free steel using hydrogen. ArcelorMittal is investing in direct reduced iron (DRI) plants powered by renewable hydrogen, while Thyssenkrupp is implementing carbon capture utilization and storage (CCUS) solutions to minimize emissions. These strategic investments are setting the stage for large-scale commercial production of green steel across Europe.

Technological Innovations

The European steel industry is undergoing a technological revolution, with innovations focusing on reducing carbon footprints. Hydrogen-based direct reduction is emerging as a game-changer, enabling the production of steel without relying on coal. Companies are increasingly integrating electric arc furnaces (EAFs), which use recycled scrap and renewable electricity, further cutting emissions.

Additionally, advancements in carbon capture utilization and storage (CCUS) are enabling steelmakers to capture CO2 emissions and repurpose them for industrial applications. These technologies, combined with increased renewable energy integration, are crucial in meeting the EU's ambitious climate targets and making green steel a commercially viable alternative to

traditional steelmaking.

Demand from End-Use Industries

The growing demand for green steel is driven by key industries committed to reducing their carbon footprint. The automotive sector, in particular, is prioritizing green steel for vehicle manufacturing, as companies like Volvo and BMW pledge to achieve carbon neutrality across their supply chains. Similarly, the construction industry is shifting toward low-emission building materials to meet stringent sustainability regulations.

The renewable energy sector is another major consumer of green steel, as wind turbines, solar infrastructure, and hydrogen storage tanks require sustainable materials. With corporate sustainability goals gaining prominence, the demand for green steel is expected to skyrocket, reinforcing its role in the global clean energy transition.

Challenges & Supply Chain Constraints

Despite its rapid growth, the European green steel market faces significant challenges. High production costs remain a key barrier, as hydrogen-based steel production is more expensive than traditional methods. The availability of green hydrogen is another critical issue, as large-scale hydrogen infrastructure is still under development.

Supply chain constraints also pose obstacles, particularly in sourcing raw materials and establishing a robust renewable energy framework. To overcome these challenges, industry stakeholders are urging policymakers to accelerate infrastructure investments and provide further financial incentives to scale up green steel production efficiently.

Strategic Partnerships & Mergers

Collaboration between steelmakers, energy companies, and policymakers is vital for the rapid adoption of green steel. Several strategic partnerships and mergers are shaping the industry, driving innovation and scaling up production capacity. SSAB, LKAB, and Vattenfall's HYBRIT project exemplifies a successful collaboration between the steel and energy sectors to produce fossil-free steel using hydrogen.

Additionally, partnerships between steel manufacturers and renewable energy providers are ensuring a steady supply of green electricity for electric arc furnaces. Mergers and acquisitions among key players are further consolidating resources and expertise, expediting the transition toward a carbon-free steel industry.

Future Outlook & Competitiveness

Europe is positioning itself as a global leader in green steel, but competition is intensifying from

regions like North America and Asia. The European Union’s regulatory framework provides a strong foundation for growth, yet challenges such as production costs and infrastructure development must be addressed to maintain competitiveness.

As green steel technologies mature and production scales up, costs are expected to decline, making sustainable steel more accessible to a wider range of industries. With continued policy support, strategic investments, and technological advancements, Europe is well on track to lead the global green steel revolution, setting an example for the rest of the world in sustainable industrial development.

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