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Innovations by Slovenian Steelmakers for the Energy Future

The European steel industry is a global leader in innovation and environmental sustainability. The exceptional properties of steels developed by SIJ Group ensure safe, efficient, and reliable production and distribution of nuclear, fusion, thermal, hydro, solar, and wind energy.

The Chamber of Commerce and Industry of Slovenia (CCIS) awarded national prizes to the most innovative innovators in companies and other organisations for the twenty-second time. The central theme of this year's awards ceremony was "We Chose Sustainability". Both gold-award-winning innovations from SIJ Group are also focused on a sustainable future.

The gold innovation of SIJ Acroni, *Steel of the Future – Innovation for Hydrogen Fuel Cells*, developed in collaboration with a German customer, is used as an application in next-generation hydrogen fuel cells – SOFC (Solid Oxide Fuel Cell). This is a unique development of the stainless ferritic steel of the future and the remelting of scrap iron and continuous casting processes, which give the steel long-term resistance to high temperatures while preserving all its properties.

SIJ Metal Ravne received a gold award for the *Development of the UTOPTI / CHN35VT-VD Superalloy Using the Innovative ESR Process as the First in the World to do so.* This innovation, a result of collaboration with the Institute of Metals and Technology and the Faculty of Natural Sciences and Engineering, belongs to a special class of metal alloys intended for the production of control cartridges critical to nuclear reactor systems.

Innovative steels, produced through the circular-economy-based technological process of SIJ Group, can already be found in the flange of the tokamak—the world's largest fusion reactor, ITER. In collaboration with scientists, they developed a steel that exceeds the project's requirements, as it maintains its specified properties even at 350 degrees Celsius, significantly extending its lifespan.

SIJ Group steels can also be used in the energy sector for various purposes, such as in critical turbine components, heat- and corrosion-resistant structural elements, reactors, heat exchangers, tanks, pressure vessels, boilers, valves, pumps, and pipelines.

With a broad portfolio that includes stainless, wear-resistant, high-strength structural, special carbon, tool, and electrical steels, SIJ Group supports key industries beyond energy – from heavy machinery to advanced manufacturing. These versatile steel solutions reflect our commitment to innovation, quality, and a sustainable future.