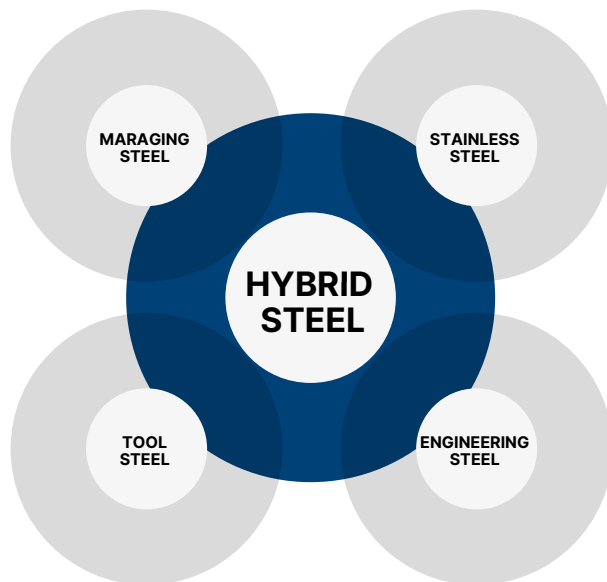




Hybrid steel, new concept, endless applications

Ovako's latest invention is to challenge the long-established divisions between the specific steel categories and to merge the unique properties in each category into one high-performance steel grade.

The background of Hybrid steel development

Ovako's goal was to develop a new alloy that would fulfil the following main criteria:

- High strength and a stable microstructure,
- A targeted hardness suitable for various applications,
- No harmful segregation of elements,
- Being suitable for large-scale production.

HYBRID STEEL®

THE NEXT STEP IN STEEL EVOLUTION

IN BRIEF

Hybrid steel, a solution for many industrial challenges

Target industries	Industrial challenges	Hybrid steel features
Mining & machining	Reducing manufacturing costs A steel which does not need energy intensive remelting process to achieve desired properties enables savings in energy, CO ₂ emissions, time and money.	✓ High-volume enabling cost-efficient production thanks to a high strength steel obtained without remelting process ✓ High hardenability enabling low distortion and a reduced need for final machining process ✓ Low microstructural segregation offering uniform properties ✓ High strength with good weldability welding of ultra-high-strength steel is possible
High-temperature structural applications	Elevated-temperature applications Operating at high temperature reduced strength by weakening steel microstructure	✓ High strength, at elevated temperatures thanks to a stable microstructure
Engine & fuel injection components, Bearings & rotating machinery	Long fatigue life Low cleanness increases the risk of fatigue failures	✓ High cleanness and fatigue strength at elevated temperatures thanks to clean steel production and stable microstructure
Engine & fuel injection components, Bearings & rotating machinery	Hydrogen embrittlement The absorption of atomic hydrogen into steels promotes premature failures	✓ Superior resistance to hydrogen embrittlement thanks to fine V and Cr rich carbide that trap atomic hydrogen and Cr and Al rich oxide that prevent hydrogen uptake
High-temperature structural applications Mining & machining	Oxidation and corrosion resistance	✓ Good corrosion resistance thanks to combined chromium and aluminum additions that form adherent and compact passive layer

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