

HYDROGEN

A COMPLEMENTARY PATH TO DECARBONISE ALUMINIUM



Hydrogen **serves as a vital decarbonisation** route for high-temperature processes where direct electrification is technically or economically difficult.

CHALLENGES & STRATEGIC ACTIONS

CHALLENGES



Material & Equipment Risks

High-temp hydrogen flame increases water vapour, which can corrode equipment and can reduce furnace durability.



Safety & Knowledge Gaps

The industry has limited experience with hydrogen; current safety protocols are built for natural gas.



Operational & Economic Rigidities

Moving directly to 100% hydrogen is costly and risky due to uncertain supply and infrastructure.

SOLUTIONS



Hydrogen Combustion Systems

Developing advanced burners designed to minimise NO_x formation and handle high water vapour levels without damage.



Safety Systems & Standards

Investing in hydrogen-specific safety concepts, leak-prevention protocols, and industrial safety standards.



Hybrid Fuel-Switching

Combining hydrogen and natural gas for a gradual transition, allowing greater operational flexibility as supply chains mature.

WHAT ENABLES THIS SHIFT IN EUROPE?



Strengthening connections to regional hydrogen hubs through EU-supported transport projects.



Ensuring predictable pricing and accessibility across Europe to de-risk investments.



Developing a consistent, fast-track regulatory framework for hydrogen projects.