PROJECT 0228

Hydrogen from Aluminium in the Processing Cycle

HydrAl reactor technology for integrated hydrogen generation during liquid-aluminium processing

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THE OPPORTUNITY

HydrAl is designed to generate hydrogen within industrial operations that already handle liquid aluminium or aluminium alloys, creating an auxiliary energy source that can be used as fuel or converted to electricity.

1 TECHNOLOGY

Steam reacts with molten aluminium to produce hydrogen. The approach uses hydrogen solubility in liquid aluminium, which serves as a reactant and as a medium for hydrogen storage and transport.

2 APPLICATIONS

- Primary aluminium smelters
- Aluminium recycling plants
- Other process chains containing liquid aluminium or alloys
- Hydrogen fuel or electricity generation

3 KEY BENEFITS

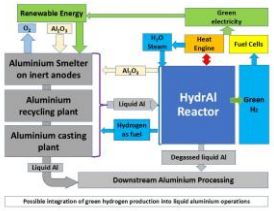
- No contaminating or harmful additions
- Alumina by-product can be recycled
- Exothermic reaction requires no additional energy source
- Batch, semi-continuous or continuous operation

PROCESS & INTEGRATION

- Three stages: reaction, dissolution and extraction
- Designed to address safety issues associated with water and molten metal interaction
- Intended for integration into existing liquid-metal operations

IP & COMMERCIAL ROUTE

- IP position: patent application
- Opportunities: licensing, spin-out and collaborative R&D
- Further patent and ownership details available from the TTO



HydrAl integration concept

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