

The Element of **Possibility™**

Carbothermic

A lost opportunity?

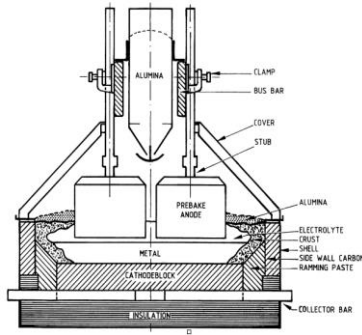
17 February 2017



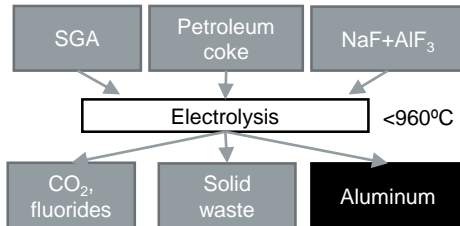
The PROGRAM

To the next generation oven and reaction: from Electrolytic to Carbothermic aluminum

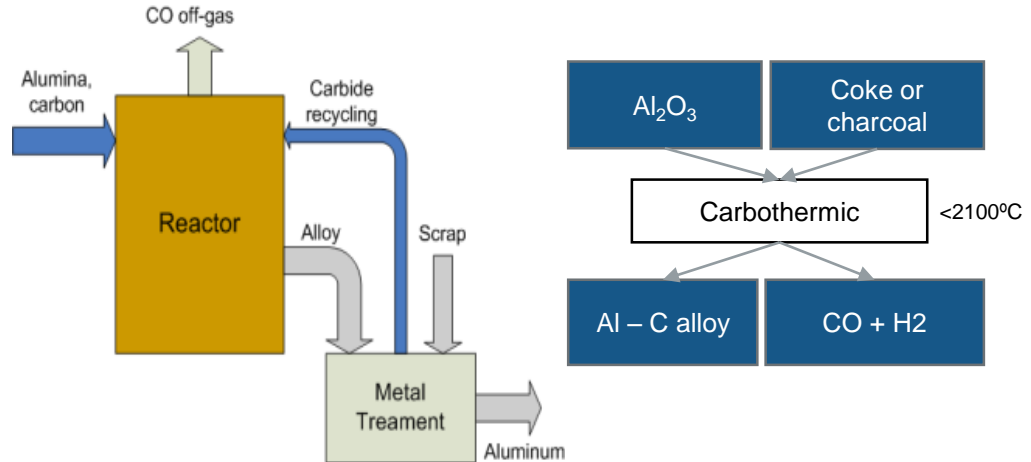
Conventional Hall process



Electrolysis using molten salt to dissolve SGA



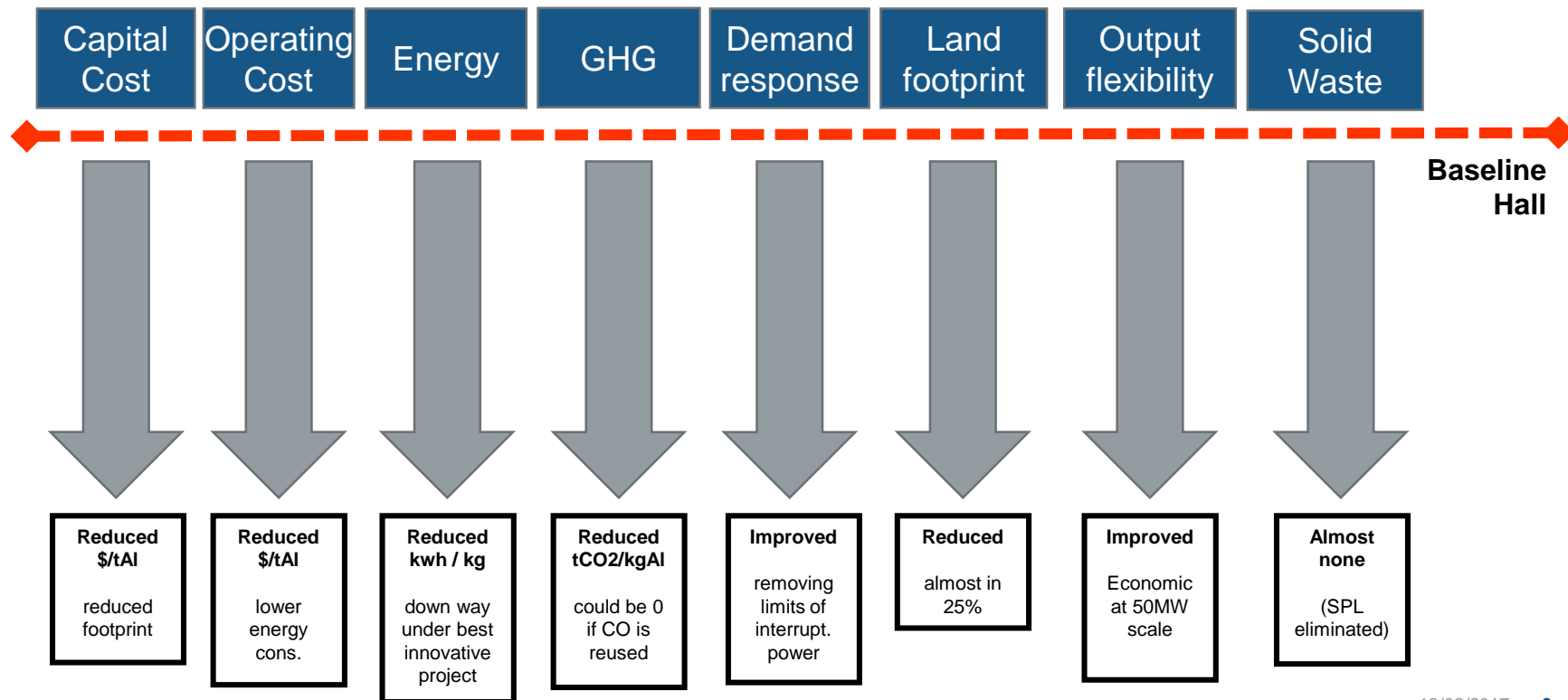
CARBOTHERMIC PROCESS



High temperature reduction of aluminum oxide with carbon

The POTENTIAL

A strong opportunity for innovation



The CHALLENGE

On the verge of EU-EFTA innovation leakage?

Economic environment and limited funding support provoked Alcoa to discontinue the project in Jan-17. Alcoa started exploring value added use of assets and intellectual property



Possible outlook of Carbothermic facility in Lista (Norway)

History

Alcoa owns all necessary patents and has invested **>80% of total project costs** since 1998, rest coming from public funding.

Status

Development Stage C (lab scale)

Next steps

Limited project costs to prove technical feasibility. **Significant bridge** to bring commercial readiness.

Time to first application

2025-2030

Time to run rate

2035-2040

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