Expert insights: The IB2 Process to revolutionize alumina technology and drive growth in China

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The alumina industry is on the cusp of a transformative breakthrough as the IB2 process, a revolutionary technology, is set to make its mark in China. Esteemed industry expert Laurent Laheux, Market Director for Metals and Mining at Technip, highlights the significance of this innovation in addressing long-standing challenges in the sector.

Aluminium, a vital material in industries ranging from automotive and aerospace to renewable energy and packaging, continues to drive progress worldwide. However, the production of alumina—a key component in aluminium manufacturing—remains energy-intensive and waste-generating. The IB2 process is poised to change this narrative by offering a sustainable and efficient solution.

A technological milestone for alumina production

Developed by specialists in green industrial technologies, the IB2 process revolutionizes the upgrading of low-grade bauxite by removing impurities such as silica, sulphur, and organic carbon. This breakthrough achieves remarkable outcomes:

- 40% reduction in CO2 emissions
- 60% decrease in red mud residue
- 80% lower caustic soda consumption, significantly cutting refining costs and the ecological footprint.

The process generates an eco-friendly by-product, tobermorite, which can be used in the production of low-carbon cement, promoting a circular economy approach.

“The IB2 process turns previously low-grade bauxite into high-value material, transforming ores with an Al/Si ratio of 2.5 into a superior quality with an Al/Si ratio of 13–14—well above current standards,” says Laheux.

China’s strategic leap forward

China, the world’s largest aluminium producer, faces significant dependence on imported bauxite, sourcing 80% of its requirements from abroad. This reliance impacts competitiveness and industrial sovereignty. The IB2 process presents a strategic solution, enabling China to maximize the potential of its domestic resources.

A state-of-the-art industrial facility is under construction in Shanxi province, with operations set to commence in June 2025. The facility will begin with an initial production capacity of 200,000 tonnes, scaling up to 600,000 tonnes by 2026 and an impressive 3 million tonnes by 2028.

A global opportunity

Beyond China, the IB2 process is gaining traction worldwide, with advanced discussions underway in Kazakhstan, Saudi Arabia, and India. Its ability to optimize resources, reduce costs, and minimize environmental impact has positioned it as a game-changer for the global alumina industry.

Towards a sustainable future

“As the aluminium industry faces mounting pressure to align with economic and environmental imperatives, the IB2 process offers a path forward. The IB2 process not only enhances efficiency but also represents a significant step towards a sustainable future. It’s the key to a more competitive and eco-responsible industry, better equipped to meet the demands of a rapidly evolving world,” concludes Laheux.

About IB2:

IB2, founded by Romain Girbal and Yves Ocello is a green industrial tech company that has developed a

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breakthrough environment-friendly technology for alumina refineries. The technology was developed by a team of 10 professionals cumulating 400 years of experience in the bauxite and alumina industry, especially in the Bayer process and all types of bauxites.

About Yves Occello:

Yves Occello has held a number of senior positions in companies in the bauxite-alumina sector (Péchiney – Alcan – Rio Tinto). He has world-renowned expertise and knowledge of refinery issues.

Honorary Director of the Chinese Academy of Sciences

Engineer – ENS Chimie de Paris

About Romain Girbal:

Romain Girbal is a co-founder of IB2.

After studying French and Spanish business law at the University of Paris X (Nanterre) and international trade at the University of Carlos III (Madrid), he obtained a master's degree in business law and international management at HEC Paris in 2007. Romain Girbal is a graduate of Harvard Business School where he studied the OPM program for entrepreneurs.

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