

September 16, 2022

Inauguration of the world's largest green technology Acid Regeneration installation supplied by John Cockerill to Steel Giant Baowu

September 16th, 2022 –The official inauguration of the world's largest acid regeneration installation took place today at the Chinese BAOWU Steel Group's Shanghai-based subsidiary, Baoshan Iron and Steel. After a challenging commissioning period marked by a 2-months shutdown due to the latest Covid-19 outbreak, the two plants supplied by John Cockerill Industry feature the full spectrum of the very latest process technologies in this field, making it the most environmentally friendly process for acid regeneration on the market.

The world's largest capacity Twin Acid Regeneration Plant (ARP) purifies 2 x 20.000 liter per hour of spent hydrochloric acid (HCl) that is led back into the client's manufacturing process. According to the latest monitoring data, it will reduce the plant's carbon footprint by 4,800 tons per year, and dust by 25 tons, all while reducing or even eliminating other waste streams including wastewater and solid hazardous waste. A compelling testimony of the Chinese steel giant's investment into circular economy and an eco-friendlier future.

Located in the client's flat steel complex in Shanghai, the two ARPs are based on John Cockerill's state-of-the-art fluidized bed (FB) technology, for highest throughput and plant availability, providing operator friendliness, as well as a small footprint and easy oxide handling. Features based on which BAOWU Steel Group opted for John Cockerill's FB technology for the regeneration of its spent acid solution coming from the pickling process. A process during which high-strength and electrical steel strip is pickled using HCl to remove impurities from the metal surface. For this type of high alloy and silicon containing metal strip the spent acid solution, also called pickling liquor, contains a particularly high number of impurities and harmful particles.

John Cockerill's highly automated acid regeneration plants allow the recycling of close to 100% of the generated spent pickling liquor. This not only reduces the environmental footprint of the steel complex but also its operating cost. Additionally, the perfectly matched tank farm guarantees the efficient management of consumable process chemicals and maximizes operating efficiency, but also minimizes the environmental impact.

Simplified processes, such as automatic ignition burner, motorized pendulum flap, the improved design of our venturi, rendering it completely maintenance free, or the most modern plant control system (PCS), are just a few examples of the features of these plants. In addition to lowering the maintenance intensity of the equipment, John Cockerill has also been heavily focusing on heat recovery and the emission reduction of its ARPs. As such, another highlight of the acid regeneration process designed by John Cockerill Industry's German entity, John Cockerill UVK, is the off-gas cooling. This highly efficient off gas cleaning by cooling guarantees ultra-low emission figures at stack. Additionally, the combustion air preheating system reduces the fuel consumption and CO₂ footprint by 10%.

"There are many ways towards circular economy in the steel sector, but the fundamental solution lies in technology." said Mr. Gu, Baoshan Iron and Steel's Project Manager for this project at the inaugural ceremony in Shanghai, before adding, "This new installation is yet another element to help our Group towards circular economy and tackle climate change. One of the strengths of the acid regeneration process provided by John Cockerill is the environmentally friendly design of the twin plant. Thus, the two highly efficient ARPs allow the recycling of close to 100% of the used hydrochloric acid for reuse in our hot-rolled steel strip manufacturing process."

“John Cockerill’s latest generation of ARPs come with an innovative and environmentally friendly concept, particularly in terms of emissions and waste energy recovery, combined with smart manufacturing and Industry 4.0 technologies. We are proud being able to assist premium steel suppliers like BAOWU to face the ever more stringent environmental policies in their country and to deliver a cleaner and more sustainable steel industry by providing future-oriented high-performance equipment like this Twin ARP installation.” commented Isabelle WIDMER, Managing Director of John Cockerill UVK

Decisive factors for choosing John Cockerill for this project were the company’s extensive experience in designing and building fluidized bed acid regeneration systems, but also the high process security of the plant concept, providing highest throughput and plant availability.

John Cockerill, enabler of opportunity

Driven since 1817 by the entrepreneurial spirit and thirst for innovation of its founder, the John Cockerill Group develops large-scale technological solutions to meet the needs of our time: preserving natural resources, contributing to greener mobility, producing sustainably, fighting against insecurity, and facilitating access to renewable energy. Its offering to enterprises, States and public bodies comes in the form of services and associated equipment for the energy, defense, industry, environment, transport, and infrastructure sectors. In 2021, John Cockerill achieved a turnover of 941 million euros in 19 countries on 5 continents.

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John Cockerill Industry helps its clients produce sustainably

John Cockerill Industry, one of the Group’s 6 sectors of activity, designs, supplies, and modernizes cold rolling mills, processing lines, chemical and thermal treatment installations for the steel and the non-ferrous industry. It also provides state-of-the-art heat treatment technologies for the aviation, forging and casting industry, as well as surface treatment installations for all types of industries, including automotive and aviation, with a particular focus on the MRO (maintenance, repair, and overhaul) segment.

Based on decades of experience and successfully running references all over the world, John Cockerill Industry also provides lifecycle services, as well as training and technical assistance.

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