

## SUCCESSFUL LAUNCH OF THE COMPLETE LEAD ACID BATTERY RECYCLING PLANT BY **STC** IN NIGERIA

**STC**'s important project commissioned by the Nigerian company **Green Recycling Industries Ltd.** based in Agbara, Ogun State, has almost come to an end. The well-known Italian engineering and contracting company has implemented the design, construction and supply of a complete lead acid battery recycling plant composed of a breaking and separation area, lead paste super desulphurization, double effect evaporator to concentrate ammonium sulphate solution in order to obtain a usable liquid fertilizer, and a final lead smelting and refining area inclusive of a lead ingots casting machine and an air pollution control system. The plant has an inlet exhausted battery capacity of up to 5 tons/h and it is currently under the final commissioning stage.

The installed technology could be considered one of the most innovative and environmentally friendly Used Lead Acid Batteries recycling plants currently installed anywhere in the world thanks to the application of the new revolutionary **U4Lead** Process, which was just recently patented by **STC**. This process is based on a desulphurization reaction carried out by means of a specific amino compound which leads to remarkably high desulphurization yields and a residual Sulphur content below 0,3%. The ammonium sulphate solution resulting from the process can be used as fertilizer in liquid form after a purification and concentration process.



**U4Lead Technology**

Another noteworthy characteristic of this plant is the new **STC** Tilting Rotary Furnace, which is employed for the smelting operations of the clean coarse metallic fraction. The resulting molten lead obtained is directly transferred through a channel to the refining kettles for final lead ingots production.

The second part of the project is already in progress: **STC** has additionally completed the design and construction of a new Rotary Furnace for lead paste smelting operations, equipped with an oxyfuel burner, process fumes extraction, and a full air pollution control system. The furnace is supplied with an automatic feeding system and bullion and slag recovery unit with an automated trolley for crucibles. An innovative charge preparation system where paste and fluxants are premixed and pelletized is also included, in order to minimize the dust emissions, allow charge premixing, reduce fluxants consumption, optimize and speed up the lead reduction process.

In particular, the furnace design and construction has been implemented using innovative CAD/CAM systems, automatic submerged arc welding and a CNC vertical turning lathe, thus making the construction process economically convenient and ensuring the highest mechanical quality of the final equipment.

Thanks to the innovative **STC**'s **U4Lead** desulphurization process, the furnace will work with almost completely desulphurised material (negligible Sulphur content - in lead paste <0.3 % and in metal and grids < di 0.1 %) with a consequent reduction of Sulphur emissions such as SO<sub>2</sub> - below 50 mg/m<sup>3</sup> - in the fumes released from the chimney.

The installation of this unit is due to be completed by the end of July 2020 while final start-up of the whole plant is expected by the end of August.

The CEO of **Green Recycling Industries LTD** <https://www.greenrecycling.ng/>, said "We are very satisfied with the cooperation with **STC**: the quality of the equipment, which is strong and robust, is according to our expectations. The technical assistance provided by **STC**'s team is very professional and has been helpful and supportive since the beginning of the project. We established a good communication line, and the collaboration with **STC** for this project is a prime example of international cooperation between the two teams

considering the objective difficulties caused by local conditions. This investment will allow **Green Recycling Industries** to expand its recycling activities, becoming the largest secondary lead producer in Nigeria, with the most advanced and environmentally-friendly technology.”



**Lead Acid Battery Recycling plant in Nigeria**