ALUM SA TULCEA

General Director
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Alum activity plan for 2023

The energy crisis of 2021-2022, through the accelerated increase in electricity and natural gas prices, had a negative impact on the production costs for calcined alumina and electrolytic aluminum.

The deterioration of the international situation caused by the conflict in Ukraine has exacerbated the energy crisis and escalated electricity and natural gas prices, leading to unsustainable alumina costs.

For 2023, in the current market conditions and taking into account electricity and natural gas prices, it is proposed to keep the activity of calcined alumina production stopped.

The main activities in Alum in 2023 will be the following:

1. Preparing the component machinery in the manufacturing lines to resume the production of metallurgical alumina from bauxite for the period when this production will be economically viable with the normalization of electricity and natural gas prices.
2. Continue the research activity on the equipment provided by the Alum Research Department to increase Alum's competitiveness by obtaining and marketing new products with high added value.

A. Staff

Considering the suspension of the production activity in August 2022, the number of employees to be directly involved in the cleaning of installations, maintenance / repair activities, as well as the continuation of the research activity within the CDI department was reassessed.

In the new conditions of activity in Alum, the company's organizational chart was revised taking into account the maintenance of a core of specialists from all departments of the plant, in order to prepare the restart of the production activity when the evolution of electricity and natural gas prices will allow it.
Currently, there are 264 employees in the company. In addition to staff in the administrative and auxiliary sectors, most carry out rehabilitation of the main plant installations to ensure reduced specific consumption of raw materials, electricity and heat when normal production is resumed.

During the suspension of the production activity, measures will be taken to maintain all operating permits (AIM, GES, ISCIR, etc.) as well as accreditations according to the integrated management standards for which we are certified: SR EN ISO 9001:2015, SR EN ISO 14001:2015, SR EN ISO 45001:2018 AND SR EN ISO 50001:2019.

B. Production activity

Considering the challenges imposed by the change of the supply chain of raw materials for its main client – ALRO SA, ALUM SA will continue to contract calcined alumina from external suppliers, the necessary logistics up to the port of Constanta, the customs formalities, as well as the contracting of handling services in the port of Constanta, providing the customer with or calcined alumina necessary for the production process to be carried out.

During the period when production is suspended in Alum, the Production Department provides process solution management activities. The volumes resulting from the emptying of installations are stored in the vessels in Pre-desilication, Red filtration, Desilication, Evaporation.

The on shift staff is provided for 9 positions in the factory, at the retention Basin, SC1, basic sections, and at the workstations outside the factory at step 1 Danube, GZA, the pond pump station, the Pond's thickener. The on shift staff will ensure the management and neutralization of rainwater from the technological platforms, the safe storage of solutions and the immediate resolution of possible problems that may arise. These activities are intended to keep the plant installations safe.

The program continues for technological cleaning of washing vessels, thickeners, decomposition vessels, technological routes, heat exchangers, water cooling towers, autoclave registers, leaching registers and evaporation registers. The realization of this program will contribute to the increase of energy efficiency by eliminating thermal energy losses and by advanced recovery of thermal energy from solutions.

C. Research activity

During the suspension of the production period will continued:

- research activities using the Research & Development Department's equipment's acquired to support the economic competitiveness and business development by obtaining and valorification of new products with high added value**:**
  - "Independent Equipment/Installation for research and development of technology to obtain dried aluminium hydroxide";
  - "Independent Equipment/Installation for research and development of the technology of grinding and screening the dried aluminium hydroxide";
  - "Independent Equipment/Installation for research and development of the technology of wet aluminium hydroxide classification";
    These equipments have been acquired and put into operation through the EU co financed project: „*Endow the Research & Development Department of SC ALUM SA with independent and efficient research facilities to support the economic competitiveness and business development", through the purchase procedure applicable to the projects financed by the Competitiveness Operational Programme 2014-2020, Priority Axis 1 "Research, Technological Development and Innovation (CDI) in Support of Economic Competitiveness and Business Development".*
- study of the possibilities to use bauxite residue in:

    - agriculture as a improver for acidic soils;
    - construction materials industry as a sub-base for roads.;
    - cement production industry as an additive to clinker production;

  with the active participation of the Alum Research Department in the projects co-financed with EU funds: Removal, Reactiv and Reescue carried out within Horizon 2020.
- the identification, testing and optimization at the laboratory level of other possibilities for capitalizing on:
    - red mud by desalination for further use in the construction materials industry;
    - screened bauxite to obtain mineral wool.
- the implementation of new analysis methods specific to other industries to increase the possibilities of capitalizing on dry, sieved or grinded hydrate (brightness, degree of whiteness and oil absorption index);
- studying the possibilities of capitalizing the crust resulting from the cleaning activities of the installations.

D. Maintenance and Repair Department activities

D1. Maintenance and repair activities

The main activity of the Maintenance and Repairs Department is to keep the facilities related to the technological flow in working order and carry out repairs according to the Overhauls and Repairs Plan.
For the year 2023, the activity will contain repairs and conservation operations for the machines taken out of operation following the suspension of the production activity, respectively the preparation for the restart of all the necessary equipment, ensuring the continuous operation of the machines necessary for the current activities (eg: ensuring the operation of all the water pumping equipment from the Danube to the Red Mud Pond).

The budget for these activities for the year 2023 has a value of approximately **387,000 USD**, of which **77,000 USD** represents repairs made with third-party companies, **248,000 USD** are own repairs and **61,000 USD** represents maintenance services.

Important repairs that will be carried out with third parties:

- CFU repairs - 26.000 USD
- repair of heavy machinery - 19.000 USD
- PSI repairs - 11.000 USD

The repairs that will be carried out with own forces will be prioritized in order to provide the equipment that will be necessary to restart the plant, consisting in general revisions without replacing some components that can be used.

D2. Continuous improvement activities

The most important works to improve the technological flow or to improve the activity of Alum scheduled for 2023 are:

- Rehabilitation of the White filtration building;
- Rehabilitation of the Duplex Hall building;
- Rehabilitation of Grinding, Digestion, Red filtration concrete platforms;
- Extenting of the pond wetting system;

- Replacement of some pumps or routes to reduce energy consumption (technological flow optimization);
- Removal of unusable pipes from the Alum estates, decommissioning of discarded and unused machinery for use as scrap iron.

For the recovery activity in order to be used as scrap iron, about 100,000 USD was allocated for the necessary auxiliary materials (oxygen, acetylene) the estimated revenues being about 700 thousand USD.

E. Activity of the Technical Quality Investments Direction

The activities strictly necessary for:

- Keeping in force all the notices, agreements and authorizations necessary for the Alum functioning;
- Ensuring operational continuity by extending the life time of the Red mud pond and maintaining its condition in compliance with the provisions of the environmental agreements with which ALUM SA is obliged to comply;
- The continuation of the gradually consolidation works at the precipitation vessels, at the support structure of the White Filtration building and the rehabilitation of the White Filtration power station;
- Increasing the safety in operation of the static and dynamic equipment's necessary to carry out the activity of the ALUM departments;
- Reducing ALUM's carbon footprint by installing a photovoltaic park. The project will be implemented with funding from the equipment supplier.

For the implementation of the ALUM Investment Program, it is estimated that a total of **1,050,000 USD** will be needed by the end of 2023 as follows:

- **Chapter 1 - Environmental projects to ensure operational continuity** – includes 2 investment objectives with a necessary forecasted budget of **250 th. USD;**

- **Chapter 2 - Projects for ensuring the operating conditions and production process safe continuity** – includes 4 investment objectives with a necessary forecasted budget of **800 th. USD.**

For energy efficiency projects:

- Will be reactualized all notices and agreements related to the "*12 MWe high efficiency cogeneration power plant*" project;
- Will be implemented the investment project "*Energy efficiency of Alum S.A. by installing a photovoltaic park within Alum S.A.*". The investment project will be financed by the supplier of the photovoltaic system under the regime of PPA.

F. Proposed budget

The budget for the year 2023 was built on the basis of the premises presented in the Activity Plan, which involves the purchase of calcined alumina from the market, with an optimized cost to cover Alro's needs.

The total budgeted revenues for the year 2023 are in the amount of 68,739,644 USD, of which revenues obtained from the sale of alumina and hydrate in the amount of 66,876,483 USD and other revenues obtained from various activities in the amount of 1,863,161 USD. Total budgeted spending for 2023 is 80,659,644 USD.

Thus, in the Alum budget for the year 2023, a loss of 11,919,575 USD is estimated.

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