SC ALUM SA TULCEA

General Director
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Plan to perform activities regarding production, maintenance, repairs and investment during the year - 2022

Taking into account the effects generated by the evolution of the electricity and natural gas market, for 2022 the production plan was analyzed as well as the necessary works, materials, related personnel in order to achieve the proposed production level and repair works, plant arrangements, at each installation level.

There were set the specific consumptions and operating technological parameters for Sierra Leone bauxite.

For alumina production and raw materials specific consumptions optimization it is envisaged to continue the cooperation with research institutes and consultancy companies from Romania and France (Technical University of Civil Engineering Bucharest, IPROLAM Bucharest, Politehnica University of Timisoara, Amber Development).

A. Production and Mechanical & Electrical Departments

Considering the low level of production scheduled for 2022, the number of employees to be directly involved in the production activity was re-evaluated, with the possibility of passing some of the staff into technical unemployment. Thus, depending on the evolution of the energy and natural gas market, it is possible that the technically unemployed personnel will be reintroduced in the production activity (starting with the year 2023).

For the optimal production activity were carried out theoretical and practical training to all staff, both professional training and related to health and safety at work.
For the year 2022, according to the professional training program for employees, training courses will be organized for employees in the production and maintenance-repair sections (chemical operators, welders, mechanical locksmiths, firefighters, electricians, operational staff).
It is considered to assure the reauthorization of employees working as crane operators, stoker, load binder, forklift driver and authorized installer of natural gas, whose permits expire in 2022(according ISCIR prescriptions).
In order to improve the activity according to the 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, training courses are scheduled in the field, such as and for the implementation of the conditions of the SR EN ISO 17025: 2018 standard within the ALUM laboratory.

B. Production Activity

For the year 2022 it was budgeted a level of production of 176,250 tones alumina, out of which 172,580 tones calcined alumina. Deliveries to Alro Slatina 154,100 tones calcined alumina. Shipping to export / others 15,916 tones alumina calcined. Other sales are in amount of 15,260 tons aluminum hydroxide.

There were established the technological equipment used primarily in order to achieve the planned production. There were established the operating parameters for Sierra Leone (511,125 tons) bauxite processing.
There are made action plans for reducing specific consumption of bauxite, caustic and thermal energy.
Research and development equipment purchased and commissioned with access to EU funds will remain in operation to comply with the contractual provisions of the funding contracts. The new product development program will be continued at the same time as securing dry and hydrated and seated hydrate orders.

The annual analysis plan has been revised in order to minimize the consumption of reagents, spare parts and the need for personnel, with strict keeping of the monitoring of the plant's operating parameters and with the support of the research program.

Will continue the tests to determine the technologies for obtaining high added value products, namely the technologies for obtaining dry, seated and ground hydrate.
The equipment will ensure the possibility of obtaining three different types of dry hydrate depending on the granulometric distribution obtained (0-45 microns, 45-100 microns, 0-100 microns). The production capacity is 8 t / h for the production of dry hydrate and 6 t / h for the production of milled hydrate (0-45 microns).

Alumina production

Month	Calcined alumina production t/month	Alumina production t/month
January	27,280	23,250
February	16,800	16,800
March	15,500	18,600
April	15,000	15,000
May	12,400	12,400
June	12,000	12,000
July	12,400	12,400
August	12,400	12,400
September	12,000	12,000
October	12,400	13,950
November	12,000	13,500
December	12,400	13,950
Total	**172,580**	**176,250**

Production of dry hydrate, sieved and ground

Month	Dry hydrate t/month	Sieved hydrate t/month	Milled hydrate, t month
January	**428.33**	**220**	
February	**208.33**		
March	**208.33**		
April	**208.33**		
May	**388.33**	**280**	
June	**208.33**		
July	**208.33**		
August	**208.33**		
September	**208.33**		
October	**208.33**		
November	**233.33**		**25**
December	**233.33**		**25**
Total	**2,950**	**500**	**50**

C. Department Maintenance-Repairs Activities

C1. Maintenance and repairs activities

The main activity of the Maintenance and Repairs Department is to maintain the technological lines of the installations related to the technological flow and to carry out the repairs according to the Revision and Repair Plan in force. at the proposed level

The budget for these activities for 2022 has a value of about **1,727,000 USD**, of which about **778,000 USD** is repairs performed with third parties, about **848,000 USD** are own repairs and about **100,000 USD** is maintenance services.

Major repairs performed by other companies:

- Boiler C2Ap Nr, 1 – repairs - 180,000 USD
- Repair high pressure pumps - 18,000 USD
- Thermoinsulations for pipes and tanks - 190,000 USD
- Repair refractory masonry for Static Kiln - 115,000 USD
- Repair turbogenerator CKTR 12 MWh - 79,000 USD
- Repair and overhaul of heavy machinery - 39,000 USD

Major repairs performed with own forces:

- Repairs conveyor belts – 20,000 USD
- Repairs bauxite grinding mills – 160,000 USD
- Repairs on digestion batteries – 120,000 USD
- Repairs tanks DN 20 m – 80,000 USD
- Repairs precipitation tanks – 80,000 USD
- Repairs on Static Calciner (1 repair) – 50,000 USD

- Repairs bag filter – 30,000 USD
- Repairs boilers – 40,000 USD
- Repairs pumps – 60,000 USD

C2. Investment activities implemented with own forces

Maintenance and Repairs department also develops specific activities to achieve with own forces putting into operation of approved investment objectives.

Investments implemented with own forces

- Construction of the roof of the NaOH unloading station
- Realization of the extension of the mud evacuation system on the red mud pound;
- Realization of the controlled and automated condensate evacuation system from digestion batteries

The technical staff of the Maintenance-Repairs Department participates at completion of the investment works carried out with third parties and ensures the necessary conditions for the commissioning of these investments.

C3. Continuous Improvement Activities

The most important works to improve the technological flow or to improve the Alum activity scheduled for 2022 are:

- Transformation of 20 m tanks into washing tanks – will be used for red mud washing in Red Filtration only 20 m diameter tanks
- Restoration of the pulp supply system of the Digestion battery feeding pumps, restoration of the feeding pulp system of the Digestion batteries
- Rehabilitation of the White Filtration building
- Rehabilitation of the Duplex Hall building
- Rehabilitation of concrete platforms Grinding, Digestion, Red Filtration
- Extension of the Red Mud Pound humidifier system
- Replacement of pumps or pipes to reduce energy consumption (optimization of technological flow line)
- Elimination of unusable pipes from Alum, decommissioning of scrap and unused equipment for use as scrap metal

D. Investments Activity

The ALUM investment program for 2022 requires a total estimated budget of USD 6,062,000 and is divided as follows:

- **Chapter 1 - Environmental projects to ensure operational continuity** - includes a number of 3 investment objectives with a necessary estimated budget of 4,466,000 USD;
- **Chapter 2 - Energy efficiency projects proposed through the energy audit and notified to ANRE** - includes a number of 2 investment objectives with a necessary estimated budget of 565,000 USD;
- **Chapter 3 - Projects to ensure the operating conditions and the safe continuity of the production process** - includes a number of 7 investment objectives with a necessary estimated budget of 1,033,000 USD;

The investment projects are required to be implemented for compliance with environmental regulation, technological process safe operation for alumina production, reduce the specific consumption of heat, electricity and raw materials and for production diversification in Alum.

At the same time, work will continue on the documentation of energy efficiency projects to be submitted in order to obtain investment funds:

- 12 MWe cogeneration plant - Alum; Completion of Feasibility Study - for the production of cogeneration, electricity and thermal energy, high efficiency in a 12 MWe turbine – by using Green Hydrogen;
- Increasing the share of renewable energy and energy efficiency with a significant reduction of the carbon footprint at Alum SA Tulcea by installing wind turbines and photovoltaic panels.

The study of the possibility of using red mud as a raw material for other industrial activities (construction, agriculture, etc.) is being considered. In this sense, Alum participates together with other European alumina producers, research institutes and European universities in the REEScue, REActiv and RemovAL projects carried out within HORIZON 2020.

E. Budget proposed

Alum's budget for 2022 provides total revenue of 156,089,859 USD from the sales of calcined alumina and hydrate. Also included other revenues in amount of 2,603,880 USD.
Total expenditures budgeted required for the production of 176,250 tons is 162,880,956 USD.
Thus, in the budget for 2022 is estimated a loss in amount of 4,605,061 USD.

Unit production costs are budgeted at 488.68 USD/ton of hydrate and 910.04 USD/ton for calcined alumina.

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