**SC ALUM SA TULCEA**

**General Director**
**PhD. Eng. Gheorghe DOBRA**

# Plan to perform activities regarding production, maintenance, repairs and investment during the year - 2021

For 2021 there were analyzed the production schedule and the requirements regarding the works, materials, personnel costs in order to achieve the production plan and maintenance work, factory arrangements, at each installation level.

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

Also 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, IPROCHIM Bucharest, Politehnica University of Timisoara, Amber Development, ICPA Bucharest)

## A. Production and Mechanical & Electrical Departments

Considering all activities at the programmed production level for 2021 the number of employees was established at 790.
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 2021, according to the employee training program, courses will be organized for a number of 150 persons for activities such as: chemical operators (1 classroom), training courses for employees in production and maintenance-repair (chemists operators, welders, locksmiths, electricians, operational staff).
Also 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 2021(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, as well as and for the implementation of the conditions of the SR EN ISO 17025: 2018 standard in the ALUM laboratory.

Also, starting with the autumn of 2019, begun a training course for Technological Foreman (metallurgy) and was finalized in February 2021. Number of participants: 28.

| Work | Organization chart | Of which administrative personnel | Personnel activity |
|---|---|---|---|
| Production activity | **410** | **14** | Provides technical operations for the production of alumina |
| Mechanical & Electrical activity | **170** | **10** | Ensure the Maintenance and repair of equipment for the technological flow and participate at investments works |
| Transportation | **53** | **4** | Ensure the bauxite supply for grinding and also ensure the domestic transport needs. Rest of bauxite and alumina transport services being outsourced. |
| Planing | **7** | **7** | Provides production and repairs planning |
| Other activities | **150** | **72** | Auxiliaries and general services activities (commercial, financial, HR, IT, health and safety and environment, investment, laboratories) |
| **TOTAL** | **790** | **107** | |

**B. Production Activity**

For the year 2021 it was budgeted a level of production of 494,810 tones alumina, out of which 413,050 tones calcined alumina. Deliveries to Alro Slatina 395,600 tones calcined alumina. Shipping to export / others 20,000 tones alumina calcined. Other sales are in amount of 133,000 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 (1,434,949 tons) bauxite processing.
There are made action plans for reducing specific consumption of bauxite, caustic and thermal energy.

It is considered to study the possibility of using red slurry as a raw material for other industrial activities (construction, agriculture, etc.). Continue pilot scale tests to use red mud to improve acidic soils performed with ICPA Bucharest.

It is taken into consideration the continuation of developing new products, for special applications, and increasing the amounts of these products in total production of Alum. The products are: dry hydrate, calcined alumina containing alpha phase greater than 70%, low soda alumina.

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 | 34,100 | 39,370 |
| February | 30,800 | 35,650 |
| March | 34,100 | 40,920 |
| April | 33,200 | 39,600 |
| May | 35,650 | 40,920 |
| June | 34,500 | 39,600 |
| July | 35,650 | 44,020 |
| August | 37,200 | 44,020 |
| September | 36,000 | 42,000 |
| October | 33,200 | 43,400 |
| November | 33,000 | 42,000 |
| December | 35,650 | 43,400 |
| Total | 413,050 | 494,810 |

***Production of dry hydrate, sieved and ground***

| Month | Dry hydrate t/month | Sieved hydrate t/month | Ground hydrate t/month |
|---|---|---|---|
| January | 958.3 | 83.3 | |
| February | 958.3 | 83.3 | |
| March | 958.3 | 83.3 | |
| April | 958.3 | 83.3 | |
| May | 958.3 | 83.3 | |
| June | 958.3 | 83.3 | |
| July | 958.3 | 83.3 | 83.3 |
| August | 958.3 | 83.3 | 83.3 |
| September | 958.3 | 83.3 | 83.3 |
| October | 958.3 | 83.3 | 83.3 |
| November | 958.3 | 83.3 | 83.3 |
| December | 958.3 | 83.3 | 83.3 |
| Total | 11,500 | 1,000 | 500 |

**C. Department Maintenance-Repairs Activities**

## C1. Maintenance and repairs activities

Main activity of the Department of Maintenance and Repair is keeping in running the installation and repairing the equipment according the approved Plan for Revisions and Repairs.

The budget for these activities in 2021 has a value of **4,300,103 USD** out of which **1,652,650** USD represents repairs that will be performed by third companies, **2,391,051** USD represents repairs done in-house and **256,402** USD there are maintenace services.

**Major repairs performed by other companies:**

- Boiler C2Ap Nr, 2 – repairs - 123,832 USD
- Rehabilitation platforms Digestion Bateries - 82,555 USD
- Repair electrical motors and coolers - 149,631 USD
- Repair building at Lime station - 216,707 USD
- Repair Grinding Mill no 2, 3, 4 - 61,916 USD
- Repair tower crane MTO 160 - 82,555 USD
- Repair of waterproofing buildings - 41,277 USD
- Thermoinsulations for pipes and tanks - 154,791 USD
- Repair refractory masonry for Static Kiln - 20,638 USD
- Repair refractory masonry for Rotary kiln no 3 - 72,235 USD
- Repair turbogenerator CKTR 12 MWh - 77,395 USD
- Repair tanks water chemical treatment - 33,022 USD
- Turbocharger revisions TK 250 - 53,808 USD
- Repair and overhaul of heavy machinery (car park) - 282,434 USD
- Repairs Internal Rail ways - 58,001 USD

**Major repairs performed with own forces**:

- Repairs conveyor belts – 76,224 USD
- Repairs bauxite grinding mills – 271,855 USD
- Repairs on digestion batteries – 106,940 USD
- Repairs tanks DN 20 m – 40,612 USD
- Repairs tanks DN 35 m (major repairs ) – 69,402 USD
- Repairs precipitation tanks – 114,419 USD
- Repairs on Static Calciner ( 1 repair ) – 60,767 USD
- Repairs on Rotary Calciner no 3 – 28,069 USD
- Repairs bag filter – 32,955 USD
- Repairs boilers – 42,731 USD
- Repairs compressors – 84,555 USD
- Repairs pumps – 600,241 USD

## C2. Investment activities implemented with own forces

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

**Investments implemented with own forces**

- Installation of China pumps with high energy efficiency;

- Improvement of the mechanical agitation system of the decomposing vessel;
- Extension of the CELTO Scada monitoring system

The technical staff of the Maintenance-Repairs Department participates in the follow-up and 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

In addition to the maintenance and repair works, as well as the scheduled investment works, the Maintenance-Repairs Department carries out, according to approved plans, activities for continuous improvement of the operation of ALUM equipment and installations, energy consumption reduction works (air, industrial water, electricity), to reduce the specific consumption of raw materials, for increasing and optimizing the capacities used, works for environmental protection, continuing the implementation of predictive maintenance in Alum.

**Activities performed**

- Continuation of the program to optimize the lighting in plant installations by replacing old incandescent lighting with new systems using LED technology.
- Installation of dosing pumps of flocculant solution for dosing in the technological process of Red Filtration;
- Installation of speed variators purchased according to the energy efficiency program.
- Optimization of washing water heating system
- Installing a bauxite unloading platform to be used during the very wet season
- Optimization of technological pipelines for digestion batteries and Evaporation.

### D. Investments Activity

The ALUM's investment program for 2021 amounts **7,377,000** and comprises a total of 15 investment projects, divided into the following chapters:

- **Chapter 1 - Environmental projects in order to ensure the operational continuity -** includes a total of 3 investment projects requiring a forecast budget of **2,280,000 USD**;
- **Chapter 2 - Projects to ensure operating conditions and safe continuity of the production process -** includes a total of 12 investment projects requiring a forecast budget of **5,097,000 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.

### E. Budget proposed

Alum's budget for 2021 provides total revenue of 172,980,926 USD from the sales of calcined alumina and hydrate. Also included other revenues in amount of 2,357,012 USD.
Total expenditures budgeted required for the production of 494,810 tons is 173,210,450 USD.
Thus, in the budget for 2021 is estimated a profit in amount of 1,717,244 USD.

Unit production costs are budgeted at 201.76 USD/ton of hydrate and 349.02 USD/ton for calcined alumina.

**Operational Director**
**Eng. Sorin Iliev**

**Technical Manager**
**Dr. Eng. Lucian Cotet**

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