**SC ALUM SA TULCEA**

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

# Plan to perform activities regarding production, maintenance, repairs and investment during the year - 2019

For 2019 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 2019 the number of employees was established at 805.
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 2019, according to the employee training program, courses will be organized for a number of 200 persons for activities such as: chemical operators (2 classrooms), training courses in electrical and PRAM 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 this year (according ISCIR prescriptions).

It will be carried out training courses for employees of the company for the transition to the new standards SR EN ISO 9001: 2015, SR EN ISO 14001: 2015 and SR EN 50001:2011. Also will be carried out training courses for laboratory accreditation (ISO 17025). Thus, all the leaders, managers and internal auditors will follow training courses in the field, in total 40 persons.

Also, starting with the autumn of 2019, it will begin a training course for Technological Foreman (metallurgy) 2 years long. Number of employees: 28.

| Work | Organization chart | Of which administrative personnel | Personnel activity |
|---|---|---|---|
| Production activity | **418** | **17** | Provides technical operations for the production of alumina |
| Mechanical & Electrical activity | **181** | **13** | Ensure the Maintenance and repair of equipment for the technological flow and participate at investments works |
| Transportation | **51** | **4** | Ensure the bauxite supply for grinding and also ensure the domestic transport needs. Rest of bauxite and alumina transport services being outsourced. |
| Planing | **8** | **8** | Provides production and repairs planning |
| Other activities | **147** | **80** | Auxiliaries and general services activities (commercial, financial, HR, IT, health and safety and environment, investment, laboratories) |
| **TOTAL** | **805** | **121** | |

**B. Production Activity**

For the year 2019 it was budgeted a level of production of 563,150 tones alumina, out of which 457,890 tones calcined alumina. Deliveries to Alro Slatina 386,517 tones calcined alumina. Shipping to export / others 75,000 tones alumina calcined. Other sales are in amount of 168,000 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 (1,633,135 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.

In January there were put in operation the equipment for obtaining dry, milled and sorted 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).

| Month | Calcined alumina production t/month | Alumina production t/month |
|---|---|---|
| **January** | **40,300** | **44,950** |
| **February** | **28,000** | **33,600** |
| **March** | **17,600** | **21,700** |
| **April** | **42,000** | **52,500** |
| **May** | **46,500** | **52,700** |
| **June** | **36,000** | **49,500** |
| **July** | **40,300** | **51,150** |
| **August** | **40,300** | **52,700** |
| **September** | **43,500** | **49,500** |
| **October** | **42,000** | **52,700** |
| **November** | **40,470** | **51,000** |
| **December** | **40,920** | **51,150** |
| **Total** | **457,890** | **563,150** |

## 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 2019 has a value of **4,473,907 USD** out of which **1,614,238** USD represents repairs that will be performed by third companies, **2,641,022** USD represents repairs done in-house and **218,647** USD there are maintenace services.

**Major repairs performed by other companies:**

- Repair electrical motors and coolers - 110,695 USD
- Repair Building Grinding - 103,373 USD
- Repair crane bridge at Hydrate storage area - 159,759 USD
- Boiler C2Ap Nr, 2 – repairs - 62,963 USD
- Repair building at Lime station - 46,987 USD
- Repair Grinding Mill no 2 - 28,192 USD
- Repair of waterproofing buildings - 37,590 USD
- Thermoinsulations for pipes and tanks - 112,771 USD

- Replaced distribution system for cooling tower no.2 - 46,987 USD
- Repair refractory masonry for Static Kiln - 37,590 USD
- Repair refractory masonry for Rotary kiln no 3 - 112,771 USD
- Repair tanks water chemical treatment - 30,072 USD
- Turbocharger revisions TK 250 - 36,650 USD
- Repair and overhaul of heavy machinery (car park) - 181,686 USD
- Repairs Internal Rail ways - 34,698 USD

**Major repairs performed with own forces**:

- Repairs conveyor belts – 66,041 USD
- Repairs bauxite grinding mills – 435,237 USD
- Repairs on digestion batteries – 125,506 USD
- Repairs tanks DN 20 m – 27,845 USD
- Repairs tanks DN 35 m (major repairs ) – 60,178 USD
- Repairs precipitation tanks – 106,168 USD
- Repairs on Static Calciner ( 1 repair ) – 55,782 USD
- Repairs on Rotary Calciner no 3 – 29,032 USD
- Repairs bag filter – 45,450 USD
- Repairs for Kelly Filters – 53,646 USD
- Repairs boilers – 26,854 USD
- Repairs compressors – 56,071 USD
- Repairs pumps – 683,890 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**

- Heat exchanger assembly at 32 m level, on top of Precipitation;
- Install China pumps with increased energy efficiency;
- Arranging storage space for wet hydrate bags;

Maintenance and repair department personnel also participate in tracking and completion of the works of investments made by third companies and provide the conditions necessary for the function of these investments.

## C3. Continuous Improvement Activities

Besides maintenance and repair works, alike the planned investment, the Maintenance and Repair department have activities in accordance with approved plans to continuously improve the ALUM's operation of the equipment and installations, works to reduce energy consumption (air, industrial water, air, energy Electric), works to reduce specific consumption of raw materials and energy (air, industrial water, electricity), to increase capacity of the installed production equipment, work for environmental protection, continuing the implementation of the 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 flocculant solution dosing pumps for dosing in the process of Red Filtration;
- Mounting of speed changers purchased under the Energy Efficiency Program.
- Extension of the calcined alumina loading system in trucks, in parallel with the loading of wagons
- Extend the heating system for strong liquor using the heat of the filtered pregnant liquor

## D. Investments Activity

The ALUM's investment program for 2019 amounts **8,301,000 USD** and comprises a total of 14 investment projects, divided into the following chapters:

- **Chapter 1 - Projects previously approved and under implementation -** includes a total of 7 investment projects requiring a forecast budget of **5,581,000 USD**;
- **Chapter 2 - Projects to ensure operating conditions and safe continuity of the production process (maintenance capex) -** includes a total of 5 investment projects requiring a forecast budget of **2,400,000 USD**;
- **Chapter 3 - New ALUM investment projects -** includes 2 projects requiring a forecast budget of **320,000 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 2019 provides total revenue of 221,431,039 USD from the sales of calcined alumina and hydrate. Also included are revenues from the sale of CO2 certificates in the amount of 22,812,153 USD.
Total expenditures budgeted required for the production of 563,150 tons is 216,766,642 USD.
Thus, in the budget for 2019 is estimated a profit in amount of 23,102,577 USD.

Unit production costs are budgeted at 221.23 USD/ton of hydrate and 389.47 USD/ton for calcined alumina.

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

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

11.03.2019