SC ALUM SA TULCEA

Approved
General Director
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Plan to perform activities regarding production, maintenance, repairs and investment during the year - 2016

For 2016 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 (IPROLAM Bucharest, Amber Development)

A. Production and Mechanical & Electrical Departments

Considering all activities at the programmed production level for 2016, the number of employees was established at 698.
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.

At present it is planned to organize new training courses for a number of activities such as: chemical operators, welders, crane operator, forklift driver for about 250 employees.
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.

At the beginning of 2016 will be carried out training courses for employees of the company for the transition to the new standards EN ISO 9001: 2015 and ISO 14001: 2015. Thus, all the leaders, managers and internal auditors will follow training courses in the field, in total 45 persons.

Work	Organization chart	Of which administrative personnel	Personnel activity
Production activity	**372**	**12**	Provides technical operations for the production of alumina
Mechanical & Electrical activity	**166**	**9**	Ensure the Maintenance and repair of equipment for the technological flow and participate at investments works
Transportation	**44**	**3**	Ensure the bauxite supply for grinding and also ensure the domestic transport needs. Rest of bauxite and alumina transport services being outsourced.
Planing	**15**	**10**	Provides production and repairs planning
Other activities	**101**	**57**	Auxiliaries and general services activities (commercial, financial, HR, IT, health and safety and environment, investment, laboratories)
TOTAL	**698**	**91**	

B. Production Activity

For the year 2016 it was budgeted a level of production of 450,000 tones alumina, out of which 414,960 tones calcined alumina. Deliveries to Alro Slatina 397,214 tones calcined alumina. Shipping to export / others 17,700 tones alumina calcined. Other sales are in amount of 53,500 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 (1,335,841 tons) bauxite processing.
There are made action plans for reducing specific consumption of bauxite, caustic and thermal energy.

Also it is considered the continuation of studies for finding ways to use red mud as raw material for other industrial activities (steel, construction, agriculture etc.).

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 new products are: dry hydrate, calcined alumina containing alpha phase greater than 70%, low soda alumina.

Month	Calcined alumina production t/month	Alumina production t/month
January	**36,363**	**37,950**
February	**34,017**	**35,670**
March	**36,363**	**38,130**
April	**28,092**	**36,900**
May	**36,363**	**38,130**
June	**35,160**	**36,900**
July	**36,332**	**38,130**
August	**36,332**	**38,130**
September	**35,160**	**36,900**
October	**29,286**	**38,130**
November	**35,160**	**36,900**
December	**36,332**	**38,130**
Total	**414,960**	**450,000**

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 equipments according the approved Plan for Revisions and Repairs.

The budget for these activities in 2016 has a value of **3,572,290 USD** out of which 1,422,983 USD represents repairs that will be performed by third companies, 1,986,987 USD represents repairs done in-house and 162,321 USD there are maintenace services.

Major repairs performed by other companies:

- Consolidation of concrete foundations T2-T3 conveyors – 67,609 USD
- Repair of chemical treatement building – 19,317 USD
- Repair sulphuric acid unloading station - 33,804 USD
- Repair of electric motors and coolers – 159,365 USD
- Repair the turbo generator CKTR 12 – 309,073 USD
- Thermal insulations and tanks – 115,902 USD
- Repair the refractory for Static Kiln – 33,804 USD
- Repair the boiler C2Ap no 1 – 33,804 USD
- Repair the boiler C2Ap no 2, – 33,804 USD
- Reviews and repair of heavy vehicles – 87,203 USD
- Repair of turbines and compressors TK 250 – 31,631 USD
- Repairs for Grinding Mill no 3 – 24,146 USD
- Repairs hydro insulation of buildings – 67,609 USD

Major repairs performed with own forces:

- Repairs conveyor belts – 97,965 USD
- Repairs bauxite grinding mills (capital repair) – 119,429 USD
- Repairs on digestion batteries – 71,129 USD
- Repairs tanks DN 20 m – 22,406 USD
- Repairs tanks DN 35 m (major repairs) – 27,131 USD
- Repairs precipitation tanks – 49,583 USD
- Repairs alumina transport system – 17,520 USD
- Repairs on Static Calciner (1 repair) – 97,131 USD
- Repairs bag filters – 8,208 USD
- Repairs for Kelly Filters – 23,701 USD
- Repairs boilers and air compressors – 21,401 USD
- Repairs compressors – 44,244 USD
- Repairs pumps Red Filtration – 62,513 USD
- Repairs pumps Digestion – 50,732 USD
- Repairs pumps Grinding – 45,281 USD
- Repairs pumps White Filtration – 37,975 USD
- Repairs pumps Evaporation – 38,580 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

- Install plate heat exchangers battery for cooling the pregnant liquor in counter current with strong liquor recirculated in Grinding
- Install 2 heat exchangers for cooling the hydrate slurry in Precipitation
- Extend the red mud wetting pipes network for preventing the dust formation at the red mud storage area

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, work for environmental protection, continuing the implementation of the predictive maintenance in Alum.

Activities performed

- Using the spent liquor for dosing the flocculant in the red mud thickening tanks
- Chemical washes piping network extension at Red Filtration
- Gradual replacement of the feeding tubes at the red mud thickening tanks Dn 20 m according to the recommendation of Amber Development (tested with good results at the tank 417/1)
- Installing electro pumps and speed variators purchased according to the energy efficiency program.

D. Investments Activity

The ALUM's investment program for 2016 amounts 9,409,000 USD and comprises a total of 16 investment projects, divided into the following chapters:

- **Chapter 1 - Environmental projects to ensure operational continuity -** includes a total of four investment projects requiring a forecast budget of 774,000 USD;
- **Chapter 2 - Projects for efficient and safe operation of industrial facilities -** includes a total of seven investment projects requiring a forecast budget of 3,758,000 USD;
- **Chapter 3 - Projects to support ANRE proposals -** includes a number of three investment projects requiring a forecast budget of 1,850,000 USD;
- **Chapter 4 - Project to increase energy efficiency -** includes one investment project requiring a forecast budget of 300,000 USD;
- **Chapter 5 - New ALUM products -** includes one investment project co-funded by EU funds requiring a forecast budget of 2,727,000 USD in 2016 ;

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 2016 provides total revenue of 141,032,204 USD from the sales of calcined alumina and hydrate.
Total expenditures budgeted required for the production of 450,000 tons is 153,024,617 USD.
Thus, in the budget for 2016 is estimated a gross loss in amount of 8,802,030 USD.

Unit production costs are budgeted at 196.49 USD/ton of hydrate and 342.99 USD/ton for calcined alumina.

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