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INVESTMENT PROGRAM ALUM 2016

The Investment Program of SC ALUM SA for the year 2016, although it involves high costs, is a program absolutely necessary to:

- increase the energy efficiency by optimizing the combustion and heat transfer processes;
- increase competitiveness by installing new equipment that will allow Alum to study and obtain new types of products corresponding to the market requirements;
- increase operation safety for plants supplied with steam and natural gas;
- ensure operational continuity by complying with the Integrated Environmental Authorization stipulations.

Executive Summary:

ALUM's investment program for the year 2016 requires a total estimated budget of **9,409,000 US$** and contains 16 investment projects,

US$'000

Company	***No. of investment projects***	***Capex required 2016***
SC ALUM SA Tulcea	***16***	***9,409***

out of which:

- 4 investment projects approved and started in 2015 and which will be accomplished during 2016 (735,000 US$);
- 12 new investment projects (8,674,000 US$) out of which:
  - 10 investment projects will be completed during 2016 (5,097,000 US$);
  - 2 investment projects will be completed during 2017 (3,577 US$ including one investment project co-funded by EU funding).

The 16 investment projects of 2016 ALUM's investment program are classified into five chapters as follows:

- **Chapter 1 - Environmental projects to ensure operational continuity** - includes a total of four investment projects requiring a forecast budget of **774,000 US$;**

- **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 US$;**

- **Chapter 3 – Energy efficiency projects proposed by the energy audit and notified to ANRE** - includes a number of three investment projects requiring a forecast budget of **1,850,000 US$;**

- **Chapter 4 - Project to increase energy efficiency** - includes one investment project requiring a forecast budget of **300,000 US$;**

- **Chapter 5 - New ALUM products** - includes one investment project co-funded by EU funds requiring a forecast budget of **2,727,000 US$** in 2016;

The capacity of implementing investments is decisive for the future of SC ALUM SA and the investment assessment is a very important assignment for ALUM S.A.

The financial evaluation and budgeting of the investments projects spending represents the main aspect of the investment requests.

The financial means related to these investments will be provided both by internal financial resources and by loans, such as leasing financing or credit facilities.

Chapter 1 - Environmental projects to ensure operational continuity

It includes investment projects necessary for ALUM to comply with the stipulations of the integrated environmental permit, to assure a safe operation of the red mud pond area and to decrease the volume of cooling water pumped from Danube River.

Project code	**Project denomination**
D-038.15.SRR.01	**Maintenance work for red mud pond** This investment project was approved and implemented during the year 2015, it is scheduled to be completed in 2016 and has a total estimated budget of 7,000 US$ in 2016;
D-63.16 SRR.01	**Reinforcing the red mud pond perimetral dykes - left bank embankment and improving the sprinkler system for preventing the dust formation** This investment project is necessary in order to continue the safe red mud storage , it is scheduled to be implemented during 2016 and has a total estimated budget of 500,000 US$;
D-054.15.SA.01	**Forced cooling tower for White Filtration** This investment project was approved and implemented during 2015, it will be completed in 2016 and requires a total budget forecast of 217,000 US$ in 2016

D-068.16.SAC.01	**Particle emissions monitoring system for bag filters** This investment project is scheduled to be implemented in 2016 and requires a total forecast budget of 50,000 US$

Chapter 2 - Projects for efficient and safe operation of industrial facilities

Project code	Project denomination
D-039.15.SAE.01	**High pressure water pump for descaling P=1100 bar for Evaporation** This investment project was approved and implemented during 2015, it will be completed in 2016 and requires a total budget forecast of 201,000 US$ in 2016
D-045.15.ALM.01	**2015 plant Endowments** This investment project was approved and started in 2015, it will be completed in 2016, requires a total forecast budget for 2016 of 310,000 US$ in 2016 and consists in the completion of the contracted equipments delivery and their installation and commissioning;
D-056.16.SAD.01	**Foundations consolidation on the Precipitation tanks** This investment project is scheduled to be implemented in 2016 with a total forecast budget of 300,000 US$. The work will be done in two stages and consists in putting out of service 10 decomposition tanks (I-4, II-6) and reinforcing their foundations;
D-069.16.ALM.01	**Warning system for fire protection** This investment project requires a total forecast budget of 30,000 US$ and consists in contracting, acquiring and commissioning a warning system having the fire protection features requested by ISU;
D-065.16.ALM.01	**Process monitoring systems for Evaporation & Digestion units** This investment project is scheduled to be implemented in 2016 with a forecast total budget of 200,000 US$ and consists in replacing the process control stations and controllers in Evaporation and Digestion facilities;
D-066.16.ALM.01	**Plant endowments 2016** This investment project requires a total forecast budget of 1,427,000 US$ and consists in purchasing and replacing: ○ Heat exchangers to heat strong liquor and dense slurry; ○ Sieving system for dry hydrate; ○ Elevator for calcined alumina; ○ Equipment obsolete or which have no longer the functional characteristics for which they were purchased;
D-071.16.ALM.01	**Investments for maintenance and improvement of equipment parameters - Alum (PPE)** This investment project requires a total forecast budget of 1,290,000 US$ and consists in: ○ acquisition of spare parts having in the form of fixed assets; ○ welded plate heat exchangers for cooling interstage hydrate suspension;

Chapter 3 – Energy efficiency projects proposed by the energy audit and notified to ANRE

Project code	Project denomination
D-051.16.CET.01	**New natural gas burners at Steam Boiler no 1 (low Nox)** This investment project is scheduled to be implemented in the period 2016-2017 with a total forecast budget of 850,000 US$ in 2016 and consists in acquiring and installing a low NOx combustion system on the boiler C2Ap1;
D-058.16.SRL.01	**Optimizing the steam lines and installing steam traps for 2 digestion units** The project is planned to be started and completed during the year 2016 and the total forecast budget necessary for this investment project is 300,000 US$.
D-070.16.ALM.01	**Maintenance Capex - Alum (Digestion modernization - autoclaves registers and agitators for 2 lines)** The project is proposed to be started and completed in the year 2016 and the total forecast budget for this investment project is 700,000 US$.

Chapter 4 – Project to increase energy efficiency

Project code	Project denomination
D-067.16.CET.02	**Burned gas fan for Steam Boiler no 2** The project is proposed to be started and completed in the year 2016 and the total forecast budget for this investment project is 300,000 US$.

Chapter 5 – New ALUM products – Development of new products

Considering the requirements made by ALUM's customers concerning the supply of special products (dry hydrate, grain size distribution ranging between 0 and 150 microns), with niche applications, as well as the opportunity to access non-repayable funding, proposal is made for the implementation of an eligible investment project within the 2014-2020 Competitiveness Operational Program – Priority Axis PI 1 "Research, Technological Development, and Innovation (RDI) in support of economic competitiveness and business development" - Investment priority 1.a "Enhancing research and innovation (R&I) infrastructure and capacities to develop R&I excellence, and promoting centres of competence, in particular those of European interest" – Action 1.1.1."Large Research &Development infrastructures" – Project type "Investments for the RD departments of enterprises".

This project will be carried out over a two year period, to be commenced in 2016 and completed in 2017.

The overall project value amounts to 5,400,000 US$, of which approximately 2,000,000 US$ representing 50% of the equipment value, that is considered as eligible expenditure will be funded grant at the completion of the project by funding from the European Union within Competitiveness Operational Programme 2014-2020.

For the year 2016 is estimated a budget of 2,727,000 US$ and for 2017 is estimated a budget of 2,673,000 US$.

Project code	Project denomination
D-059.16.ALM.01	**Increasing Alum competitiveness by installing equipment to obtain wet and dry hydrate** The project is proposed to be started in 2016 and completed in 2017 and the total forecast budget in 2016 is 2,727,000 US$.
	• 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

Conclusions

Total net budget requested for approval in 2016 is 9,409,000 US $

The key decisions necessary to be made for the investment program implementation are as follows:

- investment program approval
- implementation of the investment program according to a detailed schedule
- setting up and approval of detailed action plans for each one investment project.

The Board of Directors of SC Alum SA endorsed the Investment Program of S.C. ALUM S.A. for the year 2016 and hereby proposes to the Company shareholders to grant their approval for the implementation of the Investment Program of S.C. ALUM S.A.

President of BoD S.C.ALUM TULCEA SA

Gheorghe Dobra, Eng PhD

14.03.2016