INVESTMENT PROGRAM ALUM 2020

Investment Program of SC ALUM SA for the year 2020, although imply high costs is a program absolutely necessary to:

- Ensuring the operational continuity by extending the lifetime of the red mud pond in compliance with the provisions of the environmental agreements to which ALUM is obligated to comply with;
- Increase the degree of automation and control of the plant;
- Reducing the specific consumption of natural gas, industrial water and energy;
- Increasing the safety in operation of static and dynamic equipments necessary to carry out the activity of ALUM's departments;
- Reducing of dilution waters and thermal losses in the Red Filtration and coarse seed filtration efficiency.

Executive Summary:

ALUM's investment program for the year 2020 requires a total estimated budget of **5,081,000 USD** and contain 7 investment projects,

US$'000

Company	***No. of investment projects***	***Necessary Capex***
		2020
ALUM SA Tulcea	***7***	***5,081***

from which:

- 4 investment projects approved and started in 2019 (2,469,000 USD) of which:
  - 3 projects will be completed during the year 2020 (1,769,000 USD);
  - 1 project will be completed in the period 2020-2022 (700,000 US$), a project that foresees the gradual height increase of Red mud pond dams.

- 3 new investment projects (2,612,000 US$)

The 7 investment objectives of the Investment Program of SC ALUM SA for 2020 are structured in two chapters as follows:

- **Chapter 1 - Projects previously approved and currently under implementation** – includes 4 investment objectives with a necessary forecasted budget of **2,469,000 US$**;

Chapter 2 - Projects for ensuring the operating conditions and production process safe continuity (maintenance capex) – includes 3 investment objectives with a necessary forecasted budget of **2,612,000 US$**

The capacity of performing investments is decisive for the future of SC ALUM SA and the evaluation of investments is a very important task for ALUM S.A.

The main key aspect of investments request is financial evaluation and budgeting the investments objectives spending.

Financial effort of these investments will be assured both by internal financial resources and by loans, like leasing financing or credits.

Chapter 1 - Projects previously approved and currently under implementation

Includes a number of 4 investment projects absolutely necessary mainly for:

- Reducing the heat loss and wash water of Kelly filters by installing vertical control filters;
- Ensuring the necessary capacity for coarse seed filtration in White Filtration by purchasing and installing of a top of the line disk filter;
- Reducing the alkaline aerosol emissions in the Red Filtration Building and in the White Filtration Building;
- Reducing the dilution with washing waters and thermal losses by eliminating the operation of manual washing for the filter cloths;
- Extending the lifetime of the Red mud pond by furthering the gradual height increase in safe conditions of the Red mud pond's piers with 10 m overt the next 7 years according to a new solution proposed by Construction Technical University Bucharest. Doing this, it is estimated that the lifetime of the Red mud pond will increase with about 16 years.

Objectiv Code	Objective denomination
D-075.18.FAD.01	**Acquisition and installation a disc filter for coarse seed** This investment objective is scheduled to be completed in July 2020 and is required to reduce the slurry content in spent liquor from 5 g/l to a maximum of 1.5 g / l.
D-076.18.SRF.01	**Filtering process control efficiency enhancing by acquiring and installing vertical filters** This investment objective is scheduled to be completed in September 2020 and is

	required to reduce the dilutions with washing waters and thermal losses by installation new high eficiency filters for pregnant liquor and which does not require manual washing operations. Improve ALUM product quality.
D-072.18.SRR.01	**Increasing the storage capacity of the red mud pond by elevating the height of the perimetral dykes** This investment objective is needed to continue the safe exploitation of the Red Mud Pond and to increase its lifespan and has a total estimated budget of $ 700,000 for the year 2020.
D-078.19.ALM.01	**Packaging, storage and distribution of new Alum products** The investment objective is expected to be completed in December 2020, the total projected budget for this target in 2020 is **120 thousand US$.**

Chapter 2 - Projects for ensuring the operating conditions and production process safe continuity (maintenance capex)

It includes a total of 3 investment projects absolutely necessary mainly for:

- Replacement of spare parts belonging to the worn out equipment that no longer possess functional features for which it was originally purchased and of the strict necessity to carry out the production plan;
- Increasing functioning safety of static and dynamic equipments necessary for activities of ALUM's departments;
- Increasing the operational safety and compliance with current ISCIR norms;
- Obtaining an increased cooling capacity, which leads to obtaining results superior to the current ones in the following aspects: production volume, hydrate quality, compliance with specific norms for hydrate fractions;
- Prevention of possible incidents and accidental stops due to the deterioration in time of the Precipitation vessel's foundations.

Objectiv Code	Objective denomination
D-071.20.ALM.01	**Investments for maintenance and improvement of equipment parameters - Alum (PPE) 2020** The total projected budget for this investment target in 2020 is **886 thousand US$**. ➢ Heat exchangers with plates and gaskets; ➢ Katanax cross support system; ➢ Reducers, pumps, compressors, valves and screens.
D-066.20.ALM.01	**Replacing the obsolete equipment, Endowments 2020** The total projected budget for this investment target in 2020 is **855 thousand US$**.

	➢ Crane, front loader and forklift; ➢ Flocculation dosing station, with 8 electropumps; ➢ Hydrate storage bridge 8 t; ➢ Strilling, exhausting, monitoring and centralizing data system; ➢ IR spectrometer.
D-070.16.ALM.01	**Maintenance Capex (Consolidation foundations Precipitation tanks and White Filtration building)** The investment objective is expected to be completed in December 2022, the total projected budget for this target in 2020 is **871 thousand US$**.

The net budget requested for approval is 5,081,000 US$.

The key decisions necessary to be taken for investment plane implementation are as follows:

- investment program approval
- development of investment program accordingly with detailed diagram
- establishment and approval of detailed action planes for each one investment project.

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Investment Program 2020 SC ALUM SA Tulcea

GENERAL DIRECTOR
PhD. Eng. Dobra Gheorghe

Objective code	Investment objective denomination	Total estimated cost of the project	Spent until the end of 2019	2020 Buget	Commissioning (month/yr)
Grand Total ALUM		**18,816**	**3,542**	**5,081**	/
Capitol I - Projects previously approved and currently under implementation		**8,404**	**3,542**	**2,469**	/
D-075.18.FAD.01	Acquisition and installation a disc filter for coarse seed	991	708	**283**	Jun-20
D-076.18.SRF.01	Filtering process control efficiency enhancing by acquiring and installing vertical filters	3,673	2,306	**1,367**	Dec-20
D-072.18.SRR.01	Increasing the storage capacity of the red mud pond by elevating the height of the perimetral dyks	3,400	308	**700**	Nov-22
D-078.19.ALM.01	Packaging, storage and distribution of new Alum products	340	220	**120**	Dec-20
Capitol II - Projects for ensuring the operating conditions and production process safe continuity (maintenance capex)		**10,412**	**0**	**2,612**	/
D-071.20.ALM.01	Investments for maintenance and improvement of equipment parameters - Alum (PPE) 2020	4,886	0	**886**	Gradually 2020-2024
D-066.20.ALM.01	Replacing the obsolete equipments, Endowments 2020	4,055	0	**855**	Gradually 2020-2024
D-070.16.ALM.01	Maintenance Capex (Consolidation foundations Precipitation tanks and White Filtration building)	1,471	0	**871**	Dec-22

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