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TECHNICAL AND ECONOMIC CHARACTERISTICS OF THE ALUMINUM ENTERPRISE (ON BEHALF OF AZERALUMINIUM LLC)

A B S T R A C T

The purpose of the research - is to study the state of economic characteristics of the aluminum enterprise on behalf of Azeraluminium LLC. Aluminum market was researched for finding gaps.

The methodology of the research – methods such as synthesis, analysis and comparison were used during the assessment.

The practical importance of the research- analyzes were carried out on a more reliable and transparent reflection of aluminum production.

The results of the research - adjustment of aluminum production norms of "Azeraluminum" LLC to the norms of the companies will lead to a decrease in the cost of products. The lower production costs of other companies make them more resistant to sharp price changes in the market

The originality and scientific novelty of the research – is based on the normative legal acts and scientific-theoretical approaches adopted in Azerbaijan and regarding the disclosure of certain items specified in "Azeraluminum" LLC reports.

Keywords: aluminum enterprise, economic development, innovative technologies, aluminum production, aluminum market.

INTRODUCTION

In order to make a decision to increase the production capacity of "Azeraluminum" LLC, the possible impact of external factors on the current state of the enterprise was investigated based on the enterprise's budget (2020) data. The main difficulty faced by the enterprise is the sharp drop in the price of aluminum in the world market and as a result it operates at a loss. Taking this into account, the purpose of the study is to determine the lower limit of the LME index if the demand for aluminum in the world market decreases. The world aluminum market is based on the technologies used by five companies for aluminum production. Adjustment of aluminum production norms of "Azeraluminum" LLC to the norms of those companies will lead to a decrease in the cost of products. The lower production costs of other companies make them more resistant to sharp price changes in the market. Azeraluminium" OJSC was established on the basis of the order of the President of the

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Republic of Azerbaijan No. 398 dated 25.04.2000, and the following enterprises were included in its structure [3]:

1. Sumgait Aluminum Plant;
2. Ganja Clay-Soil Combine;
3. Dashkasan Alunite Mine.

In 1960-1965, construction and installation works were carried out in the Ganja "Gil-Torpag" Production Area, and the production of products began in 1966. During the commissioning and subsequent 30-year operation of the Production Area, the production capacity reached 415,000 tons of clay per year. Due to the disruption of production relations with the collapse of the USSR, the sale and storage of sulfuric acid obtained as an intermediate product during the production of clay-soil from alunite was impossible, since 1997 the production line from alunite raw materials has been completely stopped. The production process in IS was continued only on the basis of bauxite raw materials [2].

After being included in the structure of "Azeraluminium" OJSC, reconstruction and modernization works were carried out in IS starting from 2000, and the activity of the enterprise was restored to the limit of project capacity based on bauxite raw materials. At the initial stage, 280,000 tons of products were produced annually, and as a result of renovation and modernization, the production was increased to 420,000 tons per year.

The beginning of the world financial crisis also caused the Ganja "Gil-Torpag" Production Area to stop working in April 2009. From 2009 to November 2011, IS was kept in a state of conservation. In order to prevent costs and eliminate unemployment to a certain extent, IS was leased to "Detal Aluminum" LLC from 04.11.2011 and the production activity was resumed. However, due to the increase in bauxite ore and its transportation costs, and the decrease in the price of clay-soil in the world market, Ganja "Clay-Torpaq" IS had to stop its activity again from November 2012.

Dashkasan "Alunit" Production Area has been operating since 1960. With the collapse of the USSR, the suspension of the production line from alunite raw materials at Ganja "Gil-Torpag" IS. Dashkasan "Alunit" IS stopped its activity in 1997. The confirmed reserve of Dashkasan Alunite ore deposit is 163 mln. constitutes a ton [1].

Official information about the temporary suspension of the Ganja Clay-Soil Plant.

The Ganja Clay-Soil Plant of "Azeraluminium" OJSC was put into operation by the Detal company on December 4, 2011. However, the operation of the plant was stopped due to the following reasons. Nevertheless, currently 98 workers have been detained at the Gil-Torpag plant for the purposes of keeping the equipment in conservation mode and preventing dusting in the slurry areas [6].

Reasons for stopping the plant:

1. Impact of problems experienced at our main customer, Tajikistan Aluminum Plant (TADAZ).

Tajikistan Aluminum Plant, which is the main and traditional buyer of clay produced by Ganja, had serious problems in production and supply during 2012. Uzbekistan stopped gas supply to TADAZ, set limits for them in railway transport and created other similar problems. Due to the decrease in the production of the plant, TADAZ could not buy clay-soil in the volumes stipulated in the contract. Since it is impossible to give the goods we produce to other buyers under the same conditions due to logistical reasons, our shipments have been unstable.[7]

2. Problems related to Clay-Soil and Aluminum prices in the world market.

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According to the forecasts of the most authoritative sources for 2012, although the average exchange price of aluminum is 2,400 - 2,500 US dollars / ton, from January 01 to April 30, 2012, the highest point at which the price rose was 2,308 US dollars. (February 28, 2012), and the average of 4 months was 2,147.18 US dollars. Since clay-soil prices are related to aluminum prices, clay-soil prices were also at low levels during that period.[10]

3. Problems related to transport infrastructure, transport-expedition services.

It was not possible to deliver the produced product to the buyer because there were no wagons in the railway line in the appropriate quantity, meeting the standards and requirements. As all capacities of the plant were filled, production had to be limited or stopped. As a result, production costs and non-production costs have increased.

Since the Ganja Clay-Soil Plant stopped its operation in 2009, the production cost of 1 ton of clay-soil has increased by approximately 27.24 US Dollars (33%) due to the increase in transportation and forwarding rates alone. In general, only bauxite transportation (ocean and land) accounts for approximately 40-45% of the production cost of 1 ton of clay. It is for this reason that the tariff increase in transportation has a sharp impact on the production cost of clay and has reduced the competitiveness of the final product in the world market.[8]

4. The presence of difficulties in the supply of high-quality and abundant bauxite.

The plant was originally supposed to work with Guinean bauxite. Although the contract was concluded and the payment guarantee was provided, the supplier could not provide the bauxite for reasons beyond his control. Temporarily, the used bauxite of Indian origin did not meet the requirements. It is not profitable to bring the rich bauxite that can be processed in the factory to Ganja from an economic and commercial point of view. On the other hand, those bauxites are not enough to operate the plant continuously and sustainably. All bauxite deposits, known for their high quality and suitable geographical location, availability of appropriate infrastructure, are under the control of the world's leading aluminum producers. Some countries have even banned the export of quality bauxite (India, Indonesia, etc.) [9].

5. Problems in the Supply of Energy Carriers

During the production period, energy and gas supply by Azerigaz and Azerenerji OJSC was stopped many times. Such events seriously damaged the technological process, equipment and mechanisms, destroyed a large amount of semi-finished products, raw materials and auxiliary materials, as well as electrical and other equipment. The last two power outages alone caused more than 1 million manat damage to the plant. Restoration of the situation costs a lot of time and money [11].

Analysis

It is necessary to determine the impact of economic mechanisms between LME prices and production capacity.

SENSITIVITY TEST

The purpose of the sensitivity test is to determine the effect on the stability of the product produced by Azeraluminium LLC as a result of changes in the current price and production volume.

Test methodology: 1) Determining the break-even production volume. 2) Determining the sensitivity of the impact on profit by changing the price and production volume in different options.

Basic assumptions for calculation:

Production volume for 2020: 53,273.9 tons

Capacity utilization: 100%

Average selling price: 2149.4 USD

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Discussion

A) Determining the break-even production volume

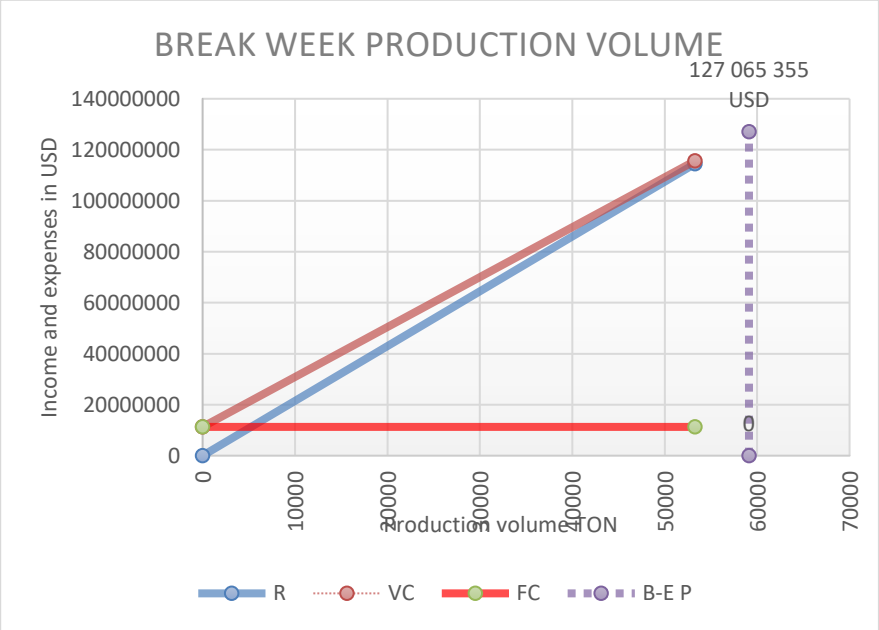
The 2020 plan Profit and loss statement was used in the calculation. Reported Revenue (R) $114,507,167, cost structure Variable Costs (VC) $104,334,710, Fixed Costs (FC) $6,083,847, loss assuming depreciation $5,204,447 $1,115 It is 837 USD. As a result of the given indicators, the loss-free production volume was 59118 tons. At least 5,844 tons of additional production capacity is required.

Table 1.

2020 plan Profit and loss statement

	USD
Income	114,507,167
Variable costs (VC)	104,334,710
Fixed costs (FC)	6,083,847
Earnings before interest, taxes, depreciation, and amortization (EBITDA)	4,088,610
Depreciation cost (FC)	5,204,447
Revenue	-1,115,837
Source: made by the author Available Production capacity tons	53,274
Breakeven production volume tons	59,118
The minimum additional production capacity required is tons	-5,844

The break-even production volume is calculated by the following formula: B-E_P=FC/[(R-VC)/Production capacity].



Source: made by the author

Chart 1. Break-even production volume.

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B) Sensitivity test of the impact on EBITDA and net profit as a result of changes in price and production volume

The result of the indicator is given in the following tables at the intersection of production volume and price. Fixed costs were taken into account regardless of production volume.

Table 2.

Sensitivity test effect on EBITDA

Financial indicator: EBİTDA							
	Production	**-30%**	**-15%**	**0%**	**15%**	**30%**	**100%**
LME	**3,009,940**	**37,291.7 t**	**45,282.8 t**	**53,273.9 t**	**61,265.0 t**	**69,256.1 t**	**106,547.8 t**
3%	$ 2,213.9	3,441,531	5,482,683	7,523,835	9,564,988	11,606,140	21,131,517
2.5%	$ 2,203.1	3,040,755	4,996,027	6,951,299	8,906,571	10,861,843	19,986,445
0	$ 2,149.4	1,036,878	2,562,748	4,088,618	5,614,487	7,140,357	14,261,082
-2%	$ 2,106.4	-566,223	616,125	1,798,473	2,980,821	4,163,169	9,680,792
-2.5%	$ 2,095.7	-966,999	129,469	1,225,936	2,322,404	3,418,872	8,535,720
-3%	$ 2,084.9	-1,367,774	-357,187	653,400	1,663,987	2,674,574	7,390,647

Source: made by the author

Table 3.

Sensitivity test Impact on net profit

Financial indicator: Net profit							
LME	**-2,872,413**	**37,291.7 t**	**45,282.8 t**	**53,273.9 t**	**61,265.0 t**	**69,256.1 t**	**106,547.8 t**
3%	$ 2,213.9	-2,440,822	-399,670	1,641,482	3,682,635	5,723,787	15,249,164
2.5%	$ 2,203.1	-2,841,598	-886,326	1,068,946	3,024,218	4,979,490	14,104,092
0	$ 2,149.4	-4,845,475	-3,319,605	-1,793,735	-267,866	1,258,004	8,378,729
-2%	$ 2,106.4	-6,448,576	-5,266,228	-4,083,880	-2,901,532	-1,719,184	3,798,440
-2.5%	$ 2,095.7	-6,849,351	-5,752,884	-4,656,416	-3,559,949	-2,463,481	2,653,367
-3%	$ 2,084.9	-7,250,127	-6,239,540	-5,228,953	-4,218,366	-3,207,779	1,508,295

Source: made by the author

CONCLUSION

The world aluminum market is based on the technologies used by five companies for aluminum production. Adjustment of aluminum production norms of "Azeraluminum" LLC to the norms of those companies will lead to a decrease in the cost of products. The lower production costs of other companies make them more resistant to sharp price changes in the market. For example, RUSAL's production of bauxite and clay, using different production

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rates and concessions on the use of electricity lead to low-cost aluminum production. When comparing Rusal and Alcoa companies, during the first 6 months of 2019, Alcoa had sales of 5.4 billion US dollars, but its net loss was 601 million US dollars. During that period, the Rusal company sold 4.7 billion US dollars and made a net profit of 558 million US dollars. Thus, it can be observed that Rusal has a comparative advantage. Also, the Rusal company has increased its production volume to reduce the impact of falling aluminum prices on the company. These factors may cause Azeraluminum LLC's competitiveness in the world market to decline if LME prices continue to trend downward, because other large companies can sell their products without incurring severe losses when LME prices fall.

Despite the short-term price increase, global financial institutions predict that aluminum prices will continue their downward trend. ABN AMRO (one of the largest banks in the Netherlands) predicts that aluminum prices will reach USD 1,742 by the end of 2019 and USD 1,835 by the end of 2020. The World Bank predicts that average prices will rise to 2200 US dollars only in 2030. Trading Economics predicts that the average price of aluminum will be $1,739 in the fourth quarter, $1,719 in the first quarter of 2020, $1,699 in the second quarter, and $1,679 in the third quarter. Considering the current geopolitical tensions and the global economic growth rate, it can be concluded that more realistic indicators belong to Trading Economics.

Taking into account the conducted sensitivity tests and the main trends in the world market, as a result of the preliminary analysis, it can be considered appropriate to increase the production capacity to 100 thousand tons in order to increase the competitiveness of the enterprise.

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ALÜMİNİUM MÜƏSSİSƏSİNİN TEXNİKİ-İQTİSADİ XÜSUSİYYƏTLƏRİ (AZƏRALÜMİNİUM MMC TİMSALINDA)

X Ü L A S Ə

Tədqiqatın məqsədi - "Azəralüminium" MMC-nin təmsil etdiyi alüminium müəssisəsinin iqtisadi xüsusiyyətlərinin vəziyyətini öyrənməkdir. Boşluqları müəyyən etmək üçün alüminium bazarı araşdırılmışdır.

Tədqiqat metodologiyası – qiymətləndirmədə sintez, analiz və müqayisə kimi üsullardan istifadə edilmişdir.

Tədqiqatın tətbiqi əhəmiyyəti - ölkənin qeyri-neft sektoruna yönəldilən investisiyalar Azərbaycan iqtisadiyyatının daha da inkişafına və keyfiyyətli yerli məhsullar istehsalının genişləndirilməsinə hərtərəfli təkan verir.

Tədqiqatın nəticələri - "Azəralüminium" MMC-nin alüminium istehsalı normalarının bu şirkətlərin normalarına çatdırılması məhsulun maya dəyərinin aşağı düşməsinə səbəb olacaq. Digər şirkətlərin aşağı istehsal xərcləri onları bazar qiymətlərinin şoklarına daha davamlı edir.

Tədqiqatın orijinallığı və elmi yeniliyi - Azərbaycanda qəbul edilmiş normativ hüquqi aktlara və elmi-nəzəri yanaşmalara və "Azəralüminium" MMC-nin hesabatlarında göstərilən bəzi məqamların açıqlanmasına əsaslanır.

Açar sözlər: alüminium müəssisəsi, iqtisadi inkişaf, innovativ texnologiyalar, alüminium istehsalı, alüminium bazarı.

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ТЕХНИКО-ЭКОНОМИЧЕСКИЕ ХАРАКТЕРИСТИКИ АЛЮМИНИЕВОГО ЗАВОДА (НА ПРИМЕРЕ ООО “АЗЕРАЛЮМИНИЙ”)

Р Е З Ю М Е

Целью исследования является изучение состояния экономических характеристик алюминиевого предприятия на примере ООО «Азералюминиум». Для выявления пробелов был исследован рынок алюминия.

Методология исследования – при оценке использовались такие методы, как синтез, анализ и сравнение.

Практическая значимость исследования - инвестиции, направляемые в нефтяной сектор страны, дают всесторонний импульс дальнейшему развитию экономики Азербайджана и расширению производства качественной местной продукции.

Результаты исследования - приведение норм производства алюминия ООО «Азералюминиум» к нормам этих компаний приведет к снижению себестоимости продукции. Более низкие производственные затраты других компаний делают их более устойчивыми к резким изменениям цен на рынке.

Оригинальность и научная новизна исследования – основана на принятых в Азербайджане нормативных правовых актах и научно-теоретических подходах, а также некоторых пунктах, указанных в отчетах ООО “Азералюминий”.

Ключевые слова: алюминиевое предприятие, экономическое развитие, инновационные технологии, алюминиевое производство, алюминиевый рынок.

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