

NON-TECHNICAL SUMMARY

(Trakya Glass Rus)

1. INTRODUCTION

ŞİŞECAM GROUP

Şişecam Group is an industrial group with the main activity fields of glass and chemicals production. The group is in a leading position in business lines covering all basic fields of glass such as float glass, glass household articles, glass packaging and glass fiber as well as soda and chromium compounds.

ENVIRONMENT

Şişecam Group has always considered the environmental awareness and performance as an important responsibility, based on the significance of the approach of sustainable development. In this respect, environmental compliance at national and international levels, as well as the reduction and assessment of environmental impacts are taken into consideration during the decision taking and production processes.

In Şişecam and its subsidiary companies, all environmental issues are handled within the framework of Şişecam's Environmental Policy, declared as:

"Şişecam, as an organization strongly aware of its responsibility towards the protection of environment, believes in the need to maintain the world as a livable place for coming generations.

This approach is considered as the cornerstone of Şişecam's strategic management and is integrated in every phase of its work processes.

Our aim is to carry out all environmental protection activities in Şişecam within a framework of an environmental management system by taking account the sustainability principles and continuously improve the system with the support of all our employees and stakeholders"

OCCUPATIONAL HEALTH AND SAFETY

As a result of the importance it places on and the respect it pays to humanly working and living right, Şişecam projects formation of a mentally and physically healthy community and workforce through realizing all its activities in healthy and safe working environments, and believes that this is the surety of its future. Setting out from this belief which is a fundamental and indispensable item of its management understanding, Şişecam, through implementing the legal legislation, standards and contemporary management systems, targets to continuously improve the working environment and conditions in line with the technological changes and developments, to inform its employees and all parties it is in relation with, and so to contribute to establishment of a real 'health and safety culture' in all segments of the community.

“ŞİŞECAM places great emphasis and considers the right of life and labor in humane conditions. It envisages the establishment of stable in spirit and body society and labor force as for that purpose requires all activities to be executed under safe and healthy work conditions and believes that this way the safe future will be reached.

Believing that this idea represents an integral and basic part of the management thinking ŞİŞECAM constantly improves the conditions of labor environment by applying statutory provision, technologic reaches, standards and modern management systems. Submitted information to its employees and to everybody it has relations with it aims to contribute to the formation of health and safety culture in every one layer of society.”

Flat Glass Group

Carrying out the activities of Sisecam Group in the field of flat glass, Trakya Cam is the leading company of the flat glass market in Turkey and the pioneer in the region.

Trakya Cam that employs the latest technologies in production, operates in the fields of;

- basic glass (flat glass, patterned glass, mirror, laminated glass, coated glass, glass for architectural applications),
- automotive glass and glass for other vehicles,
- energy glass,
- glass for home appliances

and provides input for various sectors including construction, automotive, energy, home appliances, furniture and agriculture.

2. THE NEW PROJECT

2.1. OVERVIEW

Trakya Cam will invest a new float line in Russia. The investment, Trakya Glass Rus (TGR), consists of one float line, one mirror line and one coating line.

The float glass production line has a 730 tons daily production capacity. It will produce glass for automotive, furniture and architectural industries. It will produce clear and colored glass in campaigns.

The investment is in a `Special Economic Zone`. The raw glass will be supplied to our Automotive Glass Plant which is located in the same zone using a very short way. The Mirror and Coater Lines are located in same building with the float line.

2.2. SITE LOCATION

Locations of both of the Special Economic Zone (SEZ) in Tatarstan Republic and Trakya Glass Rus in SEZ are given in attachments.

The site selection for float glass projects is significantly important in terms of mainly proximity to targeted markets, transportation conditions, proximity to raw materials, infrastructure conditions. The reasons for selecting the investment location of Trakya Glass Rus as SEZ Alabuga, in Tatarstan Republic are described below.

- Proximity to targeted markets: As mentioned in the related sections, the target markets for float glass are mainly Ural and Volga regions and South and Central Region in Russia. In this respect the selected location for project implementation of Trakya Glass Rus is very suitable considering the proximity to target markets.
- Transportation Infrastructure: The logistics network of the selected location is very favourable for the project as it offers both road and railway transportation. It is also an advantage that customs exit and entry gates are already constructed.
- Infrastructure: Natural gas availability is one of the most important factors for determining a site for float line investments, as float line production is an energy intensive technology. Besides stable electricity availability is also important and mostly for mirror and coated glass productions. The selected location meets the criteria of float glass, mirror and coated glass productions in terms of natural gas and electricity availability. It is very important that the natural gas and electricity already exists at the site. Besides, there is already sewerage, rain water drainage and waste treatment systems at the site.
- Proximity to Raw Materials: The most important raw materials which are sand and soda ash will be purchased from 350-450 km distances. The other raw materials will be purchased from 600-800 km distances. So, it is very important there are available raw materials close to the selected location with the specs suitable for float glass production.
- Land: The selected site is very suitable with size and land structure for the planned investments.
- Incentives: There are incentives provided for the investments in SEZ Alabuga most important of which are property tax exemptions, profit tax of %15,5, and VAT exemptions.
- Social Environment: There are cities around the selected locations with favourable social and living conditions and good accommodation options. There are also education institutes and specialized colleges and schools.

2.3. PRODUCTS

Float Glass

Float glass is the basic material for all glazing purposes. It is a basic raw material to various sectors including construction, automotive, home appliances, furniture, energy and agriculture.

Secondary processes are applied on float glass to improve its basic properties. When laminated, toughened, coated or made into mirror, float glass can provide heat and noise insulation, solar control, safety and security and it is well suited for decoration as well.

Main consumer features and parameters of products:

Typical float glass thicknesses vary between 2-10 mm.

Sizes :Jumbo (4,50 up to 6,00 meters to 3,21 meters)

Float glass is manufactured in accordance with;

- EN 572-9
- ISO 9001:2008 Quality Management System

Coated Glass

Glass, when used as single glazing in windows, high amount of heat loss occurs in winter. Insulating glass units contribute to energy saving by decreasing heat loss through windows. An insulating glass unit incorporating coated heat control glass, provides effective heat insulation.

Trakya Cam manufactures heat control (Low-E coated) glass by depositing multi layered metal/metal oxides on float glass through “magnetically enhanced vacuum sputtering technology”. Vacuum deposition requires a vacuum chamber in which the metal to be deposited on the glass. In the vacuum, particles of the metal circulate freely and impinge on the surface of glass.

Main consumer features and parameters of products:

Typical coated glass thicknesses vary between 3-19 mm.

Sizes: Jumbo (4,50 up to 6,00 meters to 3,21 meters)

Coated glass is manufactured in accordance with;

- EN 1096-4
- ISO 9001:2008 Quality Management System

Mirror

Mirror is used in furniture and for architectural applications. It is an ideal product for interior design and used mainly in bedrooms, bathrooms, stores, sport centers and exhibition centers.

Mirror is produced by applying a layer of silver on one side of the glass plate. The silver mirror production line uses the chemical coating method. The main steps are washing, polishing, sensitizing, silver coating, protective metal coating, and painting.

Main consumer features and parameters of products:

Typical mirror glass thicknesses vary between 2-6 mm.

Sizes: LES (1,80 up to 2,50 meters to 3,21 meters)

Split size (1,25 up to 1,80 meters to 1,60 meters)

Mirror glass will be manufactured in accordance with;

- EN 1036 : 2007 -1 and EN 1036 : 2008 -2
- ISO 9001:2008 Quality Management System

2.4. PRODUCTION TECHNOLOGY/TECHNOLOGIES

Flat glass production will be produced by the latest developed float glass technology in flat glass sector. Most flat glass producers in Russia use the same technology. This technology allows producers to produce high quality flat glass. However, some producers use older float glass technology, Chinese technology or old-fashioned sheet glass technology and therefore produce low quality flat glass products. Trakya Glass Rus will be able to produce flat glass in each thickness, color and size valid in flat glass sector and therefore will not have any disadvantages in this regard.

Concerning the mirror production, existing mirror production technology, know-how and experience allows us to produce very high quality mirror and our mirror is renowned in Russia as well as in other countries. Given that technology, know-how and experience, we will have the same quality and our mirror is going to have advantageous against our competitors because of our product's quality, competitor products' quality and our mirror's market awareness.

The coated glass technology differs from company to company. However, concerning the product, our coated glass products will have the similar or better technical specs and performance in order to compete with the competitors.

3. ENVIRONMENTAL OBJECTIVES OF THE PROJECT

3.1. EMS and OHSAS Integration

After all the projected lines are taken into operation, both of Environmental Management System and Occupational Health and Safety Management System will be applied for the new plant.

3.2. Emissions: Air, water, nonhazardous and hazardous wastes

Air emissions will be discharged to the atmosphere in accordance with the regulations in Russia. However, to get the further improvement primary measures will be applied to all production lines.

As a secondary measure; in order to reduce NO_x and dust emissions from Float Glass Furnace, waste gases will be connected to a waste gas treatment system composed of ESP and SCR.

Sanitary wastewater that will be generated from the various activities in the Plant will be discharged into the sewage within limits required by the Municipality.

Only the process wastewater that needs to be treated in the Plant will be generated from the mirror production line and it will be treated before to be discharged into the sewage.

Nonhazardous wastes that will be generated from the Plant will be stored separately and will be given to recycling companies. Only the cullet will be recycled in the Float Glass furnace.

Hazardous wastes will be managed according to the requirements of regulations in Russia.

3.3. Noise at boundary

There will be no noise impact at the boundary. However, noise at the boundary will be monitored according to the legislation requirements by authorized laboratories and data of monitoring will be reported to relevant authorities.

3.4. Energy efficiency & carbon management (including carbon emissions and any reduction measures)

Main energy saving techniques to reduce energy consumption will be applied to the float glass production line since the main energy will be consumed in this line.

- ⇒ **Furnace design:** The furnace will be designed as regenerative by which heat of the flue gas is recovered and used for the pre-heating of the combustion air. This design will provide saving of fuel usage and CO₂ emissions generation.
- ⇒ **Combustion control and fuel choice:** For the most efficient combustion, all combustion parameters will be monitored and evaluated continuously. As well as that low-NO_x burners will be utilized.

- ⇒ **Cullet usage:** Internal cullet recycling, which provides substantial savings from raw material, energy and CO₂ emissions generation, will be a part of the production.
- ⇒ **Electricity production:** Electricity generation by using heat of waste gas of the furnace is planned to be realized within the project. With this Co-generation project, 6 MW of electricity, 600,000 kcal/hour hot water and 2 ton/hour 2 bar steam will be generated.

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