EUROGLAS

COMPANY PORTRAIT

YOUR PARTNER IN GLASS

CONTENTS

APPLICATIONS

Unique buildings created by architects, outstanding interior design, windows for luxury automobiles, aircraft and railway vehicles – the base glass for these projects always originates from one of the Euroglas factories. Our independent glass supply gives our customers the freedom to explore courageous ideas.

EXTERIOR

Magnificent works of architecture can be created with our types of façade glass. We are able to provide the right solution for every construction project. Depending on the building's location, a combination of thermal and solar radiation protection panels can be used. Our coated glass comply with the required industry standards without compromising the design. Our anti-misting glass is a market leading product which prevents condensation by means of an innovative coating.

INTERIOR

Interior spaces can be exquisitely designed and enhanced using our glass. Whether wall cladding or partition panel: one highlight is our exclusive decorative panels, which are available in an almost unlimited variety of designs and colours. Glass doors, shower walls, stairs and tables also give rooms an individual appearance.

AUTOMOTIVE

Our glass products provide "moving" views and perceptions for vehicle as well. Whether sports cars, high speed trains or helicopters: our products range from high quality, complete glazing solutions to individual elements for the most varied applications and uses. And all of our products have in common the highest degree of quality and safety.

HIGHLIGHTS

Galeria Malta Poznan, Poland

Lamborghini Gallardo

Paul Klee Centre Berne, Switzerland

THE WORLD IS CONSTANTLY CHANGING, MUCH LIKE THE GLASS MANUFACTURING INDUSTRY. NEW TECHNOLOGIES AND PRODUCTS ARE CONTINUALLY CREATING INNOVATIVE WAYS OF USING GLASS.

For high speeds or breathtaking heights – with utmost passion Euroglas seeks, as well as researches, discovers and develops, suitable solutions made out of glass. Not least, in order to overcome engineering challenges and, together with competent partners, to realise large and astonishing projects across Europe and the Middle East.

Zefiro CRH380 highspeed train China

New Monte Rosa Hut Zermatt, Switzerland

Gütersloh Theatre Gütersloh, Germany

CFK North Research Centre Stade, Germany

ABU DHABI FINANCIAL CENTRE Abu Dhabi, United Arab Emirates

Pilatus PC-21 Training aircraft

SWISSCULINARIA counter top, Switzerland

Dornier Museum Friedrichshafen, Germany

Glass in the Garden Private house, Switzerland

Vintage car factory Neu-Ulm, Germany

Yas Island Yacht Club Abu Dhabi, United Arab Emirates

COMPANY

Thanks to our independence – as well as our flexibility and the advantageous dynamism of being a medium-sized entreprise – we are always able to perform at the highest level for our customers and partners.
As a European glass manufacturer and coater, we are a reliable partner – day after day.

Medium-sized, independent, customer-focused and dynamic – what Euroglas stands for.

CORPORATE CULTURE

SUCCESS THROUGH DYNAMISM.

Euroglas is a rapidly growing medium-sized company and already one of Europe's biggest glass manufacturers. Our recipe for success is as simple as it is effective: with qualified and motivated staff, we produce innovative products that are oriented to the needs of our customers. At the heart of all this, dynamism is the keyword, which runs like a common thread throughout our thoughts and processes. We act independently, flexibly and quickly to service our customers – today and always.

MEDIUM-SIZED AND BASED ON PARTNERSHIP

We know our origins and nurture our roots. As a subsidiary of the Glas Troesch Group, which is currently managed by the fourth generation of the founding family, we place emphasis on an achievement-oriented yet friendly, familiar working environment. The qualifications of our colleagues and a globally active management are just as important to us as a professional approach to managing health and safety or a motivating environment at the workplace. We regard our customers as employers when they commission us as clients, spurring us on to deliver a top performance daily.

FOR PEOPLE AND THE ENVIRONMENT

We want to produce something meaningful: products that contribute to a reduction in greenhouse gases, or help people to increase their productivity and improve their wellbeing. We go to work each day to make the world a better place.

Our specialists give their best to achieve customer satisfaction.

We are proud of our innovative products.

Our 100% recycling of broken fragments, for the benefit of the environment.

The glass stairway, manufactured in our own factory, symbolises the transparent business policies of Euroglas: as a fair partner, we progress with our customers, developing ourselves step by step.

PIONEERING SPIRIT

OVER 100 YEARS OF EXPERIENCE.

PIONEERING SPIRIT AND GROWTH

The roots of the Euroglas company reach back to the beginning of the 20th century: Johann Friedrich Troesch founded the company Glas Troesch in 1905, in the Swiss town of Buetzberg. Thanks to the courageous and foresighted dealings of four generations of entrepreneurs, the company has developed from a small local business into the globally active company it is today.

FROM GLASS PROCESSING TO GLASS PRODUCTION

The stated goal of Heinz Troesch at the end of the 1980s was to establish his own factory for basis glass materials. He entrusted the project to his son Erich, the fourth generation of the Glas Troesch family. Thanks to his entrepreneurial courage and will to succeed, he managed in 1995 to break into the market controlled by Europe's glass oligopoly. In that year, the factory in Hombourg, France, already manufactured 580 tonnes of glass each day. Building on the success of this facility in Alsace, Troesch quickly established a second production plant in 1997 in in Haldensleben, (Germany). Another two factories followed in 2006 and 2009 , with the successful launching of operations in Osterweddingen, (Germany) und Ujazd (Poland). The four facilities now produce over 3,000 tonnes of glass per day. Together with its strong partners, this medium-sized company has managed to establish a glass manufacturing business which is independent of Europe's major glass corporations.

Pioneering spirit was required from the company's earliest days, in the Swiss town of Buetzberg.

Hombourg, 1995: Opening of Europe's first independent float glass manufacturing facility.

Erich Troesch at the launch of the first float production plant.

Euroglas puts a great deal of know-how into every new oven. The batched raw materials are fed here into the 1550 °C furnace.

PARTNERSHIP

TOGETHER MAKING THINGS HAPPEN.

One goal existed at the beginning of the Euroglas story: to independently produce glass for the processing facilities of Glas Troesch Group and its partners. Since then, this goal has been realised, day after day. This is what drove them, together with the Arnold glass company, to establish the first float glass factory in Hombourg, France. Just two years later, Erich Troesch, of the fourth generation of the Swiss family enterprise, together with the Arnold and Nowak glass companies, opened the second float glass factory in Haldensleben, Germany. In co-operation with the Semcoglas Group and the Glas Sprinz company, a third factory was opened in 2006 in Osterweddingen, Germany.

EXPANSION INTO EASTERN EUROPE

The deliberate, consistent pursuit of development and growth reached a high point in the opening of the fourth float factory in Ujazd, Poland, in August 2009. Established in co-operation with Press-Glas SA, it is one of the largest facilities in the world. Glas Troesch thus succeeded in becoming the first independent, medium-sized company in glass manufacturing.

Euroglas float glass factory Hombourg, France

Euroglas float glass factory Haldensleben, Germany

Euroglas float glass factory Osterweddingen, Germany

Euroglas float glass factory Ujazd, Poland

FACTS & FIGURES FLOAT GLASS FACTORIES

	Start of operations	Daily output*
Hombourg, France	1995 / 2008	580 t
Haldensleben, Germany	1997 / 2011	700 t
Osterweddingen, Germany	2006	800 t
Ujazd, Poland	2009	1000 t

* Minimum quantities

Partnership with vision – as symbolised by
the transparent cladding of the Euroglas factories.

FLOAT GLASS
EUROFLOAT® AND EUROWHITE® NG

THE START OF EVERYTHING: OUR BASIS GLASS.

It is hard to find an older material that is more modern and has more of a future than glass. Glass has been known to man for over 6000 years, and only industrially manufactured in the last 100 years. Since 1995, Euroglas has been producing float glass of the highest quality.

EXCEPTIONALLY VERSATILE: EUROFLOAT®

EUROFLOAT® is the name given to the Euroglas float glass family. This basic glass is the foundation for coated thermal and solar radiation protection glass, laminated safety glass and solar panel glass.

EXTREMELY TRANSLUCENT: EUROWHITE® NG

EUROWHITE® NG is melted from sands that are especially, carefully selected and prepared, with low iron oxide content. EUROWHITE® NG is characterised by its very high translucence and colourless light admission. Combined with thermal insulation glass more natural light comes into the room, moreover, the energy yield increases. For interior design, neutral and aesthetic appearance of the glass is interesting. Staircases, glass balustrades, shower separation and furniture - EUROWHITE® NG sets this perfectly.

Particular note is EUROWHITE® Solar, it was developed especially for the solar energy industry. It offers very high light and energy transmission values and is available from 2.6 mm.

Our basic glass materials EUROFLOAT® and EUROWHITE® NG are characterised by their striking visual appearance and quality. They are the foundation for all refining processes.

From basic glass to façade glass – all refining steps can be realised using our float glass materials. Façade of EUROWHITE® NG with thermal insulation.

A computerised cutting machine engraves the **float glass** with a hardened steel wheel; the glass is then automatically broken apart. Inspection systems are in operation to constantly check for the smallest flaw in the ribbon of glass.

COATED GLASS
SILVERSTAR®

INTELLIGENT COATING DESIGN FOR PEOPLE AND THE ENVIRONMENT.

The optimal insulation of buildings is one of the most important contributions to the fight against climate change. SILVERSTAR® coatings reduce the energy costs of the heating or cooling of buildings to a minimum – and enable people all around the world to feel comfortable behind glass walls and windows whilst enjoying natural light.

KEEPS WARM: SILVERSTAR® THERMAL INSULATION GLASS
Whether double or especially efficient triple glazing: SILVERSTAR®-coated insulation glass materials offer the highest degree of heat insulation. They stand for comfort, all year round.

STAYS COOL: SILVERSTAR® SOLAR PROTECTION GLASS
In regions which experience particularly intense sunshine, SILVERSTAR® coatings provide effective protection against rising internal temperatures in buildings. The result: reduced air conditioning costs and a pleasant living and working environment.

PERFECTLY COMBINED: SILVERSTAR® COMBINATION COATINGS
The combination of glass materials of SILVERSTAR® are characterised by a maximum of selectivity. They combine efficient solar protection and modern heat insulation with exceptionally high light transmission. The range of applications is accordingly wide – from smallscale conservatories to multi-storey façades.

SILVERSTAR® coating facility Ujazd, Poland

Exceptional colour neutrality and natural reflection of colour allow a transparent, discerning architectural design.

Agricultural social insurance company Landshut, Germany
Insulating glass for aesthetics and the perfect indoor environment.

LAMINATED SAFETY GLASS
EUROLAMEX®

THE LAMINATED SAFETY GLASS THAT PROTECTS AND AESTHETICALLY GRABS YOU.

EUROLAMEX® is the laminated safety glass of Euroglas. The increasing need for safety in all aspects of life and the demands of glass architecture have seen a rapid growth in demand for this product. Today, laminated safety glass has already become the industry standard for a large number of uses and applications.

RELIABLE PROTECTION: EUROLAMEX®
EUROLAMEX® safety glass ensures optimal resistance to being broken or if something is thrown at it. Thanks to EUROLAMEX PHON®, traffic noise and annoying sounds remain outside. The noise protection glass offers all the benefits required to ensure a pleasant living and working environment.

MUMUTH – House of Music and Musical Theatre Graz, Austria

EUROLAMEX® is manufactured, in a clean room, by inserting a synthetic sheet between the glass panels. The sandwich is then fused together under the action of pressure and heat in an **autoclave** oven.

SOLAR GLASS
EUROGLAS ESG FLAT

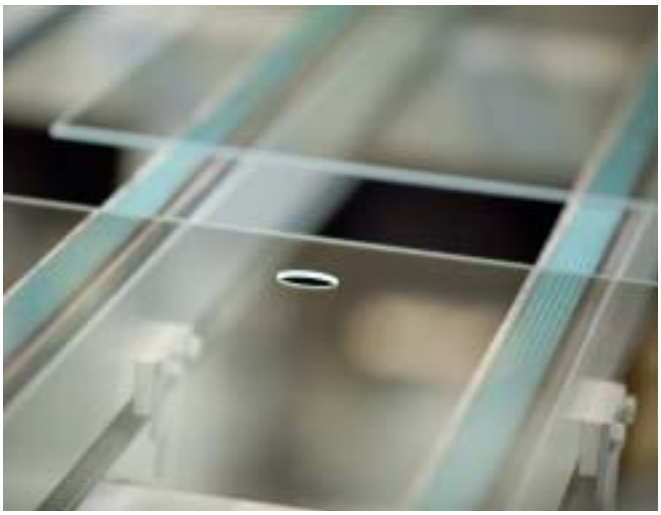
FOR A FUTURE IN WHICH ENERGY WILL BE PRODUCED IN A SUSTAINABLE AND RESOURCE-CONSERVATIONAL MANNER.

Euroglas has been manufacturing glass for the solar industry at its facility in Haldensleben since June 2009. Euroglas produces front and back glass for solar panels based on a thinfilm technology. These modules, which are often installed in large solar energy parks, are vitally important for a reliable and clean energy supply, which Euroglas is contributing to in its own way.

EXTREMELY FLAT: EUROGLAS ESG FLAT
EUROGLAS ESG Flat can be used as front or back glass. As back glass it serves as the foundation of the thinfilm module, on which all other elements of the module rest.

In connection with highly transparent white glass, EUROGLAS ESG Flat is used as front glass. Its high transmission qualities enable more light to reach the module, increasing efficiency.

Whether front or back glass, both sheets can be processed to make tempered safety glass. Modern furnace technology can ensure a particularly low level of distortion and high mechanical strength. This allows, in further processing, the use of very thin intermediate sheets – the reduced use of materials and the lower weight reduce the cost of the solar panel.



Variable glass processing according to customer specifications.

Euroglas Haldensleben, Germany has been manufacturing glass for the solar industry since June 2009.

Glacier Gate Zermatt, Switzerland
Solar glass façade, Matterhorn Glacier Paradise.

RAW MATERIALS

BUILDING BLOCKS FROM MOTHER NATURE – CREATING A FASCINATING MATERIAL.

Glass: a fluid which has set without crystallising – as it is defined by science. Since around 1960, glass has been manufactured using the float process.

INGREDIENTS FOR FLOAT PRODUCTION

The bulk of the mix consists of high quality quartz sand which is followed by soda, sulphite, dolomite and lime. Recycled fragments are also added. Euroglas only uses carefully selected raw materials which enable us to produce glass of the highest quality.

Raw materials used in float glass production (recycled fragments, soda, quartz sand, lime, dolomite)

FIRE AND ENERGY

TO US, TOP PERFORMANCE IS AN OBLIGATION. THE FASCINATION OF FIRE AND THE ENERGY OF OUR GLASS IS OUR INSPIRATION.

Fire is our element. It can never be allowed to stop, or everything comes to a standstill. 24 hours a day, 365 days a year, we keep our furnaces fired up and our ribbon of glass flowing. The furnaces are up to 60 metres long and 30 metres wide. Approximately 6000 tonnes of refractory bricks and 1000 tonnes of steel were used in their construction. A temperature exceeding 1500°C is needed to melt the contents inside.

FIRE – THE SOURCE OF OUR DRIVE

Fire also characterises our entrepreneurial spirit. Just as our furnace never stops, we too are spurred on by the drive to continually break new ground in the world of glass.

Furnace bricklayers Ujazd, Poland

Tin bath Haldensleben, Germany

MANUFACTURING PROCESS

THE RAW MIXTURE AND FIRE TOGETHER CREATE ONE OF THE MOST ATTRACTIVE, NOBLEST MATERIALS: GLASS.

Our float experts take great care to ensure an endless ribbon of glass. They master the giant furnaces of brick and steel – the birthplace of glass. They give the glass the strength and the stresses it needs. They cut it to exacting dimensions and gently transport it. They create glass of the highest quality.

① **Material deliveries**
Raw materials are delivered by sea, rail and road:between 250,000 and 400,000 tonnes each year per factory. The materials are stored in our silos and tested in the laboratory for quality and purity.

② **Mixing**
Quartz sand, soda, dolomite and other raw materials are weighed and mixed according to a recipe. To improve the melting process, recycled glass fragments in the volume of 20 % of the total are then added to the mix.

③ **Melting**
The batch is introduced at the front end of the furnace. At each side, up to 23 burner lances inject natural gas. The flames spread horizontally across the batch and cause it to melt at a temperature of 1550 °C. Powerful regenerators are found at each side of the furnace through which the hot combustion gases are channelled to the chimney. Every 20 minutes, the firing changes from one side to the other. The cold combustion air is directed through the currently hot regenerator, warming it up and thus winning back approximately 30 % of the energy.

④ **Purification**
After the melting process, the glass outgasses, i.e. any small bubbles, escape. Before it leaves the furnace, the glass is cooled down to 1200 °C, to achieve the right viscosity – similar to that of honey - for the forming process.

⑤ **Exhaust air treatment and energy recovery**
The exhaust air **A** is cleaned, efficiently using the most modern techniques in three steps: in the reaction tower **R** (desulphurisation), in the electrostatic filter **F** (dust removal) and in the denitrification unit **D**. By way of the waste heat recovery boiler **K**, energy is removed from the exhaust gases. The energy is transformed into electricity by a steam turbine **T** with a generator. This covers half of the float facility's needs for electrical energy.

⑥ **Forming**
The endless ribbon of glass is formed in the tin bath. Since glass is significantly lighter than tin, it flows or floats on the molten tin – hence the name "float glass". The surface of the glass is thus absolutely planar. The thickness and width of the glass band are determined by top roller machines which grip into the soft glass mass at its edges. The balanced thickness of the glass ribbon is six millimetres. For thinner glass, the top rollers pull the glass outwards, for thicker glass they compress it inwards.

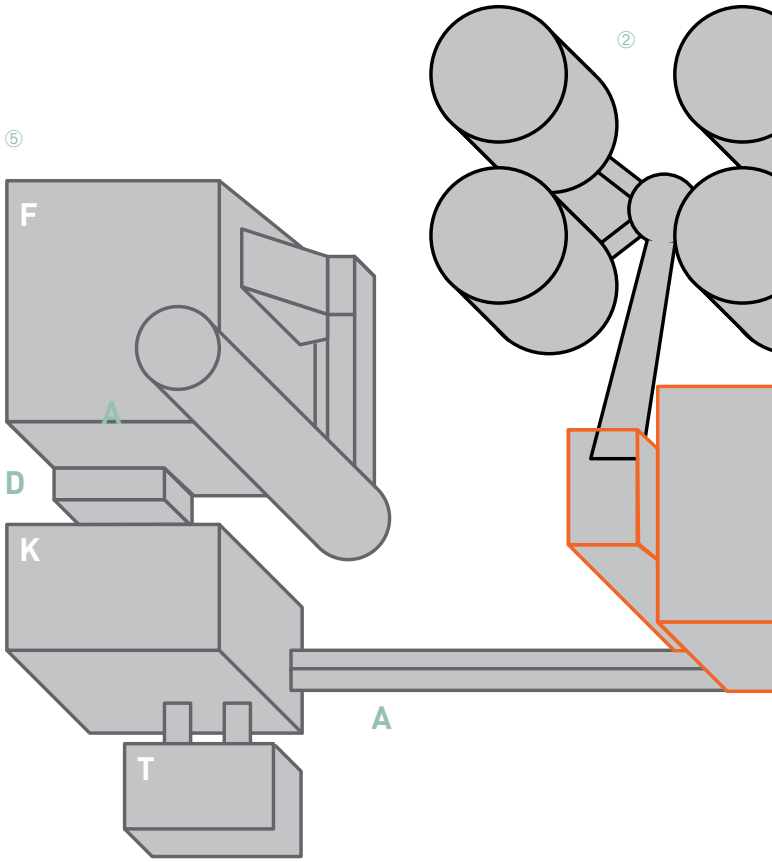
⑦ **Cooling**
In the 150 metre long cooling tunnel, the glass is cooled from 600 °C to 60 °C. The slow, controlled cooling ensures that only low, uniform stresses remain. This allows the glass to be then cut without any problems.

Impressive dimensions: The total length of the float glass facility is several hundred metres.

⑧ **Inspection**
Our glass ribbon is subjected to a number of quality checks. A laser beam examines the glass for optical imperfections and records them electronically. Imperfect sections are automatically removed and sent for recycling. The checking of the thickness and for stresses in the glass is based on the double reflection principle: automatic and continuous. For the checking of optical quality and other characteristics, samples are continually taken from the production line and analysed in the laboratory.

⑨ **Cutting**
Glass panels of varying lengths are cut from the never-ending ribbon of glass. The computerised cutting machine engraves the glass with a hardened steel wheel, upon which it is automatically broken apart. Longitudinal cuts remove the edge strips with the top roller tracks, transverse cuts determine the lengths of the panels. All cutoffs are sent back to the furnace for recycling. Laser checking and the analysis of imperfections ensure a consistently high quality glass.

⑩ **Storage and delivery**
Generous stock holdings of tens of thousands of tonnes of glass in popular sizes and thicknesses ensure short, customer friendly delivery periods. The finished products are delivered by special vehicles and in containers to customers all around the world - quickly, environmentally soundly and punctually.

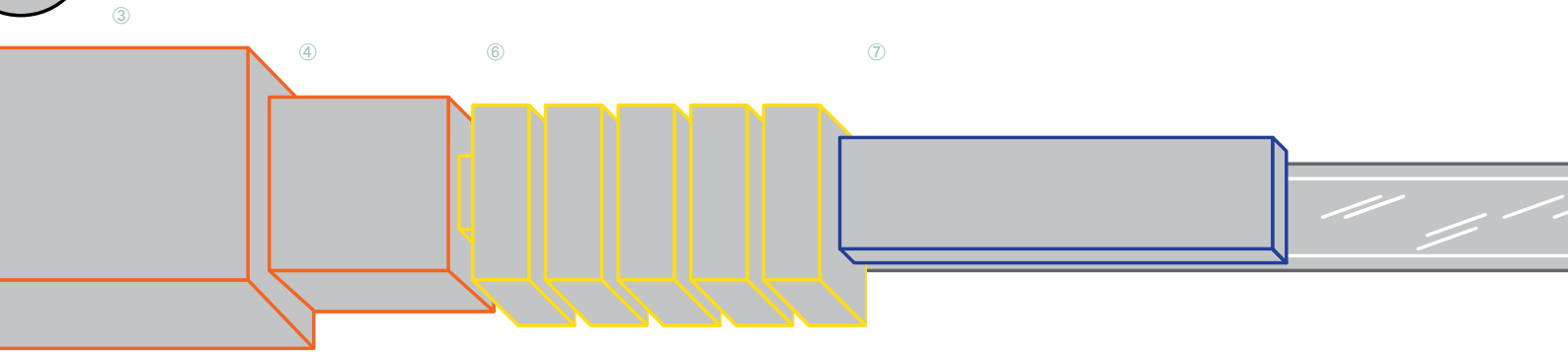


① **Material deliveries**

② **Mixing**

③ **Melting**

④ **Purification**

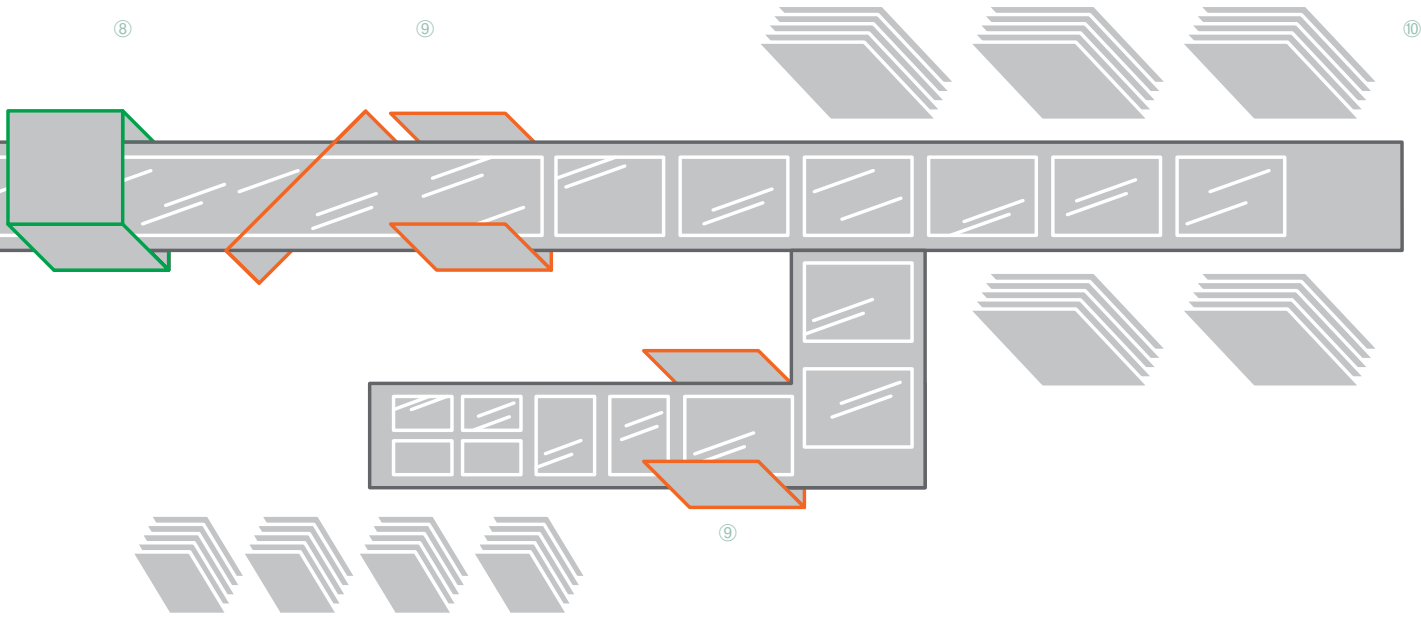


⑥ **Forming**

⑧ **Checking**

⑨ **Cutting**

⑩ **Storage and delivery**



QUALITY AND CONTROL

WE ARE ONLY SATISFIED IF YOU ARE AS WELL.

Manufacturing can be controlled by computers and checked with lasers. But above all else, it is the experience and skill of our engineers and technicians that enables us to produce high quality glass. Our specialists give their best to ensure exceptional glass quality right through the entire manufacturing procedure and up until the despatch to our customers. The most modern technology accompanies the quality assurance process, from the arrival of materials until the loading for delivery.

GUARANTEED CONTROL

In the laboratory, we continually check the composition and properties of delivered raw materials. We systematically analyse the entire process chain and, of course, work in accordance with the organisational principles of ISO 9001 and ISO 14001.

EUROGLAS – THE QUALITY BRAND

"Quality work for quality glass" is a promise we renew and keep every day.

In the "zebra test", planarity (distortion) is checked at random.

Experienced glass experts continually oversee quality.

CUSTOMER PROXIMITY

OUR CUSTOMERS ARE OUR PARTNERS.

In the heart of Europe, we produce float glass in four factories and three countries. With the opening of each production facility, we also came a bit closer to our customers. With each factory, we increased our manufacturing capacity. We are able to offer our customers the highest degree of reliability and certainty.

COMPREHENSIVE SERVICE

We listen. Being near to the customer means for us responding to all their wishes and queries at all times. From the quotation until unloading at the customer's premises: Euroglas ensures that every single step of the delivery is carried out to the customer's complete satisfaction.

Partnership and expertise, in the office and in the field.

Stores Haldensleben, Germany

LOGISTICS

The Euroglas inloader fleet transports glass right across Europe.

In handling glass, we take safety seriously.

OPTIMAL AND FITTING REQUIREMENTS: OUR FLOW OF MATERIALS FROM MANUFACTURING TO THE BUILDING SITE.

PROFESSIONAL LOGISTICS

The Euroglas logistics department ensures punctual despatch and optimal protection during transport. Our stock holdings allow even mixed loads with short lead times. Our inloaders ensure easy, cost-effective and safe delivery. On the return journey, we take the customer's broken fragments for recycling, making good use of this important source of material. If necessary, we also export by sea and rail.

ENVIRONMENT

WE TAKE ON THE RESPONSIBILITY FOR CURRENT AND FUTURE GENERATIONS.

Conservation of natural resources is a primary concern for us – also in the manufacturing of our glass products. Euroglas has established a process to address this concern appropriately.

AIR PURIFICATION

Conservation of resources doesn't just mean energy efficiency – it also includes the control of exhaust emissions from the furnace. An electrostatic filter greatly reduces the emission of fine dust and sulphur dioxide, so that the regulations are more than met. In addition, Euroglas cleans exhaust fumes using a so-called DeNOx machine which, with the addition of ammonia water, catalyses the conversion of nitric acid to nitrogen and steam.

HEAT RECOVERY

The waste heat of the combustion gases is used to recover energy. Our factories generate approximately one third of the power in this way.

RECYCLING

Our patented glass recycling system enables primary energy consumption to be reduced by approximately 9%.

Conservation of nature through environmental protection and recycling.

With our patented glass fragment recycling system, we strive for the recirculation of valuable raw materials and thus for the conservation of resources.

LOCATIONS

LEGEND

F	Float glass

EUROGLAS GmbH
Dammühlenweg 60
D-39340 Haldensleben
Germany
Tel. +49 3904 63 80
Fax +49 3904 63 81 100
info@euroglas.com

EUROGLAS AG
Euroglasstraße 101
D-39171 Osterweddingen
Germany
Tel. +49 3904 63 80
Fax +49 3904 63 84 150
info@euroglas.com

EUROGLAS S.A.
Zone Industrielle
F-68490 Hombourg
France
Tel. +33 389 83 35 00
Fax +33 389 26 08 08
hombourg@euroglas.com

Euroglas Polska Sp. z o.o.
Osiedle Niewiadów 65
97-225 Ujazd
Poland
Tel.: +48 44 719 40 00
Fax: +48 44 719 49 99
ujazd@euroglas.com

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