





## YOUR GLASS EXPERTS

Innovation, quality, excellent service and experience-based expertise: That's what you can expect from OSG. Whatever it is - if it is glass, we can do it. From automotive and architectural glass systems to glass for rail, heavy engineering machinery and transparent armor for the defense and security, military and civilian sectors, OSG is a leading expert in these fields.

From design to finished product, we focus on enhancing your vision, and believe in taking initiative. We like nothing better than to work with a customer from the design, research and development stages right through to manufacturing, sharing and realizing your dreams. Our customer is always at the forefront of our mind, which is one of the reasons we have built such a loyal customer base.

## COMMITMENT TO THE CUSTOMER

This professional work ethic, attention to detail and commitment to quality and service have seen us grow into a market leader and experts over the last 35 years, with long-term international customers.

Today we are a global company with large production facilities in Emporia, Virginia, Israel, and Spain. Our size, experience and global presence give us great manufacturing flexibility, and this means we can easily handle all your needs. All our production lines are ISO 9001-2015 certified and equipped with the latest technology.



## TOMORROW'S SOLUTION TODAY

Our research and development team continually investigates and tests the latest market offerings, incorporating new materials and using new technologies to our advantage. We have pioneered many of our industry's most important innovations. At OSG, research and development is a leading force, as we continuously look for new, improved solutions. Our work in cooperation with leading academic institutes has expanded our knowledge base greatly and has led to excellent advances in technology.

With innovations such as light-weight compositions for the transportation market as well as transparent armor, OSG is as cutting-edge as it gets. Some of our products are up to 40% lighter than previous industry standards.

- Other innovations include products that complement our glassware:
- Improved supporting systems and components, such as emergency exits and assembly solutions.
  - Integrated LCD video displays in windows and windshields.

## EVERYTHING YOU NEED, WHENEVER YOU NEED IT

Our highly skilled engineers are at your service and ready to consult with you, from the design phase to manufacturing. Excellent service and meeting the needs of our customers are a high priority to us, and we take pride in offering you a comprehensive service under one roof. Our in-house laboratories and testing facilities are designed to streamline manufacturing and deliver the best possible product.

We believe in building long-lasting relationships with our customers and in working together closely on all projects in any country. We strive to respond swiftly to any customer need. You can rely on our assistance throughout every phase of your project, and we are happy to custom-build for you. Our customized options include egress solutions, add-on applications and frames.

## FOUR DECADES AND COUNTING

Since we started doing business in 1979, we've made our mark in the rail, defense and security and architectural sectors across the globe. Our transparent armor solutions have been used widely by the IDF, US ground forces and NATO as well as many military and civilian international customers worldwide. In the transportation sector, we have been serving major customers in the OEM and ARG markets such as Volvo, Siemens, DAF, Liebherr and others for over three decades.

We work closely with our customers, market experts and professionals around the world. As a result of our years in the industry, and the range of customers we have served over this time, we have vast, rich experience that makes us experts in our field.





## OSG's DEFENSE & SECURITY DIVISION: Transparent Armor

When it comes to saving lives and protecting property, our transparent armor complies with the highest industry standards. Our products meet ATPD-2352 (current rev.) as well as STANAG 4569 standards (Levels 1 to 4), plus equivalent US National Institute of Justice (NIJ), European, German, Spanish, DOD UFC performance criteria and other standards for all threat levels. We conduct blast, fragmentation, and environmental tests in-house, in accordance with STANAG, the US Army, and USMC specifications.

Our transparent armor is made for both military and civilian security and defense applications. Applications involve vehicles as well as buildings (such as Governmental Offices and Embassies), plus naval applications. Thanks to advances in technology our highly armored glass remains completely clear.

Since ever-changing threats such as ballistics, explosions and improvised explosive device (IED) attacks have increased worldwide, our blast-resistant transparencies are becoming even more important. Glass shrapnel is one of the main safety concerns during an explosion. OSG's blast-resistant glass is available in no-spall and low-spall variants to eliminate this.

We have been successful at keeping soldiers safe, while maintaining a protected working environment with optimal visibility.

Our state-of-the art research and development facilities include ballistic laboratories for the full range of small arms kinetic and FSP fire testing.



## OSG's TRANSPORTATION DIVISION: Glass Solutions for the Transportation Industry

Chances are you've seen our handiwork going down the street in the form of a bus, car, train or tram windshield or window. We handle transportation glass process from beginning to end, and currently our glass products are available in more than 50 countries around the world. We focus on remaining at the forefront of technology, bringing new developments, compositions and technologies for all transportation vehicles: ground, naval and airplanes.

### **Rail: From A to Z with system solutions**

OSG provides complete solutions for all types of trains and trams, from glass to frames and supporting systems, researched and developed to the customer's request.

OSG's latest developments for the rail market include:

- Light-weight compositions, with total glazing weight up to 40% lighter
- High impact solutions
- Anti-reflective glass
- IR-protective technology

- Anti-vandalism glass against various threats
- Windshields for high-speed locomotives

All our products comply with the latest industry standards including: R43, ANZI Z26.1, BSI, BN 918511, UIC, DB, EN 15152, BS, FRA type I and FRA type II, NF F, ISI and the USA TIER 2 for windshields.

### **Cars, trucks, buses & coaches**

We make a great variety of windshields and side windows for most types and models of vehicles. What's more, we proudly serve several leading glass manufactures and OEM companies around the world. Options are unlimited and include laminated, tempered or IGU, curved or flat glass with or without silk print and other applications. All our products are tested in-house and meet the ECE, R43 and other major standards.

### **Construction & agriculture**

OSG has an impressive track record in working with major OEM manufacturers in the field. We have developed special solutions for heavy duty and agriculture machinery that meet all the sector's needs.



## OSG's SPECIAL APPLICATIONS DIVISION: ScreeneX, Architectural Glass, Solar Energy and New Technologies

### ScreeneX - Window of Opportunities

ScreeneX is an LCD embedded glass technology that transforms windows and other glass elements into vivid digital Information displays for passengers. Conventional windows, doors and partition walls become a dynamic communication channel. A window of real-time communication, ScreeneX, is a new generation of passenger information systems for on-board and off-board applications, real time passenger information, entertainment and commercial advertisements. Featuring an embedded TFT - LCD panel inside the glass unit, ScreeneX allows operators to control and tailor information displayed to passengers. Because the screen is embedded into the glass unit, the surface on both sides is as smooth and clear as regular glass. Custom solutions for HD LCD based passenger information systems are designed to meet harsh environmental conditions with zero-maintenance requirements and with a unique, narrow, low-weight design.

### Harvesting nature's bounty: Solar energy

The benefits of using solar power are huge, both for the environment and in business. OSG specializes in double-axis curved glass mirrors, which maximize solar concentration and energy collection. These curved mirrors provide higher sunlight-to-electricity conversion than alternative technologies. We offer various tailor-made solar glass options to suit individual customers.

### Building your dreams: Architectural glass

This is where creativity, functionality and beauty meet. Our architectural solutions are made to the highest standards, while catering to aesthetic needs. We also guide our customers in acoustics, reflective or non-reflective, heat transmission and fireproof glass. You can choose from flat or curved laminated glass, tempered glass, and double glazing. We can also make balustrades, banisters, and safety railings, taking your décor into consideration. Additionally, our digitally or screen-printed décor glass is available in a variety of colors, patterns, images or pictures.



## THE RIGHT CHOICE FOR YOUR MANUFACTURING NEEDS

At OSG, we aim to become a one stop shop for our customers, and this led to the birth of **OSG Metal Fabrication**. We now offer our customers advanced metal fabrication of all types of metal frames (incl. armored steel) for armored vehicles and aluminum frames for trains and transit vehicles. **OSG's metal fabrication's** structure, experience and training methods allow us to be flexible, agile and responsive to our customer's needs in today's demanding environment.

**A to Z solutions** - Providing total solutions from the development and prototyping to production, finishing and final assembly.

We provide laser cutting, metal forming, welding, media blasting, robotic and manual welding and painting services.



## PROVEN TRACK RECORD

### Defense and security

OSG is the largest supplier of armored windows for the MRAP and MATV family of vehicles for the US DOD (US Army - TACOM and US Marine Corps). Just recently OSG was chosen to be the supplier of transparent armor to the JLTV program - the vehicle that will replace the iconic HMMWV. OSG also supplies transparent armor for virtually all tactical wheeled vehicles in the US military fleet. These include trucks produced by Oshkosh, Navistar, BAE, General Dynamics, Lockheed Martin, AM General and many others. OSG also supplies armored windows to MOD's across the globe: UK MOD, German BWB, French MOD, Italian MOD, Australian MOD and others. OSG's transparent armor is installed on many armored vehicles such as Zetros, Actros, Dingo Astra, Husky, Hawkei and many more.

### Transportation

We have worked with manufacturers such as Siemens, Bombardier, Alstom, Talgo, CAF and Kawasaki in numerous projects including the AMTRAK new generation of high-speed locomotives, Houston and Portland LRV, Illinois high-speed train and M9. We are also involved in the design and manufacture of a new BRT platform in Israel as well as numerous OEM bus platforms world-wide.

## GOING GREEN

At OSG, innovation is important, and this includes environmentally friendly innovations. We're proud of our work in solar power and our continuous advances in architectural glass. We work alongside the finest architects to create insulation glass to keep out the heat. Our weight reduction solutions of up to 40% in our transportation safety glass means lighter vehicles and lower fuel use for the customer and for the environment.

At our production plants, we keep in sync with new developments to save energy and reduce carbon footprint in the production process, as well as to create products that themselves save energy in the long run. It's all in a day's work at OSG.







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