stora

Tank & Containment Systems



# Tank & Containment Systems

Engineered Stability. Built for Long-Term Performance.

# Who We Are

Engineered Stability. Securing Critical Infrastructure.

Industrial processes demand absolute operational safety. As a specialized brand within omeras group, stora delivers high-performance enameled steel tanks and containment systems designed for challenging operating environments.

We do not simply supply storage tanks – we develop fully integrated system solutions. Every system is engineered to protect valuable resources, stabilize complex processes, and secure your investment over the long term.

### Core Commitments:

**Industrial-Grade Durability**: Built to withstand severe chemical, mechanical, and environmental stress.

**Complete System Integration**: Perfectly matched interaction between tank shells, roof covers, and process components.

**German Engineering Excellence**: Precision manufacturing and strict quality control at our German production facility.



# System Ecosystem

Integrated Solutions from Tank to Process.

**Modular engineering tailored to demanding containment requirements.**

Efficient containment requires more than an isolated tank shell – it demands a fully harmonized system. stora provides a modular ecosystem where every component is engineered to work together seamlessly, ensuring operational safety, easy maintenance, and long service life.





**01 | Glass-Fused-Steel Tanks**

High-strength, enameled steel shells engineered for maximum chemical and physical durability.



**02 | Advanced Roof Covers**

Gas-tight, emission-reducing, aluminium, or heavy-duty structural roof systems.



**03 | Access & Safety Infrastructure**

ISO-compliant ladders, staircases, maintenance walkways, and perimeter handrails.



**04 | Process Components & Accessories**

Precision flanges, shell manways, sight glasses, safety valves, and thermal insulation.



**05 | Custom Engineering & Integration**

Project-specific connections, foundation designs, and custom structural adaptations.



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biogas

## Continuous Tightness Under Chemical & Dynamic Load.

Biogas facilities are highly dynamic processing environments. Operating conditions require containment systems that resist aggressive organic acids, volatile gas phases, hydrogen sulfide (H2S), and continuous pressure variations during continuous 24/7 operation.

**stora biogas** systems combine high-grade vitreous enamel coatings with gas-tight joint sealing technology. Engineered specifically for digesters and gas storage tanks, our containment solutions ensure long-term structural integrity and zero-leakage performance under extreme headspace conditions.





**Core Applications:**

- Anaerobic digesters & primary fermenters
- Secondary digesters & digestate storage tanks
- Gas-tight double membrane storage systems

**Project Reference:**

- Facility: Industrial Biogas Plant
- Location: Genua Italy
- Scope: capacity 15000 $m^3$



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water

## Hygienic Integrity & Water Resource Security.

Water management demands non-reactive, inert storage environments. Whether for municipal drinking water supply, industrial process water, or wastewater treatment, containment systems must guarantee maximum hygiene, zero contamination, and long-term protection against corrosion.

**stora water** delivers glass-fused-steel tanks engineered with a smooth, non-porous vitreous enamel surface. This coating prevents biofilm accumulation and chemical interactions with the media, securing water quality and operational reliability over decades.





**Core Applications:**

- Potable drinking water storage reservoirs
- Municipal & industrial wastewater treatment
- Dedicated firewater protection tanks
- Process water & filtration containment

**Project Reference:**

- Facility: Potable Water Reservoir
- Location: Riyadh Saudi Arabia
- Scope: 20000m$^3$ capacity, dome roof



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industrial

## Heavy-Duty Containment For Severe Operational Environments.

Industrial production facilities operate under intense process-related loads. Storage systems must withstand extreme chemical exposure, mechanical wear, thermal stresses, and continuous processing requirements without operational downtime.

**stora industrial** provides highly adaptable containment systems designed for severe industrial applications. Engineered to integrate seamlessly into complex manufacturing and chemical process lines, our tanks reliably contain aggressive chemical media, industrial effluents, leachates, and dry bulk materials.





**Core Applications:**

- Industrial chemical & process liquid containment
- Leachate & industrial effluent storage
- Dry bulk materials & industrial silos
- High-load process reservoirs & equalization tanks

**Project Reference:**

- Facility: Industrial Effluent Treatment Plant
- Location: Reggio Emilia, Italy
- Scope: Capacity membrane roof stainless steel accesories

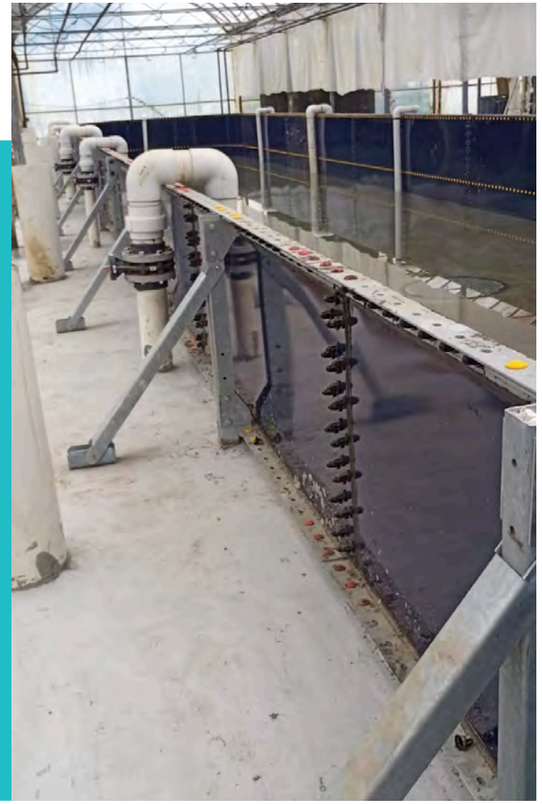


stora
aquaculture

## Precision Containment for Sensitive Biological Cycles.

Aquaculture facilities rely on controlled biological environments where water quality, circulation, and temperature stability are vital. Even minor material leaching or surface irregularities can disrupt sensitive aquatic ecosystems.

**stora aquaculture** provides non-toxic, chemically inert glass-fused-steel tanks featuring an ultra-smooth vitreous enamel finish. This poren-free coating prevents algae accumulation, simplifies bio-cleaning routines, and ensures long-term operational stability in recirculating aquaculture systems (RAS) and marine environments.





**Core Applications:**

- Land-based fish farming containment systems (RAS)
- Water treatment & biological filtration tanks
- Saltwater & marine storage applications

**Project Reference:**

- Facility: Land-Based Fish Farming Facility
- Location: La Coste Texas USA
- Scope: 18 fish tanks; special: fish friendly blue color inside



stora
agriculture

## Heavy-Duty Storage Built for Agricultural Operations.

Agricultural operations require robust, cost-efficient storage infrastructure built for intense daily usage. Containment solutions must withstand harsh outdoor conditions, aggressive organic acids, and heavy slurries without complex maintenance requirements.

**stora agriculture** supplies long-lasting slurry tanks, liquid day to day containment, and animal feed silos designed for real-world farming conditions. Built for rapid field assembly and long operational life, our modular systems allow effortless future expansion as farm requirements grow.





**Core Applications:**

- Slurry & liquid manure storage tanks
- Grain & animal feed silos
- Agricultural water & liquid fertilizer containment

**Project Reference:**

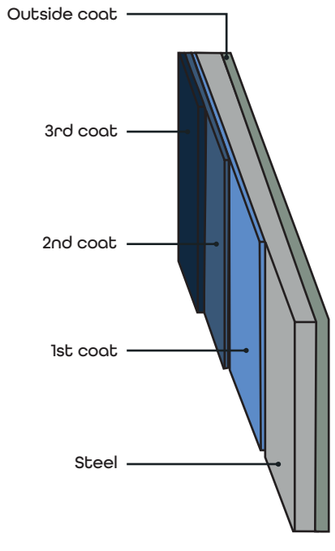
- Facility: Grain Storage
- Location: Switzerland
- Scope: Tank for animal feeding; with automatic extraction system

# Material Technology

The Structural Strength of Steel. The Chemical Inertness of Glass.

Vitreous enamel coating represents the ideal technical synergy, combining the high mechanical load-bearing capacity and resilience of steel with the exceptional chemical resistance of glass.

During a high-temperature firing process at approximately 850°C, liquid enamel fuses directly with the prepared steel substrate to create a completely new, unified composite material. Unlike conventional applied coatings, vitreous enamel is not merely bonded to the surface—it is molecularly fused.




Core Technical Properties:

- **Permanent Fusion:** Zero risk of delamination, blistering, or sub-surface corrosion.
- **Non-Porous Surface:** Mirror smooth, pore free surface prevents bacterial growth, biofilm buildup, and media retention.
- **Extreme Corrosion Resistance:** Outstanding stability against aggressive organic acids, leachate, and hydrogen sulfide (H2S).
- **UV & Weather Inertness:** Complete immunity to UV radiation, atmospheric aging, and color degradation.



# Enameled Surface Qualities

Coating Qualities & Technical Standards

**Precision-engineered surface protection tailored to process requirements.**
The glass-coated steel plates are manufactured in four specialized quality grades to meet specific operational demands and chemical exposure profiles.

| Specification Parameter | BASIC 600 | STANDARD TWO 900 | PREMIUM THREE | PREMIUM THREE PLUS |
|---|---|---|---|---|
| **Primary Applications** | Agriculture, slurry tanks, animal feed silos, temporary storage, dry bulk goods | Potable water, process filter tanks, firewater, sludge storage, digester sediment zones | Sludge treatment, industrial effluent, seawater, liquid leachate, digester atomized zones | Extreme industrial applications, digester gas zones, high-acid leachate, chemical media |
| **pH Value Resistance** | pH 3 to 9 | pH 3 to 10 | pH 2 to 12 | pH 2 to 12 |
| **Number of Enamel Coats** | 2 coats | 2 coats | 3 coats | 3 coats |
| **Coating Thickness** | 180 µm to 360 µm | 200 µm to 460 µm | 260 µm to 460 µm | 300 µm to 480 µm |
| **Test Standard** | EEA 7.24 / EEA 7.25 | EEA 7.24 / EEA 7.25 | EEA 7.20 / DIN EN ISO 28765 | EEA 7.20 / DIN EN ISO 28765 |
| **Testing Procedure** | High Voltage Test | High Voltage Test | High Voltage Test | High Voltage Test |
| **Test Voltage** | 600 V | 900 V | 1100 V | 1500 V |
| **Standard Interior Color** | Vitreous 7022 (Umbra Grey) | Vitreous 7022 (Umbra Grey) | Vitreous 7022 (Umbra Grey) | Vitreous 7022 (Umbra Grey) |

# System Advantages & Customization

Operational Efficiency and Architectural Adaptability.

**Engineered for low maintenance, long service life, and modular flexibility.**

## Core System Advantages:

***Individually Replaceable Shell Panels*:**
In the event of localized mechanical damage, individual steel sheets can be unbolted and replaced independently without dismantling adjacent rings or the roof structure—significantly reducing maintenance costs and operational downtime.

**Outstanding Chemical & UV Resistance:**
Vitreous enamel delivers total immunity to aggressive media, organic acids, atmospheric corrosion, and intense UV exposure.

**Modular Expansion & Relocation:**
The precision bolted joint design allows tanks to be expanded, heightened, or relocated as site requirements change.

**Rapid & Efficient Assembly:**
Factory-controlled manufacturing ensures short production lead times and rapid, climate-independent field installation.

**Minimized Lifecycle Costs:**
The glass-smooth surface eliminates the need for periodic recoating, lowering long-term maintenance costs.

## Exterior Colors & Custom Graphics:

The exterior surface of the steel plates is also enameled to guarantee lifetime weather protection.

- Standard Exterior Color: Green (RAL 6020)
- Optional Standard Colors: Dark Blue (RAL 5011), Light Grey (RAL 7035), Olive Green (RAL 6006)
- Enamel Graphics & Company Logos: Customer logos, vector graphics, and branding can be screen-printed in vitreous glass enamel and permanently fired directly onto the plate surface. This process guarantees 100 % UV resistance with zero risk of peeling, fading, or weathering.

RAL 6020

RAL 5011

RAL7035

RAL 6006

# Engineered Roof Systems

## Specialized Roof Covers for Every Operational Requirement.

Integrated containment structures designed for gas tightness, emission control, and structural load resistance.

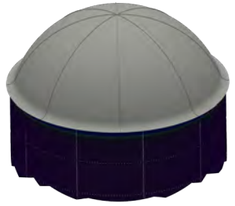
**01 | Aluminium Dome Roof**

Self-supporting aluminium structure without internal support columns. Highly corrosion-resistant, cost-effective, and ideal for water, wastewater, and chemical storage.



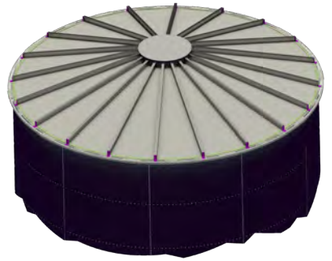
**02 | GRP Roof**
**(Glass-Fibre Reinforced Plastic)**

Self-supporting modular GRP panels sealed with neoprene rubber gaskets and stainless steel fasteners. Highly resistant to UV radiation, aggressive chemical vapors, and effective for odor reduction.



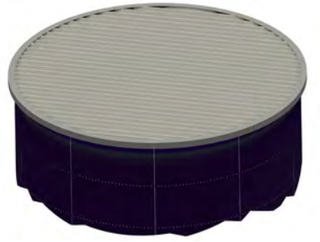
**03 | Heavy-Duty Conical Roof**
**(Steel / Stainless Steel)**

Heavy-duty conical roof structure engineered for high snow loads, gas-tight digesters, or tanks with central agitators. Roof sheets available in glass-fused-steel or stainless steel (1.4301 / 1.4401) with galvanized structural beams. Conical slope of 15° (up to Ø13.00 m) or 20° (above Ø13.00 m)



**04 | Trough Deck Roof**

Cost-effective flat roof structure made of trapezoidal steel or aluminium sheets. Self-supporting up to Ø11.97 m; supported by internal columns for larger diameters. (Non-gas-tight).



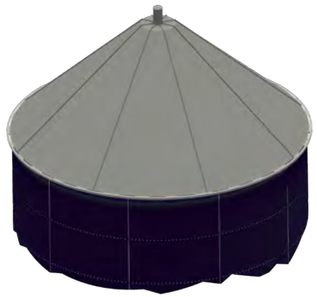
**05 | Double Membrane Gas Roof**

Gas-tight PVC-coated polyester membrane cover with continuous air-blowing system and internal belt support structure. Engineered specifically for anaerobic biogas digesters and gas storage. Flame-resistant according to DIN 4102 B1.



**06 | Emission-Reducing Membrane Cover**

Single membrane cover supported by a central column and belt system. Fastened via clamping rails to significantly reduce odors and gaseous emissions in agricultural and wastewater storage. Flame-resistant according to DIN 4102 B1.



# Access & Safety Infrastructure

ISO-Compliant Access Systems for Safe Operation and Maintenance.

**Ergonomic, heavy-duty access solutions built to European safety standards.**

Operational safety requires reliable, ergonomic access to tank roofs, maintenance platforms, and inspection points. stora access systems are engineered for maximum durability and full compliance with international safety regulations.

**Vertical Safety Ladders**

Safety cages engineered according to DIN 18799-1. Maximum unassisted height of 10 m before resting platforms are required. Weight: 15 kg/m.

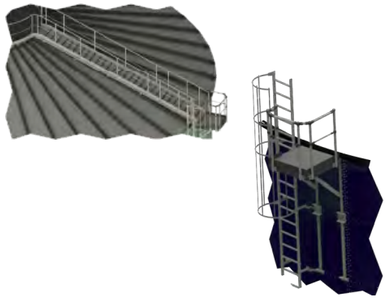
Materials: Galvanized steel, epoxy-coated steel, aluminium, or stainless steel (1.4401 / AISI 316).



**Maintenance Platforms & Walkways**

Sturdy working platforms (800×800 mm / 1000×1000 mm) and perimeter roof walkways (W=800 mm) compliant with DIN EN ISO 14122-3. Load rating: 100 kg/m (W=800 mm) to 135 kg/m (W=1000 mm).

Materials: Galvanized steel, epoxy-coated steel, or stainless steel (1.4301 / 1.4401).



**Perimeter Handrails**

Roof and platform handrails engineered according to DIN EN ISO 14122-3. Standard height: H=1100 mm. Weight: 25 kg/m.

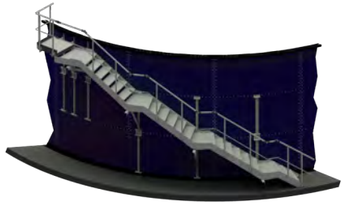
Materials: Galvanized steel, epoxy-coated steel, or stainless steel (1.4301 / 1.4401).



**Mantle & Spiral Staircase**

Segmented mantle staircases and spiral staircases equipped with continuous handrails built compliant with DIN EN ISO 14122-3. Standard width: W=800 mm. Vertical load rating: 210 kg/m.

Materials: Galvanized steel, epoxy-coated steel, or stainless steel (1.4301 / 1.4401).



# Tank Components & Process Accessories

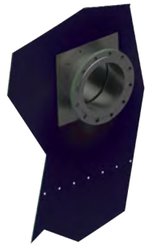
Precision-Engineered Connections for Total Process Integration.

**High-integrity shell fittings, access hatches, and safety devices designed for reliable system performance.**

### Connection Flanges (DN 32 to DN 1000)

Single and double connection flanges compliant with EN 1092-1 (PN 16). Standard length: L=150 mm. Custom dimensions available upon request.

Materials: Galvanized steel, epoxy-coated steel, or stainless steel (1.4301 / 1.4401).



### Aeration & Ventilation Openings

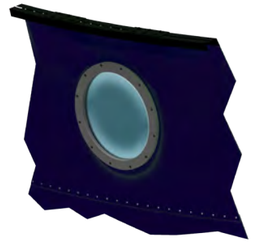
Weatherproof air intake and exhaust vents engineered for continuous pressure balance, air exchange, and odor mitigation.



### High-Pressure Sight Glasses

Borosilicate glass inspection windows designed for operating pressures up to 20 bar. Equipped with PTFE shaft seals; optional wipers and integrated LED illumination.

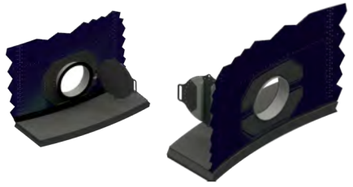
Frame Material: Stainless steel (1.4401 / AISI 316).



### Shell Manways (DN 600 / DN 800)

Standard (door thickness 8 mm) and heavy-duty manways (door thickness 10 to 20 mm) for easy internal maintenance and inspection.

Materials: Galvanized steel, epoxy-coated steel, or stainless steel (1.4301 / 1.4401)



### Overpressure & Vacuum Safety Valves

Mechanical and hydraulic safety relief valves designed for gas-tight roofs to prevent pressure imbalances. Applicable for explosion group IIB3 media at temperatures up to 60°C. Connections from DN 50 to PN 200.

Material: Stainless steel (1.4401 / AISI 316)



# Thermal Insulation & Foundation Engineering

Structural Stability and Process Temperature Control.

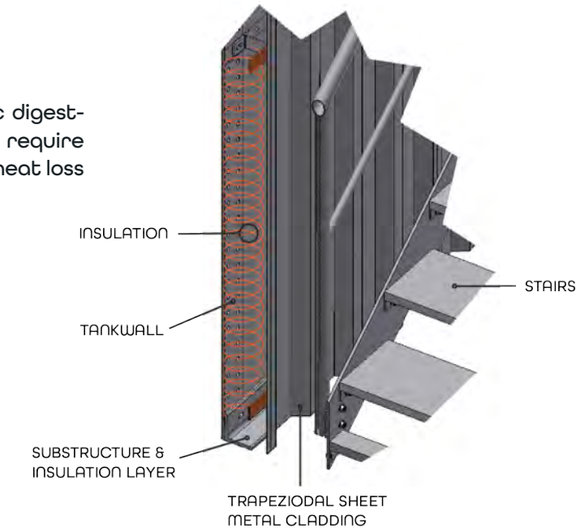
**Engineered base connections and thermal containment solutions for optimized operational performance.**

### Tank Shell Thermal Insulation System:

Heated process tanks, such as anaerobic digesters and hot process water reservoirs, require efficient thermal insulation to minimize heat loss and stabilize interior temperatures.

- **Insulation Core:** High-density mineral wool or polyure thane insulation layers tailored to process temperature requirements.

- **Outer Cladding:** Protective trapezoidal profile sheeting made of aluminium or pre-painted galvanized steel, guaranteeing weather resistance and an aesthetic exterior finish.



## Foundation & Base Fixation Options:

The choice of foundation mounting depends on soil conditions, seismic requirements, and tank geometry. stora provides versatile base fixation arrangements for seamless structural connection:

**Option A – Base Rebate (Embedded Shell Connection):**

The bottom tank ring is set directly into a pre-formed concrete rebate, secured with bottom brackets and anchor bolts, and permanently sealed using high-performance elastomeric sealant and non-shrink grouting.

**Option B – Base Plate (Direct Base Fixation):**

The tank shell is mounted directly onto a flat concrete foundation slab using heavy-duty bottom stiffener angles, anchor bolts, and continuous joint sealants.

**Option C – Starter Ring (Foundation Embedment):**

A dedicated starter ring (230 mm height) is embedded directly into the concrete foundation slab during casting, providing maximum structural shear resistance.

**Option D – Concrete Ring Wall Mounting:**

The tank shell is anchored directly onto pre-cast or cast-in-place concrete ring walls for elevated or specialized civil designs.





certified by third party

# Synchronized Tank Lifting Systems

Precision Top Down Erection Technology for Circular Containment Systems.

**Safe, ground level tank assembly engineered according to European Machinery Directives.**

Constructing large containment tanks requires controlled, reliable, and safe elevation methods. stora synchronized spindle lifting jacks enable top down erection entirely from ground level, eliminating the need for scaffolding and heavy cranes during shell assembly.

## Spindle Gearbox Architecture

High precision spindle gearboxes interconnected via drive shafts ensure continuous, perfectly uniform lifting across the entire perimeter. Trapezoidal self locking spindles prevent unintentional lowering even under full load.

Specifications: Lifting height: 1530 mm | Unit weight: 125 kg | Power requirement: 0.055 kW per ton per jack.

## Modular System Configuration

Flexible circular setup adaptable to specific tank dimensions and shell weights. The system is anchored to the foundation with M12 bolts and stabilized with head to head cross bracing.

Specifications: System capacity: 4 to 66 interconnected units | Max. load capacity: 6000 kg per jack.

## Synchronized Top Down Erection Process

Sequential erection methodology where upper tank rings are assembled first and elevated incrementally via shell mounted pin bars, allowing subsequent lower rings to be fitted at ground level.

Process sequence: Ring assembly -> Pin bar engagement -> Synchronized elevation -> Lower ring integration.

## Safety & Standard Compliance

Engineered for maximum site safety with integrated shaft covers, emergency stop controls, and structural stability during site assembly.

Standards: CE marked, fully compliant with Machinery Directive 2006/42/EC, EN ISO 12100, and EN 1494.






Quality Management ISO 9001 www.dekra-seal.com DEKRA certified

Environmental Management ISO 14001 www.dekra-seal.com DEKRA certified

Occupational Health and Safety Management System ISO 45001 www.dekra-seal.com DEKRA certified



# Certified Quality & Global Reach

Certified Engineering Standards for Global Infrastructure Projects.

**Industrial-grade manufacturing compliant with international quality regulations.**

Every stora containment system is manufactured at our specialized facility in Germany under strict quality control frameworks. From raw steel preparation to high-voltage enamel testing, our processes guarantee total reliability for global infrastructure projects.

### Quality Standards & Norms:

- **Vitreous Enamel Quality:**
Certified according to EEA 7.20 / EEA 7.24 / EEA 7.25 and DIN EN ISO 28765.

- **Access & Safety Infrastructure:**
Built compliant with DIN EN ISO 14122-3 (staircases & walkways) and DIN 18799-1 (safety ladders).

- **Fire & Material Safety:**
Membranes flame-resistant compliant with DIN 4102 B1.

- **Certificates:**
NSF 61, ISO9001, ISO14001, ISO45001

### Global Deployment:

stora storage systems operate reliably across more than 30 countries worldwide, supporting municipal, industrial, and agricultural operations.



(Reference installations currently include: Africa, Argentina, Australia, Austria, Brazil, Canada, Chile, Colombia, Denmark, Dominican Republic, Egypt, France, Germany, Greece, Indonesia, Italy, Mexico, New Zealand, Oman, Peru, Portugal, Qatar, Romania, Saudi Arabia, Spain, Sweden, Switzerland, Thailand, Turkey, UAE, United Kingdom, USA, Vietnam, Belgium, Bulgaria, Israel, Jordan, Latvia, Poland)

# omeras group

Industrial Manufacturing Excellence & Strategic Vision.

**A strong umbrella combining decades of engineering expertise, material innovation, and industrial manufacturing.**

The omeras group stands for durable, high-precision industrial solutions engineered for global applications. As a strong umbrella brand by HLE, it unites specialized competencies in vitreous enameling, sheet metal fabrication, and complex containment engineering.

Within this unified strategic framework, stora operates as the dedicated brand for Tank & Containment Systems—delivering long-term operational stability, resource protection, and engineered system reliability.

omeras
group by HLE

**The omeras group Value Promise:**

- **Industrial Substance:**
German production site with advanced machinery and large-scale manufacturing capacities.

- **Synergistic Engineering:**
Shared technical competence across specialized industrial brand divisions.

- **International Reliability:**
Systems designed and tested to perform under the harshest real-world conditions.



# stora

Tank & Containment Systems
**A Brand of omeras group**

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Made in Germany. Engineered for global performance.