Field Fabricated Fiberglass Tanks
The ultimate solution for the storage of chemicals
No more corrosion and diameters up to 30 meter.
About Plasticon Composites

Plasticon Composites is a full-service turnkey solution provider in the field of corrosion resistant fiberglass reinforced plastic (FRP) tanks, piping and apparatus. Founded in 1950 Plasticon Composites is well positioned to meet your needs.

Plasticon Composites is the world’s largest manufacturer of specially engineered, corrosion resistant, fiberglass reinforced plastics and dual laminate products providing integrated solutions for the handling, storage and processing of critical fluids and gases for the chemical water & wastewater, power generation and other process industries. Dual laminate constructions consist either of thermoplastic or fluoropolymer liner reinforced with FRP.

Plasticon Composites is an international specialist in design, manufacturing, installation and service solutions for the processing, storage and transport of highly critical corrosive fluids and gases. The products are constructed from high quality composite materials. Plasticon Composites has a consolidated geographical presence, with a multilingual staff and an active research and development program. Our technical support team of specialists assists customers in the early planning and design stages of projects. Plasticon Composites aims to reach an optimum end-result with solutions that reduce operational costs for its customers. Composite structures by Plasticon Composites come in a wide variety of materials, sizes, shapes and forms, depending on process specifications. The versatility of working with today’s composites, combined with the Plasticon Composites expertise, results in an extensive range of integrated solutions.

Plasticon Composites, leader in anti-corrosion applications and composite solutions

Transport of big diameter FRP cylinders to Germany in 1963

Transport of horizontal PVC/FRP tanks for a chemical plant in the Netherlands in 1959
The ultimate solution for your storage of chemicals

Products
- Storage Solutions
- Piping Systems
- Stacks & Ducting
- Lining Systems
- Scrubber & Filters
- Special Products

Materials
- PVC, PE, PP, PVC-C, PVDF, E-CTFE, FEP, FMA, PFA
- Modified PTFE
- FRP
- FRP

Services
- Inspections, repair and maintenance
- Turn key installation under single point responsibility
- Detailed engineering and stress analysis

Markets
- Water & Wastewater
- Chemicals & Petrochemicals
- Power Generation
- Technologies & Electronics
- Metals & Mining
- Food & Agriculture
- Water & Wastewater
- Power Generation
- Technologies & Electronics
- Metals & Mining
- Food & Agriculture

Large diameter tanks to be assembled on site
Production of tanks with the mobile winding factory
Design of corrosion resistant solutions

Designing components for the handling, storage and processing of corrosive or abrasive liquids and gases is a challenge best handled by composite specialists. Engineers must consider resin formulation, glass and synthetic material selection, corrosion barriers and other features unique to composites. They must design the corrosion resistant liner, and structural wall, both of which have unique chemical and structural design parameters.

Engineers at Plasticon Composites analyze each new project and review system performance specifications as they select the material and construction methods necessary.

Material choices & construction methods
The low maintenance requirements of today’s composite systems make fiberglass reinforced plastics the material of choice for most industrial applications. The primary materials and construction methods used by Plasticon Composites include:

- Fiberglass Reinforced Plastic with an anti-corrosion layer (FRP)
- Dual Laminate Construction using Thermoplastic Liners (PVC, PE, PP)
- Dual Laminate Construction using Fluor-polymer Liners (PVDF, E-CTFE, FEP, MFA, PFA)
Design code
Plasticon Composites field fabricated fiberglass tanks are designed and built in accordance to all major industry standards, including ISO, ASME, EN, API, BS, NFT and DIN.

While these storage tanks can be designed to contain products with a wide range of temperatures (from -40°C to 120°C), the outer surface finish is remarkably resistant to harsh environmental conditions, making fiberglass an ideal material for exposure to the elements, including the sun and even the salt-laden atmosphere found close to the coastlines.

Seismic
The design of field fabricated fiberglass tanks always takes into consideration the required seismic codes pertinent to the actual site of erection. Finite Element Analysis (FEA) can also be used to optimize the design even further.

Fire retardant:
Some plants require their FRP equipment to be fabricated using fire retardant resins in order to comply with ASTM E84 or EURO class B regulations. Plasticon Composites takes into consideration this requirement in the design phase. In the event of a fire, the greater wall thickness will prevent the uncontrolled collapse of the tank while minimizing the heat transfer to the stored product. Ignition of the contents is thereby avoided. It should be noted that the design for tanks requiring fire retardancy is done according to the standards (ASTM RTP-1, BS, etc).
Field fabricated fiberglass tanks for gypsum slurry (1,000 m³) produced on site in Rumania
Field Fabrication & Installation

Field fabrication is the best option in all instances where equipment size renders transportation impossible. Plasticon Composites has the experience and expertise to fabricate tanks on site in a variety of terrains and climates, with outdoor temperatures ranging from -40°C to +50°C.

Plasticon Composites’ mobile plant is equipped with highly customized winding machines for the on site manufacture of FRP stacks, ducts, apparatus, tanks and vessels.

Depending on the required tank diameter, Plasticon Composites uses its vertical winding machine for diameters up to 30 meters and its horizontal winding machine for diameters up to 10 meters.

The mechanical properties of the laminates obtained with the on site winding equipment are identical to the properties of the laminates produced in the shop.

Innovation:
In 2015, Plasticon Composites introduced its patented “expandable mold”. A true innovation in the industry, this technology drastically reduces the time required to change molds when several diameters are required on a project. This has truly given Plasticon Composites the edge in the market of field fabricated FRP equipment.

About the mold:
The mold surface is made of flexible carbon fiber panels. Because of the wide diameter range, two mold models are available: one expands from 7.0 meters to 12.5 meters, while the other expands from 12.0 meters to 20.0 meters. Adjustment from one diameter to another can be done within a few hours.
Fiberglass - An excellent alternative to stainless steel or rubber lined steel

While steel tanks were almost exclusively used for chemical storage just a few decades ago, FRP and other composite materials are now more popular than ever. With their impressive resistance to corrosion, their low maintenance and long service life, FRP tanks are now the most attractive solution for large diameter vessels.

Plasticon Composites has been serving the chemical process, power, water & waste water, mining and food industry for over 50 years.

The advantages of FRP tanks in comparison with steel and rubber lined steel for the storage of aggressive fluids like acids

<table>
<thead>
<tr>
<th>4.500 m³ atmospheric Tank</th>
<th>Carbon steel</th>
<th>FRP</th>
<th>SS 316</th>
<th>Carbon steel Rubber lined</th>
<th>Alloy 2205</th>
<th>Duplex steel 2205</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrosion resistance</td>
<td>Very poor</td>
<td>Excellent</td>
<td>Excellent</td>
<td>Inside: Excellent</td>
<td>Excellent</td>
<td>Excellent</td>
</tr>
<tr>
<td>Maintenance</td>
<td>High demand</td>
<td>Close to nothing</td>
<td>Periodic</td>
<td>Lining: High</td>
<td>Periodic</td>
<td>Periodic</td>
</tr>
<tr>
<td>Construction time</td>
<td>4 – 6 month</td>
<td>3 – 5 month</td>
<td>5 – 7 month</td>
<td>6 – 8 month</td>
<td>5 – 7 month</td>
<td>5 – 7 month</td>
</tr>
<tr>
<td>Lifetime without serious maintenance</td>
<td>5 years</td>
<td>Up to 50 years</td>
<td>Up to 50 years</td>
<td>15 years</td>
<td>Up to 50 years</td>
<td>Up to 50 years</td>
</tr>
<tr>
<td>Cost ratio</td>
<td>100%</td>
<td>150%</td>
<td>180%</td>
<td>200%</td>
<td>250%</td>
<td>350%</td>
</tr>
</tbody>
</table>
What to store:

Fiberglass storage tanks are very corrosion and chemical resistant and can store chemicals like:

- Crude oil and refined petroleum products
- Chemicals (petrol)
- Bio- and vegetable oils
- Brines
- Acid (concentrated)
- Fatty acids
- Caustics
- Chlorides
- Liquid fertilizer
- Lime slurries
- Waste water
- Mixing slurries
Construction design

The fiberglass storage tanks of Plasticon Composites can be equipped with numerous accessories such as leak detection equipment, vent scrubbers, immersion heaters, cage ladders, platforms, level indicators, baffles, agitator bridge, valves, etc.

The top of the fiberglass tanks can be:
- Conical 15°
- Curved
- Flat
- Domed

In case of under pressure/vacuum the fiberglass tanks will be executed with stiffening ribs.

Baffles and agitator bridge

Platform and cage ladders in coated steel according to DIN 18799-1 & 2 or DIN EN ISO 14122-4: 2010-12

Conical roof

Curved roof

Flat roof & stiffeners

Domed roof

Domed roof construction of 30m diameter FRP tanks with FRP Covers
Storage of hydrochloric acid
(D = 9800 mm, 1000 m³) at a steel plant
Piping systems in FRP

For over 50 years Plasticon Composites designs, supplies and installs already since 50 years piping systems for the transport and distribution of corrosive chemicals in the power, chemical process and mining industries as well as tank terminals.

Especially for the management control of the piping system Plasticon Composites designed RFID so during engineering, production, transport, installation and later after installation the entire piping systems can be monitored.

**Product Range**

- Diameter range: 25 – 1200 mm ID (larger diameters available on request)
- Design pressure: up to 16 bar (higher pressures available on request)
- External design pressure: 1 bar / full vacuum
- Design temperature: maximum 130 °C for liquids and 170 °C for gases
- Design standards: DIN, ASTM, EN, SFS, UIC, AWWA, BS, ISO, API

**Stress design according to Autopipe or Ceasar II**

Standard fittings are available up to 400 mm ID in bell & spigot adhesive and up to 1,200 mm for butt & strap laminated joints. Special mouldings and pipe spools are available on request.

Plasticon designs PE, PP, PVC-U and C-PVC elbows, flanges, T-pieces and reducers out of one piece up to ID 400. The components are extruded from first class thermoplastic granulates in accordance with DIN and ASME standards. This production procedure avoids a weld in the component which means NO STRESS.

Bell & spigot adhesive FRP pipe parts

The installation of an underground cooling water pipe (D=1600 mm) at a coal fired power plant
GRP piping for the distribution of several liquids in the power industry
**Full Service Provider**

Plasticon Composites has the capability to design, manufacture, install and service GRP and dual laminate products for your specific needs. An experienced, multi-lingual staff consisting of our team of engineers and technical support specialists assist customers in the early planning and design stages. The end result is an engineered system that reduces life cycle cost.

**Maintenance services**
Plasticon Composites recommends periodic upgrades and maintenance for the optimum performance of composite systems in extreme environments. To minimize downtime and avoid unplanned interruptions, Plasticon Composites offers the following maintenance services:

- Inspections
- Refurbishments
- Preventive Maintenance
- Facility Upgrades
- Repairs
Continuous training
Plasticon Composites realizes that an investment in training is critical to the company’s long-term leadership position in the field of engineered composite systems.

Two areas of focus for the company include:

- **In-House Training**
  Plasticon Composites acknowledges that many of the best ideas are generated by our employees. Product training sessions are a part of day-to-day business and best practices and are encouraged so that Plasticon Composites can offer customers the very best service and product.

- **Certified Laminators and Thermoplastic Welders**
  Plasticon Composites exceeds industry requirements for certified GRP laminators and thermoplastic welders through its in-house training programme. This is in addition to the annual testing and inspections performed by well-known organizations such as KIWA and DVS.

Industry Technical Associations
Plasticon Composites maintains active membership of many technical associations throughout the world in order to stay abreast of changing technologies and pending regulations.
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