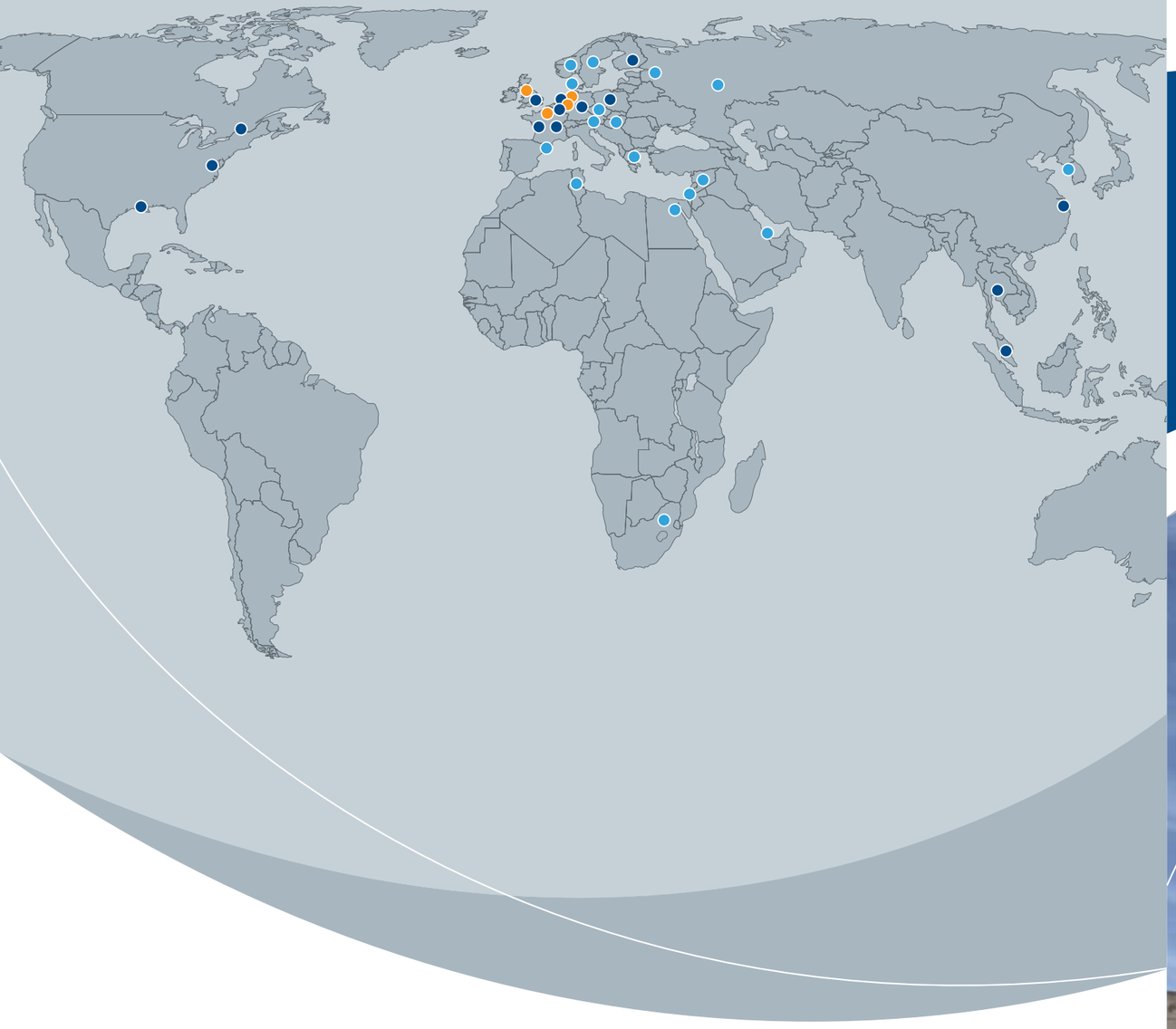
Plasticon Composites

Worldmap Operations & Sales

- Operations & Sales
- Sales
- Polem, bulk storage



Plasticon Composites

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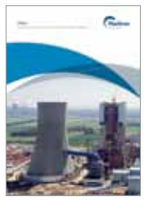
General



Power

Piping Systems

Chemical

Corrosion Resistant Composite Solutions

Specialists in tanks, process equipment, piping and installation

Plasticon Composites

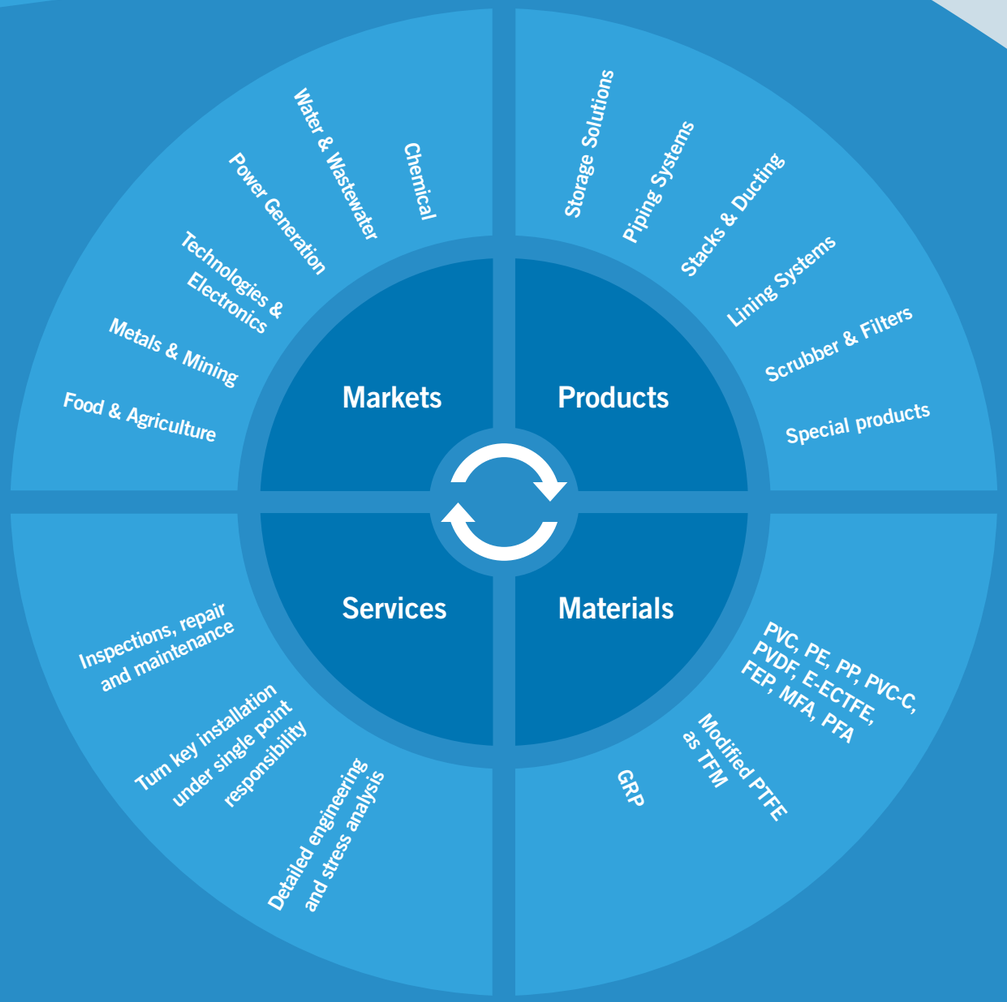
About Plasticon Composites

Plasticon Composites is a full-service turnkey solution provider in the field of corrosion resistant fibreglass reinforced plastic (GRP) 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, fibreglass 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 liners reinforced with GRP.

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 gasses. The products are constructed from high quality composite materials. Plasticon Composites has a consolidated geographical presence, with a multi-lingual staff and an active research and development programme. 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.

Plasticom 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 storage of raw materials for the pharmaceutical industry

Preparation of a stack liners (D = 8 meter) ready for installation

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 individually analyse each new project and review the system performance specifications in order to select the right materials and construction methods.

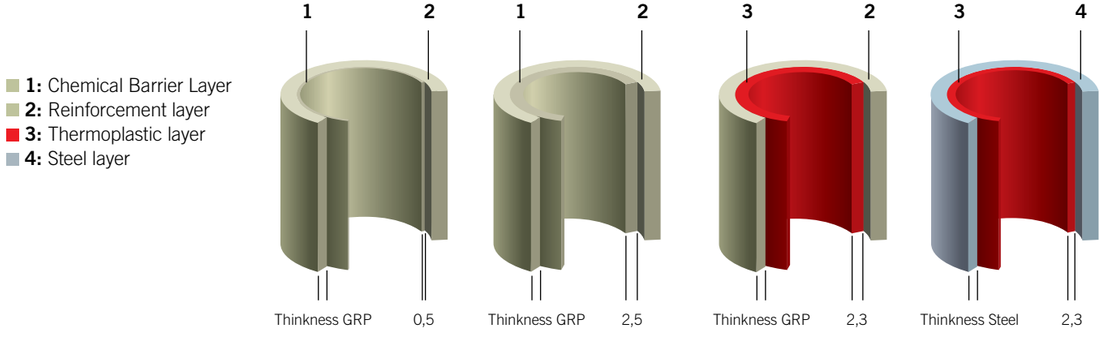
Material choices & construction methods
The low maintenance requirements of today's composite systems make fibreglass reinforced plastics the material of choice for most industrial applications. The primary materials and construction methods used by Plasticon Composites include:

- Glassfibre Reinforced Plastic (GRP)
- Dual Laminate Construction using Thermoplastic Liners (PVC, PE, PP)
- Dual Laminate Construction using Fluoropolymer Liners (PVDF, ECTFE, FEP, MFA, PFA)
- Fluoroplastic lining of steel/concrete

Specialist GRP Solutions
The advantages of GRP materials are:

- High Chemical Resistance
- Long
- Low specific gravity (1.8 g/cm3)
- Low price
- Delivery time
- GRP replaces expensive alloys like Hastelloy, Super Duplex, Ni etc.

Plasticon Composites pipe engineers design according to the international codes like DIN and ASTM



Spray winding of a GRP storage tank

Preparation of dual laminate spools for a project in China

Specialists in Dual Laminate technology
In 1952, Plasticon Composites introduced Dual Laminate technology to the chemical industry. Dual Laminate construction combines the superior chemical resistance of thermoplastics with the mechanical strength of GRP.

The liner is thermoformed and welded after which the GRP is chemically or mechanically bonded to form a high performance dual laminate finished product. The added cost of this type of construction is justified by longer service life, lower maintenance costs and higher process productivity.

Plasticon Composites has recently improved the production process for special applications in order to achieve an adhesion between liner and GRP of more than 7 N/mm2.

Today, many of our customers specify Dual Laminate products for operating conditions requiring high chemical resistance and strength.

Hot gas welding of a PVC/GRP demister plate

A selection of our Thermoplastic and Fluoropolymer liners:

PE	max. 60°C
PVC	max. 60-70°C
C-PVC	max. 85°C
PP	max. 90°C
PVDF	max. 100°C
ECTFE	max. 110°C
FEP	max. 140°C
MFA	max. 160°C
PFA	max. 180°C
Modified PTFE, e.g. TFM	max. 200°C

Storage Solutions

Storage of NaOCl in a specially designed steel construction (100 m³, D =3000 mm)

Storage of waste water at 90°C (3 x 120 m³, D = 3500 mm

Plasticon Composites provides a wide range of storage solutions in GRP and dual laminate materials, for extreme and moderate service applications. Our in-house specialists are able to help you create or expand your storage capacity requirements in accordance with current design code standards and health & safety regulations.

Plasticon Composites tanks and silos can be equipped with numerous accessories such as leak detection equipment, vent scrubbers, immersion heaters, ladders, railings, walkways, pumps, valves, level indicators, load cells, dust filters, etc.

Storage products:
- Chemical tanks
- Ultra-Pure Water tanks
- Water and Wastewater tanks
- Food Storage tanks
- Salt Saturator tanks
- Brewery tanks
- Fuel Storage tanks
- Mixing tanks and reactors
- Silos
- Insulated tanks
- CE pressure vessels
- Transportation tanks
- Double wall storage tanks

GRP silos (6 x 500 m³, D = 5000 mm)

Storage solution (20 – 150 m³) at a fertilizer plant

Process Equipment

For chemical recovery and pollution control, Plasticon Composites offers process vessels such as scrubbers, bio filters, biogas reactors and many related accessories. These vessels handle the full range of dynamic and hydrostatic loads for chemical environments in industries such as wastewater treatment, power generation and chemical processing. Supplemental system components including internal and external piping, distribution systems and ducting can be fabricated in virtually any shape or configuration.

Many of the Plasticon Composites products manufactured today are designed to withstand temperatures ranging from -40°C to 250°C.

Products
- FGD Scrubbers
- Deodorization Scrubbers
- Bio Filters
- Biogas Reactors
- Stacks and Liners
- GRP Covers
- Duct Systems
- Settlers
- Separators
- Headers

Three GRP scrubber to filter odors

GRP reactors with PED approval
(P = 8 barg, T = 80 °C)

Lifting of a PVDF/GRP column
(D = 3.500 mm, H = 16.000 mm)

Piping Systems

GRP piping, part of the chemical processing at a steel plant

Quality inspection of GRP auxiliary piping on an absorber (D = 1200 mm, P = 10 barg)

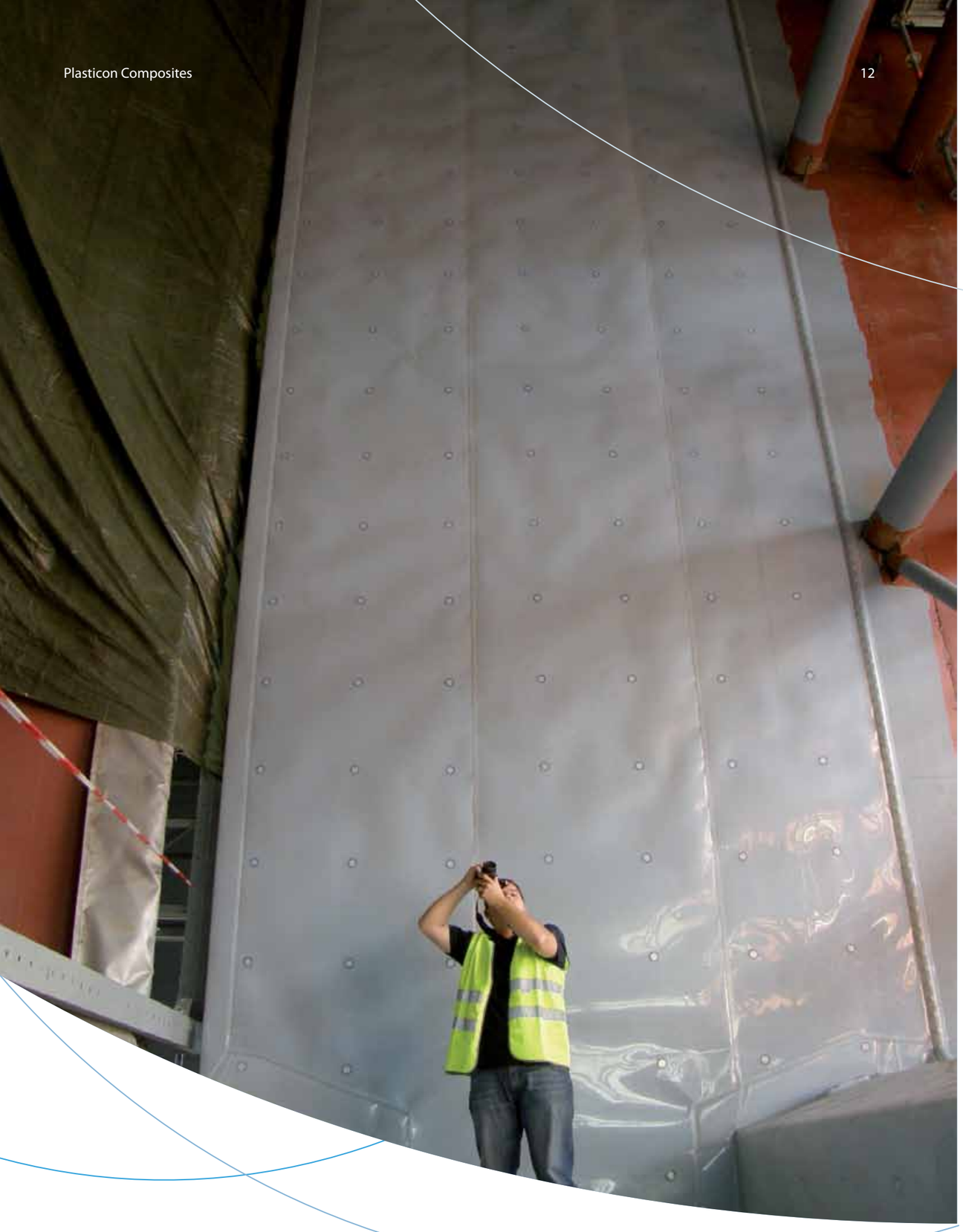
GRP piping systems
Since 1969 Plasticon Composites has enjoyed a worldwide reputation in glassfibre reinforced pipes and fittings with its Kialite® brand and Plastilon® brand (bell & spigot bonding system) piping systems. Today, piping systems are available in a variety of standard diameters ranging from 25 to 1200 mm. Plasticon Composites offers pipe and fittings to meet all national and international standards depending on the area and application. Combining the strength of GRP and the chemical compatibility of plastics provides customers with a superior alternative to costly metal alloys and rubber-lined steel.

Applications:
- Industrial cooling water
- Chemical processing
- Flue gas desulphurisation
- Food processing
- Ship building
- Fire fighting installations
- Water purification
- Sewage treatment

Dual laminate piping systems
In addition, Plasticon Composites manufactures and installs PVC lined GRP pipes for aggressive products such as chlorine gas, hydrochloric acid, sodium hypochlorite and caustic soda. Various thermoplastic and fluoropolymer liners were combined by Plasticon Composites (PVC, C-PVC, PP, PE, PVDF, E-CTFE, FEP, PFA, MFA) with glassfibre reinforced polyester resins to provide customers with dual laminate piping systems for extremely hot and corrosive environments.

PVC/GRP pipes for the transport of chlorine

The installation of an underground sewage pipe (D = 1600 mm) at a coal fired power plant



Double wall fix point lining (PFA) of a stainless steel column (D = 2000 mm)

Specialty Products

Fluor Film Lined Products
Plasticon Composites is recognized as a leading supplier in the field of fluoropolymer linings for a variety of applications in the pharmaceutical, chemical, semi-conductor, power generation, waste incineration, biotechnology and processing industries. Our extensive range of specialty products is characterized by outstanding chemical resistance, compatibility to both high and low temperatures, high pressure ratings and corrosion resistance.

Fluoropolymer liners such as PVDF, E-CTFE, FEP, MFA, PFA and modified PTFE (e.g. TFM) can be employed as dual laminate, sheet lining, loose lining and fix point lining.

Our well organized manufacturing processes qualify Plasticon Composites to be a well-known supplier for high purity linings of ISO containers for the semiconductor industry. In these containers ultra pure chemicals are transported which are used for photolithographic etching processes for silicon based microchip or solar cell productions.

High Purity Equipment for the Semi-conductor Industry:

- Apparatus for the production of ultra-pure chemicals
- Ultra-pure chemical storage, day, slurry and mixing tanks
- Sheet linings of ISO containers
- Ultra-pure water storage tanks

Solid Thermoplastic Products
Plasticon Composites is also a certified manufacturer of solid thermoplastic constructions (PE, PP, PVC, C-PVC or PVDF), focusing on special solutions for customer related developments such as: pipe bundles for wet electro filters, lamellar separators for water cleaning, covers for special apparatus.

Our production strength of thermoforming liner materials enables us to reduce the number of weld seams to a minimum. This had led to us becoming a high quality supplier for the chemical industry.

Applications

Tanks
Pressure vessels
Apparatus
Piping systems

Lining Systems and max. Operation Temperature

Fluor Laminate (GRP with Fluor Liner)	200°C
Sheet Lining (Liner glued on Steel)	120°C
Plastline® Lining (Fixpoints between Liner and Steel)	250°C
Loose Linings (Liner clamped between Flanges)	250°C

Fluor Liner Materials

- Fully fluorinated: FEP, PFA-M, PFA, modified PTFE
- Semi fluorinated: PVDF, PVDF-Flex, ECTFE

Fiber Materials for knitted Fabrics

Polyester, PAN, E-Glas, PTFE, Carbon

New Trends

Substitution of

Metals (Ti/Pa, Ti, Ni, based alloys) PTFE loose lining of steel apparatus Fibre reinforced phenolic resinEnamel lining on steel (big diameter)Fluor polymer rotolining on steel

Replacement of

Combination of flake and brick lining on steel Combination of rubber and brick lining on steel Fibre reinforced phenolic resin

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.

Field Fabrication & Installation
Field fabrication and installation can be highly cost-effective and efficient. When several large components have to be assembled on site, field fabrication and installation often overcome size and difficult access problems.

On site Production
With the use of a field winding machine, Plasticon Composites is able to manufacture tanks, vessels and piping up to 20 metres in diameter. On-site manufacturing can minimise transportation costs and can be effectively coordinated with other on-site contractors.

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

Quality inspection by our well experienced quality staff

New employees in the training centre of Plasticon Composites

Qualified staff for the inspection

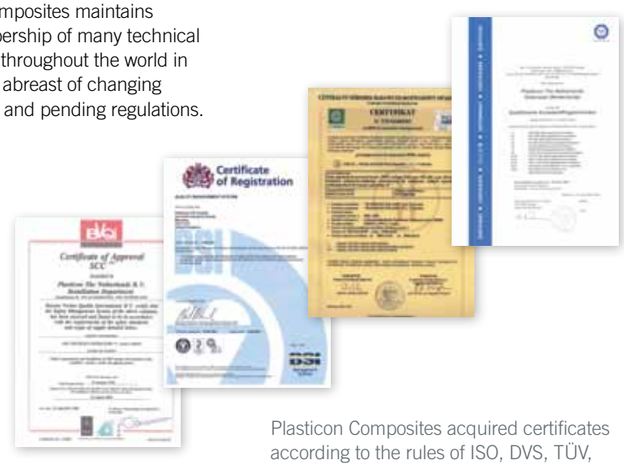
Continuous training
Plasticon Composites realises that an investment in training is critical to the company's long-term leadership position in the field of engineered composite systems.

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 organisations such as KIWA and DVS. inspections performed by well-known organisations 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.



Plasticon Composites acquired certificates according to the rules of ISO, DVS, TÜV, KIWA, Veritas and IFBT

Installation of a thermoplastics (PE) pipe line by butt fusion welding (D = 600 mm)