PRESSURE VESSELS

- Tantalum
- Zirconium
- Titanium
- Nickel Alloys
  Stainless Steel
- Carbon Steel
Mersen wishes to share its extensive expertise in high-performance equipment with its customers. Mersen designs innovative solutions to address its clients’ specific needs to enable them to optimize their manufacturing process in sectors such as energy (nuclear and solar), chemical, fine chemical, water and process industries (metallurgy...).

Mersen’s experience and skills in thermal design, process engineering and anticorrosion materials ensure that all the manufactured equipment can cope with your process constraints.

To serve its worldwide customers, Mersen manufactures its equipment through American, European, Indian and Chinese first-class production plants representing more than 220,000 m².
Mersen is a worldwide recognized designer and manufacturer of pressure vessels made of different materials ranging from carbon steel, stainless steel and nickel alloys up to sophisticated anticorrosive solutions such as titanium, zirconium and tantalum.

Decades of experience allow Mersen to provide any design including solid, lined and cladded construction and therefore it masters all available welding processes such as GTAW, GMAW, SAW, PAW, FCAW, SMAW.

Since 2006, Mersen has successfully developed its own patented Clad technology called CL-Clad®.

Mersen, through the acquisition of Lumpp, French company specialized in the design and manufacture of mixers, gathers internally all the competences to produce a full reactor-mixer package:

- thermal transfer
- mass transfer
- hydraulic design
- mechanical design

Our experience in many fields is a strength to adapt our industrial means according to the specification, from a pilot project to an industrial capacity (100m³).

Our engineering capabilities comply with international standards such as ASME, AS ADM, JIS, CODAP RTOD or RCCM for nuclear applications.

Pressure vessels are also fully in accordance with international certifications:
ASME U stamp, PED, ISO 9001, ISO 14001, OHSAS 18001, SELO, KGS, GOST-R, HAF.
Carbon steel and stainless steel pressure vessels are mainly produced in China. Our 150,000-m² plant allows the production of pressure vessels up to 7,000 mm diameter and 120 mm thickness for carbon steel equipment. All the machines such as heavy-duty rolling machines, heavy cranes, heat treatment facility, sandblasting and painting are fully integrated in the Mersen plant.

**Means of production:**

- 20,000 m² shopfloor exclusively dedicated to carbon steel and 13,000 m² for stainless steel
- Rolling: maximum 120 mm thickness, 3 meters width
- Lifting cranes: 240 tonnes
- In-house NDT: X ray, Gamma ray PT, UT, MT, PMI, helium leak test
- Heat treatment furnace: 6 m height, 6 m width, 24 m length
- Flame and plasma cutting, up to 200 mm
- In-house surface treatment: pickling, polishing and electropolishing
- Design capacity
- Design according to international standards
- Material according to ASTM, EN, AS, GB, AD standards
- High-pressure vessel experience
- Large production capacity up to 50,000 tons equipment/year
- Project management according to international requirements (fluent English speaking) able to manage large projects including 100 pressure vessels
Nickel alloys and titanium pressure vessels are produced in plants on 3 continents: 6,000 m$^2$ in USA, 6,000 m$^2$ in Europe and 13,000 m$^2$ in China.

A long expertise in the fabrication of reactive metal equipment combined with an international material sourcing policy allow Mersen to bring quality and cost-effective solutions.

Titanium pressure vessels are specially designed to cope with PTA applications, for which Mersen has a large recognized experience obtained by providing reactors, crystallisers, columns, heat exchangers and piping in titanium grade 2.

Means of production:

- Dedicated rolling machine for nickel alloys and reactive metals
- Plasma cutting machine
- Glove boxes
- Water jet cutting
- In-house NDT: X ray, PT, UT, PMI, helium leak test
- In-house surface treatment: pickling, polishing and electro-polishing
- Design capacity
• Design according to international standards
• Material according to ASTM, EN, AS, GB, AD standards
• High-pressure vessel experience
• Large production capacity
• Project management according to international requirement (fluent English speaking) able to manage large projects including 100 pressure vessels
A long expertise in the design and fabrication of reactive metal equipment combined with an international material sourcing policy allow Mersen to bring quality and cost-effective solutions.

Mersen has mastered solid or cladded zirconium fabrication processes for decades.

Mersen has developed a patented cladding technology, CL-Clad® already experienced on various zirconium pressure vessels.

Mersen produces zirconium pressure vessels in plants on 3 continents: 6,000 m² in USA, 6,000 m² in Europe and 13,000 m² in China.

Zirconium pressure vessels are suitable in corrosive environments, notably for the production of acetic acid. Mersen is recognized as the number 1 in supplying zirconium columns and produces zirconium shell and tube heat exchangers and pressure vessels for the major producers of acetic acid. Our large references are available upon request.

**Key features:**
- Dedicated rolling machines for reactive metals
- Glove boxes
- Automatic GTAW + PAW machines
- Water jet cutting
- In-house NDT: X ray, PT, UT, PMI, helium leak test

**Experience** in designing solid or cladded pressure vessels
- Design according to international standards
- CL-Clad® technology
- Material according to ASME, EN, AS, GB, AD
- Manufacturing in dedicated clean room ensuring final quality
- Experienced and qualified international welding teams
Mersen designs and manufactures tantalum process equipment such as heat exchangers, columns, pressure vessels, mixers, piping, fittings for chemicals, fine chemicals/pharmaceuticals and steel industries in its dedicated 3,000 m² workshop in Linsengericht (Germany).

A long expertise in the design and fabrication of reactive metal equipment combined with highly skilled welders allow Mersen to be recognized as an expert in tantalum equipment.

This consolidates our reputation as the Home of Tantalum.

Mersen has mastered solid, lining or cladded tantalum fabrication processes for decades. Mersen has developed a patented cladding technology in 2006, CL-Clad®, already experienced on various tantalum pressure vessels.

Tantalum pressure vessels are mainly used in fields such as:
- Hydrochloric acid
- Sulfuric acid
- Acid concentration
- Bromine
- Pharmaceuticals
- Pickling baths

Means of production:
- CL-Clad® brazing furnace
- Water jet cutting machine
- In-house NDT: PT, PMI, helium leak test
- 5-axis milling machine
- Glove-box
- Available stock of plates
Mersen developed and patented few years ago a new brazing technology. **CL-Clad® brazing** is a reliable technology based on our patented specific brazing filler that allows strong bonding between base material (carbon steel or stainless steel) and anticorrosive cladding.

CL-Clad® is suitable for Tantalum and Zirconium equipment. A 3 000 m² workshop in Pagny-sur-Moselle (France), is dedicated to the manufacture of CL-Clad® plates, with a large capacity furnace designed internally by the Research and Development department.

**Process:**
1. Pack of plates are loaded in a furnace operated under inert atmosphere
2. Cladding of materials is obtained by heating and pressure cycle
3. Largest size of CL-Clad® plates in 2.5x4.5m. Brazing hardness allows forming
4. Assembly, welding, testing accordingly international codes.

**Clad lining for very large thickness under pressure.**

Clad lining consists of using a dual layer comprised of internal CL-Clad® layer in vacuum with large external steel layer. The external layer thickness is up to 100 mm.

The internal CL-Clad® layer, which is comprised of a carbon steel base plate brazed with a thin reactive metal layer, has a thickness from 10 to 15 mm.

Both internal and external layers are locally welded to comply with vacuum resistance.

**Process:**
1. Steel vessel and CL-Clad® plates are manufactured separately
2. CL-Clad® liner is formed and welded to the steel shell (wall papering)
3. Steel vessel is following pressure vessel regulation
4. Lining is designed to resist vacuum
5. Batten strap design give flexibility and geometrical tolerances for the lining
6. Lining procedure with welding of CL-Clad® plates in compliance with ASME-V regulation
• Customized design with flexible number and position of nozzles
• Can withstand pressure and vacuum
• Temperature resistant
• Mechanical and thermal resistance
• Corrosion resistance
• Plates in stock
Main production sites
Quick service shops

A worldwide specialist in anticorrosion and process equipment

Worldwide presence with several manufacturing sites and workshops close to our customers

Mersen France Pagny-sur-Moselle
- 36,000 m²
- Heat exchangers, pressure vessels, columns, piping, bellows and compensators, mixers, systems, bursting discs

Mersen USA Salem
- 6,700 m²
- Graphite heat exchangers, systems, welded plate heat exchangers, piping, bellows and compensators, bursting discs

Mersen France Grésy
- 8,000 m²
- Specialist in equipment for the nuclear industry
- Pressure vessels, columns, mixers, heat exchangers

Nippon Carbon Mersen
- Distribution and repair shop

Mersen UK Teesside
- 5,600 m²
- Graphite heat exchangers, bursting discs

Mersen USA Oxnard
- 6,600 m²
- Pressure vessels, columns, heat exchangers (zirconium, titanium)

Mersen India Chennai
- 2,600 m²
- Graphite heat exchangers, systems

Mersen Maroc El Jadida
- 2,500 m²
- Graphite and metallic heat exchangers
- After-sales service, assembling

Mersen France Brignais
- 8,000 m²
- Welded and gasketed plate heat exchangers, metallic shell and tubes heat exchangers, mixers

Mersen Deutschland Linsengericht
- 3,000 m²
- Tantalum equipment: heat exchangers, bayonets, heating coils, columns, accessories

Mersen Xianda Shanghai-Fengxian
- 150,000 m²
- Heat exchangers, pressure vessels, columns, piping, mixers, systems

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