

HEAT EXCHANGERS



MERSEN
Expertise, our source of energy

**A worldwide specialist
in anticorrosion
and process equipment**

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

Mersen France Grézy

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

Mersen USA Oxnard

- > 6,600 m²
- > Pressure vessels, columns, heat exchangers (tantalum, zirconium, titanium, nickel alloys, stainless steel)

Mersen France Pagny-sur-Moselle

- > 36,000 m²
- > Heat exchangers, pressure vessels, columns, piping, bellows and compensators, mixers, systems, bursting discs

Nippon Carbon Mersen

- > Distribution and repair shop

Mersen India Chennai

- > 2,600 m²
- > Graphite heat exchangers, systems

Mersen USA Salem

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

Mersen UK Teesside

- > 5,600 m²
- > Graphite heat exchangers, bursting discs

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

www.serviceprocess.net

Service Process Equipment, Inc.

PO Box 850908

Mobile AL 36685-0908

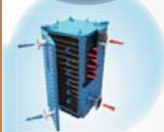
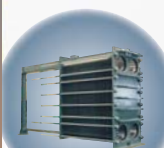
251.342.1313 • Fax 251.342.1377

Email msellers@serviceprocess.net

**Welded
and gasketed
plates**

**Graphite shell and tubes
Graphite blocks**

**Metallic shell
and tubes**



MERSEN

Mersen France Pagny-sur-Moselle
1, rue Jules Ferry - F-54530 Pagny-sur-Moselle
Tel. : +33 (0)3 83 81 60 81

www.mersen.com

www.infrarouge.com

B08_1_E

Worldwide heat exchanger leader with solution-oriented approach

MERSEN DESIGNS AND MANUFACTURES ANTI CORROSION AND PROCESS EQUIPMENT, INCLUDING PRESSURE VESSELS, HEAT EXCHANGERS, COLUMNS, MIXERS, TURN-KEY SYSTEMS AND PIPING IN A WIDE RANGE OF MATERIALS. HEAT EXCHANGERS FORM A CORE PART OF MERSEN'S EQUIPMENT BUSINESS.

DESIGN EXPERIENCE TO SERVE YOUR PROJECTS

Mersen has designed a comprehensive portfolio combining multiple heat exchanger technologies and materials of construction.

Mersen has over 50 years of thermal design experience and applications expertise. Our engineers have a successful history of designing thermal equipment based on our customers' applications in order to optimise thermal efficiency and easy maintenance.

Several design tools are used to provide thermally efficient heat exchangers that meet specified process constraints

- Thermal design tools (In-house Programs, ASPEN B-JAC, X-Designer ...)
- Mechanical design tools

50-years
thermal and mechanical
design experience

Performing design tools

Unrivalled comprehensive
range of designs
and solutions



WORLDWIDE PRODUCTION SITES AND LOCAL SERVICE CENTERS



Mersen manufactures heat exchangers in its ten worldwide first-class production sites representing more than 220,000 m² of factory area.

The production sites are all equipped with the latest technology machines and equipment to ensure performance, productivity and quality.

The after-sales service is available in all our manufacturing sites (USA, Morocco, Germany, France, China, UK, India) and local repair-shops in South Africa, Korea, Taiwan, Spain, Brazil, Japan, Italy and the Netherlands.

The after-sales service consists of:

- Spare parts delivery.
- Repair and/or refurbishment services.
- On-site supervision of repair work to tube sheets, tubes, etc. Available based on request.

The after-sales service can be carried out at the Mersen sites as well as directly on the customer's site.

QUALITY COMMITMENT TO SERVE YOUR PROJECTS

Mersen manufactures all its heat exchangers in accordance with international standards: ASME, AS, ADM, JIS, CODAP, RTOD, RCCM and international certifications: ISO9001, ISO 14001, OHSAS 18001, ASME U stamp, PED, SELO, KGS, GOST-R, HAF 601.



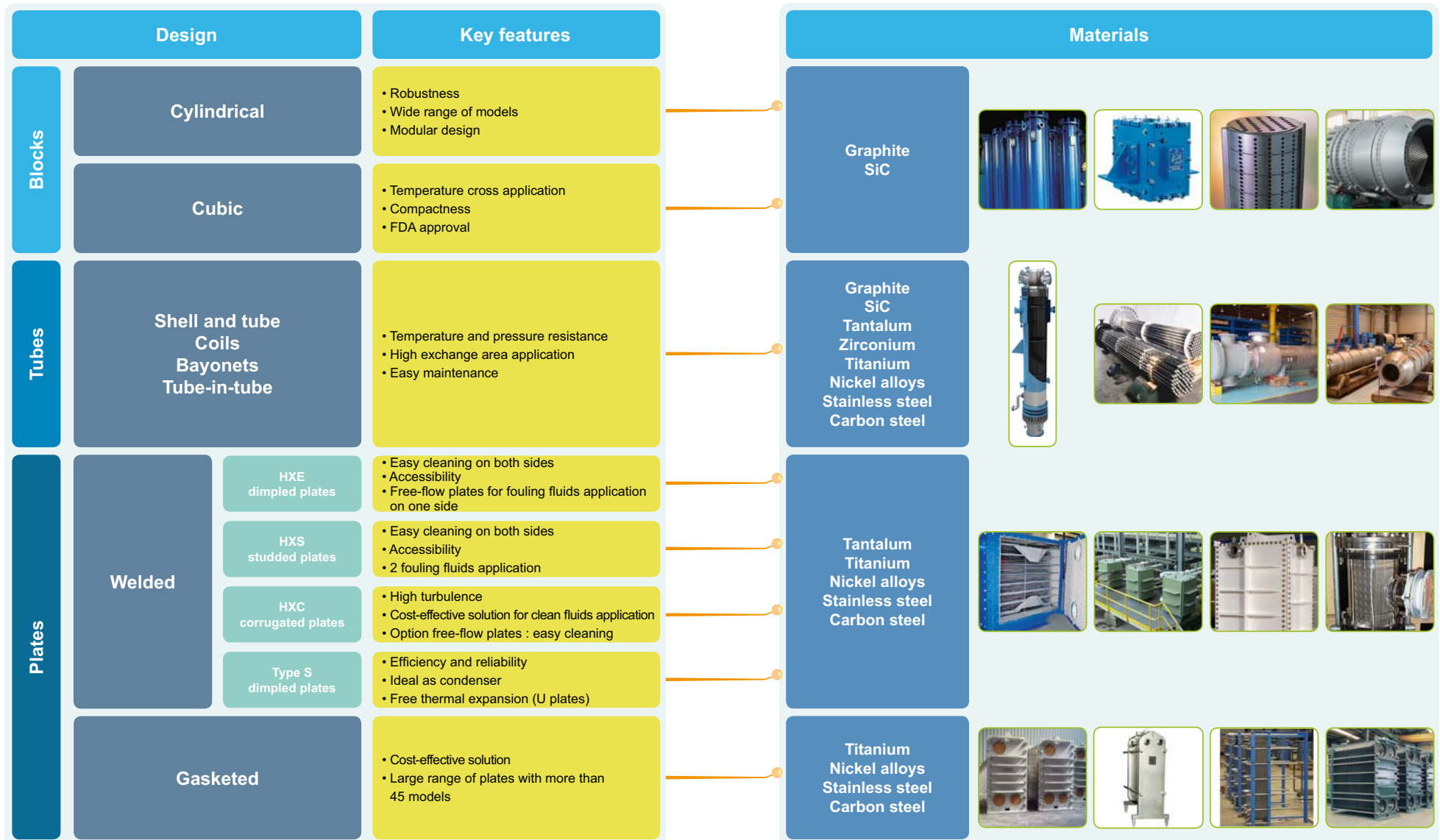
220,000 m²
of factory areas

10 production sites

Local after-sales
services

Comprehensive portfolio of heat exchangers

www.serviceprocess.net
Service Process Equipment, Inc.
PO Box 850908
Mobile AL 36685-0908
251.342.1313 • Fax 251.342.1377
Email msellers@serviceprocess.net



Graphite block heat exchangers

www.serviceprocess.net
Service Process Equipment, Inc.
PO Box 850908
Mobile AL 36685-0908
251.342.1313•Fax 251.342.1377
Email msellers@serviceprocess.net

DESIGN AND MANUFACTURE OF BLOCK HEAT EXCHANGERS FOR OVER 50 YEARS

MERSEN HAS DESIGNED AND MANUFACTURED BLOCK HEAT EXCHANGERS FOR OVER 50 YEARS, WITH MORE THAN 10,000 UNITS IN SERVICE IN ALMOST 50 COUNTRIES.

MATERIAL EXPERTISE GRAPHILOR® 3

The only impregnated graphite with ultra-fine grain isostatic graphite.

PROPERTIES :

- High resistance to corrosion
- Resistance to temperature and thermal shock
- The highest mechanical resistance certified by TÜV.

IMPREGNATION

- BS: Phenolic highly cross-linked resin
- C: highly-temperature treated carbon → exclusivity Mersen
- TH: PTFE = Teflon → exclusivity Mersen

EXCEPTIONAL TÜV HOMOLOGATION

- XBS: up to 220°C: G20-00-200 for blocks up to 220°C: G30-00-220 for tubes
- XC: up to 430°C: G18-00-400
- XTH: up to 250°C: G15-00-250

10,000 units
in service in almost
50 countries

430°C
maximum temperature
resistance of Graphilor® 3

In-house supplied
isostatic graphite

High corrosion resistance
with exclusive carbon (XC)
and PTFE (XTH) impregnation

Multi-applications design



GRAPHITE POLYBLOC® HEAT EXCHANGERS

LARGE AND MODULAR DESIGN

- Large exchange surface areas (up to 300 m²) and high thermal transfer
- Headers – available in Graphilor®, stainless steel and reactive metals, PTFE or rubber lined steel
- Large range of block size from 140 to 1,800 mm diameter
- Design for high pressure up to 16 barG (service) and 12 barG (process)
- PTFE Bellows - fitted to graphite nozzles to remove pipework stresses
- Drilling adapted to process constraints with large diameter holes for fouling process
- Multi-pass arrangements possible for both process and service sides

MATERIAL EXPERTISE

- Rigilor® consisting of a layer of carbon fiber which reinforces the graphite and improves the erosion and abrasion resistance

EASY MAINTENANCE - easily dismantled for overhaul, cleaning and validation

EXTENSIVE REFERENCE LIST available on request for main markets as pickling baths, cooler, evaporator, absorber, condenser.

GRAPHITE CUBIC BLOCK HEAT EXCHANGERS

COMPACTNESS - slots or double drilling on process side effectively doubling the process side surface area making units ideal for condensing duties

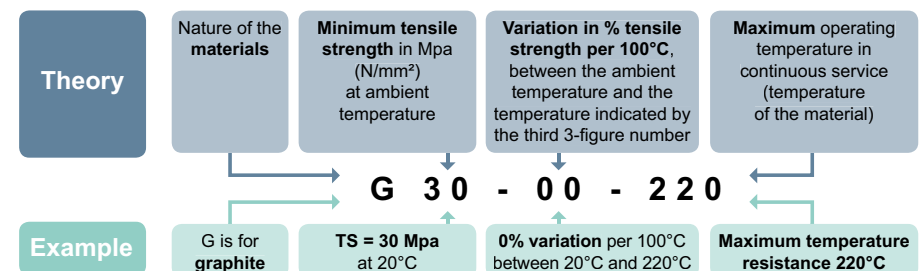
SPECIAL GMP DESIGN FEATURES - fully draining and no process to service gaskets

LARGE AND MODULAR DESIGN

- Headers – available in Graphilor®, carbon and stainless steel, PTFE or rubber lined steel
- No hidden gaskets – single piece core blocks (250mm, 400mm, 500mm and 600mm square and up to 1600mm long)
- Heat exchange areas – from 1m² to 100m²
- Drilling – adapted to process requirements (6.5mm, 10mm and 16mm holes in single or double drilling patterns)
- Design pressure – up to 10 Bar.G on process and service side
- PTFE Bellows – fitted to graphite nozzles to remove pipework stresses
- Interchanger – optimum solution for corrosive fluids on both process and service side
- Multi pass arrangement - on both process and service side gives the most efficient thermal design using true counter-current flow

EASY MAINTENANCE - easily dismantled for overhaul, cleaning and validation

EXTENSIVE REFERENCE LIST – available on request for main markets as fine chemical and pharmaceutical, H2SO4 dilution, interchanger for 2 corrosive fluids



Graphite shell & tube heat exchangers

WORLDWIDE LEADER IN THE MANUFACTURE OF GRAPHITE TUBES FOR OVER 50 YEARS

MERSEN HAS DESIGNED AND MANUFACTURED GRAPHITE SHELL AND TUBE HEAT EXCHANGERS FOR OVER 50 YEARS WITH UNITS IN SERVICE IN THE MOST DEMANDING PROCESSES, ESPECIALLY IN THE PHOSPHORIC ACID INDUSTRY. POLYTUBE®, THE GRAPHITE SHELL AND TUBE HEAT EXCHANGER DESIGN IS BASED ON GRAPHILOR® 3, THE UNIQUE IMPREGNATED GRAPHITE WITH ULTRA-FINE GRAIN ISOSTATIC GRAPHITE. THREE TYPES OF IMPREGNATION ARE AVAILABLE (PAGE 5).



OUR GRAPHITE TUBES ARE MANUFACTURED IN FRANCE BY AN EXTRUSION PROCESS WHICH PRODUCES UP TO 6 METER LONG TUBES WITHOUT A JOINT. THE TUBES HAVE THE HIGHEST MECHANICAL RESISTANCE (G30-00-220) CERTIFIED BY TÜV. THE GRAPHITE SHELL AND TUBE HEAT EXCHANGERS CAN BE ASSEMBLED IN ALL OUR WORLDWIDE WORKSHOPS.

GRAPHITE POLYTUBE® HEAT EXCHANGERS

LARGE DESIGN AVAILABLE

- High exchange surface (up to 1,000 m²) and high thermal transfer
- Tubes up to 6 meter without joint with reinforced fiber as an option
- Designed for high pressure: 10 barG (service) and 6 barG (process)
- Special shell designs adapted to corrosive service fluids

GRAPHILOR® 3 MATERIAL EXPERTISE

- High corrosion resistance of Graphilor®
- High temperature resistance up to 220°C protection by Rigilor®, the carbon reinforced fiber homologated by TÜV
- Erosion and abrasion resistance

GLOBAL MANUFACTURER (6 SITES) AND QUICK MAINTENANCE SERVICE ALL OVER THE WORLD

EXTENSIVE REFERENCE LIST on request for main markets (phosphoric acid, evaporator, sulfuric acid heater, hydrochloric acid re-boiler)

TESTS AND CONTROLS ARE RELEASED AT EACH STAGE OF THE PRODUCTION TO GUARANTEE THE BEST QUALITY

INTERMEDIARY TESTS

- Tube-sheets: pneumatic tests for tightness
- Tubes: 20 bar air under water for mechanical and 9 bar air under water for tightness
- Cemented tubes: pneumatic tests at joint to verify perfect cementing

FINAL TESTS

- Air in the service side to verify tube cement joints
- Hydraulic pressure test on process and service sides

VISUAL AND DIMENSIONAL INSPECTIONS by our quality control and third party if required.



HEADERS

- Graphilor® 3 XBS standard header with concentric nozzle
- Other materials are available: stainless steel, carbon steel, CL-Clad® or massive metals (tantalum, zirconium, titanium), rubber lined, PTFE lined..
- Fast dismantling design option for an easy re-tubing.
- Special design according to the process (falling film, multi-pass process, kettle, phosphoric or sulfuric acids)

TUBE-SHEET

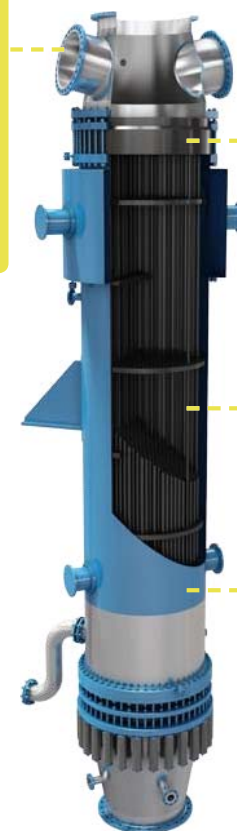
- TÜV homologation G20-00-220
- Monolithic design
- Alternative ML technology for diameters between 36" and 82"
- Rigilor® option to increase abrasion resistance
- Amorphous carbon sleeves to increase erosion resistance
- Graphilor® 3 XC option for severe applications (up to 430°C)

GRAPHILOR® 3 TUBES BUNDLE

- Tubes in Graphilor® 3 XBS
- TÜV homologation G30-00-220
- Diameters: 25/16, 32/22, 37/25 and 51/38. Special diameter on request

SHELL

- Diameter 10" – 82"
- Carbon steel shell as a standard
- Other materials are available: stainless steel, rubber lined, high nickel alloys, CL-Clad® or massive metals (tantalum, zirconium, titanium)



50-years
of experience

N°1 worldwide
producer
of graphite tubes

Exclusivity
6-meter
jointless graphite tubes

Option: fiber tubes

Highest mechanical resistance
for tubes and tubesheet
certified by TÜV

Silicon carbide (SiC) heat exchangers

SPECIALLY DESIGN TO COMPLY WITH SEVERE PROCESSES

Mersen designs and manufactures both shell and tube and block type Silicon Carbide heat exchangers at its American and European production sites. Silicon Carbide is one of the high performance materials available for heat exchangers. SiC is completely impervious without any resin impregnation. SiC heat exchangers are resistant in severe environments such as strong acids, bases and chlorinated organics such as sulfuric acid, phosphoric acid, HF, NaOH, HCl...

More than 300 units already in operation.

LARGE DESIGN OPTIONS

- Single or double "O" ring design
- Single fixed tube-sheet design
- Double tube-sheet design
- Materials for construction for shell and headers
- Multi-pass process flow

Metallic shell & tube heat exchangers

HEAT EXCHANGER EXPERTISE SUPPORTED BY ENGINEERING CAPACITY

- ENGINEERING CAPACITY FOR THERMAL AND MECHANICAL DESIGN
- ASPEN, TASC+ SOFTWARE
- NEW DESIGN OR REVAMPING
- PROCESS KNOW-HOW FOR MANY DESIGNS : STRAIGHT TUBES, U-BUNDLE, KETTLE, COILS, DOUBLE TUBES, SMOOTH OR CORRUGATED TUBES...

WORLDWIDE INDUSTRIAL SITES

- OXNARD (USA)
- PAGNY-SUR-MOSELLE, BRIGNAIS, GRÉSY (FRANCE)
- LINSINGERICHT (GERMANY)
- EL JADIDA (MOROCCO)
- SHANGHAI (CHINA)

MULTI-CONSTRUCTION CODES EXPERIENCE

- INTERNATIONAL STANDARDS: ASME, AS ADM, JIS, CODAP, RTOD, RCCM
- INTERNATIONAL CERTIFICATIONS: ASME U STAMP, PED, ISO 9001, ISO14001, OHSAS18001, SELO, KGS, GHOS-R, HAF 601
- MATERIALS ACCORDING TO ASTM, EN, AS, GB STANDARDS

Mersen is your partner

whenever high-end materials, international projects, large equipment and heat exchange expertise are required for a metallic shell and tube heat exchanger.



UNRIVALED MATERIALS CHOICE WITH KNOW-HOW AND WELDING COMPETENCE

- REACTIVE METALS : TANTALUM, ZIRCONIUM, TITANIUM
- NICKEL ALLOYS, STAINLESS STEEL
- CARBON STEEL
- ALUMINIUM ON REQUEST

INDUSTRIAL CAPACITIES ESPECIALLY FOR LARGE EQUIPMENT

- WELDING EXPERTISE : GTAW, GMAW, SAW, PAW, FCAW, SMAW
- IN-HOUSE NDT : X RAY, PT, UT, MT, PMI, HELIUM LEAK TEST
- EQUIPMENT UP TO 240 TONS

INTERNATIONAL PROJECTS MANAGEMENT

- PROJECT MANAGEMENT SYSTEM WITH A DEDICATED PROJECT LEADER
- GLOBAL PROCUREMENT
- MANUFACTURING REPORTING
- TOTAL QUALITY MANAGEMENT PROGRAM

Metallic shell & tube heat exchangers

www.serviceprocess.net
Service Process Equipment, Inc.
PO Box 850908
Mobile AL 36685-0908
251.342.1313 • Fax 251.342.1377
Email msellers@serviceprocess.net

CARBON STEEL, STAINLESS STEEL AND NICKEL ALLOYS EQUIPMENT

FOCUS ON LARGE CAPACITIES

Since the acquisition of Xianda in 2009, Mersen has repeatedly invested to maintain its position of having a state-of-the-art workshop in China. The whole entity covers a total surface of 150,000 m² ground space with **85,000 m² of workshop area**. The new production center is equipped with the highest-level industrial capabilities, such as a **thermal treatment furnace for equipment up to 25 meters**, automatic welding machines, **X-Ray rooms for 20-meter length and 5m-diameter equipment**, rolling machines (one of which can handle 120 mm thick material) together with **several cranes** with a cumulated capacity of **400 tons**.



For many years, both international and local customers have acknowledged Mersen Xianda as a leading manufacturer, particularly for the supply and project management of large contracts. The design

office, bringing together more than one hundred highly skilled experts in design, process and projects management, applies its experience to demanding projects.

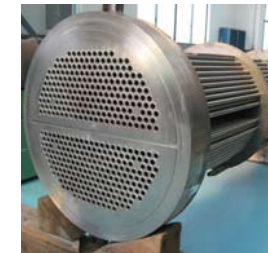


N°1 worldwide supplier
of zirconium equipment to the
acetic acid producers

Dedicated workshops in
USA, Europe and China



ZIRCONIUM AND TITANIUM EQUIPMENT



Zirconium is suitable for corrosive environments, notably for the production of acetic acid. Mersen is recognized as the world number one, in supplying zirconium columns and produces zirconium shell and tube heat exchangers and pressure vessels for the major producers of acetic acid.

Titanium is suitable for wet chlorine and chlorinated compounds, sea water and oxidizing acids.

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

Mersen manufactures zirconium and titanium heat exchangers in plants on three continents.



TANTALUM EQUIPMENT

Mersen produces high-end Tantalum heat exchangers in its dedicated 3000 m² workshop in Germany. Mersen, the home of Tantalum, is deemed to be the worldwide leader for the manufacture of Tantalum equipment.

The unique chemical and physical properties of Tantalum require know-how, specific equipment and highly trained people. A long experience in design, forming and welding Tantalum equipment combined with an international material sourcing policy allows Mersen to bring quality and cost-effective solutions.

Mersen has many reference lists for Tantalum bayonet heaters, U-tube heat exchangers, heating coils for columns, clad tube-sheets that are currently used in fields such as

- Hydrochloric acid
- Nitric acid
- Bromine
- Sulfuric acid
- Phosphoric acid
- Pharmaceuticals
- Acid concentration
- Strong organic acids
- Pickling baths



Worldwide leader

for the manufacture of
Tantalum equipment

Dedicated workshop

in Germany

Highly skilled welders

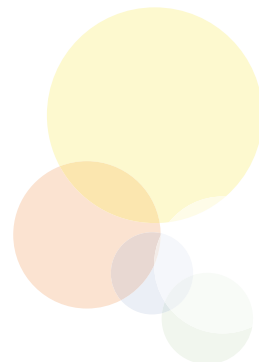
Many reference lists
for severe applications



85,000 m²
workshop in China

High-level industrial
capabilities

International project
management



Heatex®, welded plate *heat exchangers*

www.serviceprocess.net
Service Process Equipment, Inc.
PO Box 850908
Mobile AL 36685-0908
251.342.1313•Fax 251.342.1377
Email msellers@serviceprocess.net

3 DIFFERENT PROFILES TO COPE WITH YOUR PROCESS CONSTRAINTS

THE HEART OF THE HEATEX® WELDED PLATE HEAT EXCHANGER IS COMPOSED OF THE PLATES, AVAILABLE WITH THREE DIFFERENT PROFILES (CORRUGATED, STUDDED, DIMPLED) WELDED TOGETHER TO FORM A CUBIC PLATE PACK. THE FRAME IS COMPOSED OF FOUR COLUMNS AND TWO END-PLATES INTO WHICH THE PLATE PACK IS MOUNTED. DOORS ARE BOLTED ONTO FOUR FACES OF THE UNIT. THE ALTERNATIVE PLATE PROFILES OFFER THE OPTIMUM SOLUTION BETWEEN THERMAL EFFICIENCY AND MAINTENANCE.



HXC SUITABLE FOR 2 CLEAN FLUIDS



Best solution for petrochemicals, chemicals, coke oven gas treatment, pharmaceuticals applications.

- Corrugated plate type ensures high efficiency
- Area: from 2 m² to 280 m²
- Regular profile: 5 mm plate gap
- Pressure up to 36 bars
- Temperature: 350°C
- Materials: stainless steel, nickel alloys, titanium, tantalum

High efficiency
Compactness
Competitive solution



FOCUS ON A PATENTED INNOVATION: HXC FREE-FLOW, THE BEST SOLUTION FOR PROCESS WITH 1 FOULING FLUID AND 1 CLEAN FLUID

- Free flow channel up to 25 mm between plates
- The special design of the plates creates turbulences and high coefficient



HXE SUITABLE FOR 1 FOULING FLUID



Best solution for pulp and paper, sugar, coke over gas treatment, pharmaceuticals applications.

- Area from 1 m² to 625 m²
- Free gap up to 40 mm on one channel
- Pressure up to 32 bars
- Dimpled plates
- Plates pack can be independent from frame
- Temperature : 350°C
- Materials: carbon steel, stainless steel, nickel alloys, titanium



Independent plates pair design

FREE-GAP:

no retention, no plugging risk

Plate repair or replacement possibility

HXS SUITABLE FOR 2 FOULING FLUIDS



Best solution for sludge/sludge on wastewater treatment plant, sugar factory, PVC stripping process applications.

- Area from 1 m² to 300 m²
- Pressure up to 25 bars
- Temperature: 250°C
- Studded plates
- Materials: stainless steel, nickel alloys
- Spacing up to 25 mm on both side

Best cleanable solution

Easy access on both sides

No stress rate on plate, less corrosion sensitive



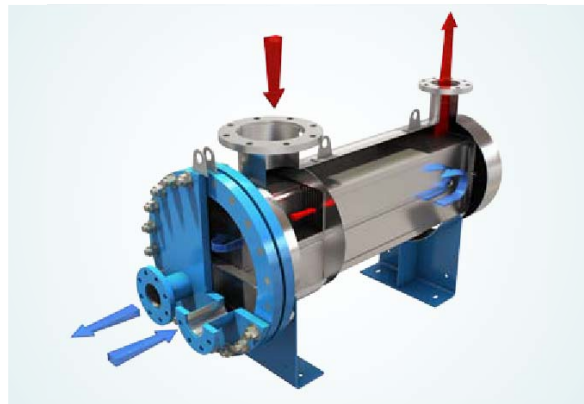
Dimpled welded plate and shell heat exchanger S type

AN ALTERNATIVE SOLUTION TO U-TUBE DESIGN

The plate and shell concept is only available with dimpled plates. It is an economical alternative to Heatex® welded plate heat exchanger for solvent condensers, top-column condensers and gas coolers.

It ingeniously combines the efficiency of the welded plate heat exchanger and the reliability of the shell and tubes. A dimpled plate pack is mounted into a cylindrical shell. Materials can be stainless steel and nickel alloys.

www.serviceprocess.net
Service Process Equipment, Inc.
PO Box 850908
Mobile AL 36685-0908
251.342.1313•Fax 251.342.1377
Email msellers@serviceprocess.net



THE UNIVERSAL CONDENSER SOLUTION

Some examples of applications :

- Solvent condenser overhead
- 2-stages condenser with water at 1st stage and glycol at 2nd stage
- Double-stage condenser with integrated decanter (200 L)
- Vapor top-column condenser

Same performance as plate heat exchangers

Same reliability as shell and tube

Temperature resistance
up to **350°C**

Pressure resistance
up to **25 bars** (plate)
and **40 bars** (frame)

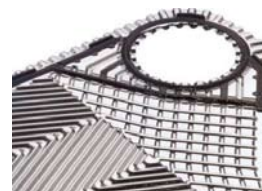
Removable plates pack
for inspection and cleaning

Free expansion due to
unique innovative U-plates
design

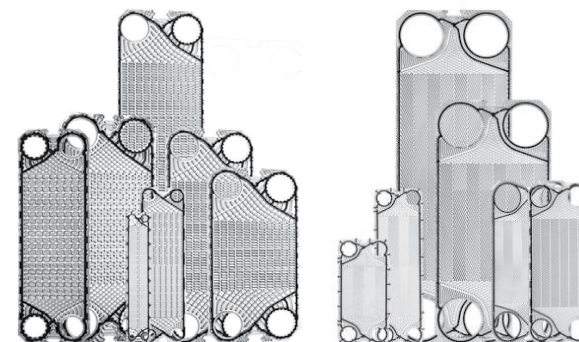


Gasketed plate heat exchanger

A WIDE PORTFOLIO TO MATCH YOUR PROCESS CONSTRAINTS



Mersen, as a recognized expert in thermal design and heat exchanger manufacturing, has reached the best compromise for the gasketed plate heat exchanger : plates and gaskets are provided by the market leaders while Mersen Brignais ensures the thermal and mechanical design, the assembly in its manufacturing sites and the maintenance of the gasketed heat exchangers. Mersen's service centers, which are located close to our customers, are a guarantee of a good and reactive customer service.



- **STANDARD**
For industrial applications with no fouling fluids.
Up to 18 bars / 180°C
- **FREE-FLOW**
For fluids containing particles. Free gap up to 11 mm
- **SEMI-WELDED**
For extreme conditions up to 25 bars
- **SAFE PLATES**
For eliminating the risk of contamination
- **XXL PLATES**
Large porthole for condensation with low pressure drop

**45
standard
models**
with 2 chevrons

**12 free flow
plates**

**10 semi-
welded plates**

Plates from **0.4
to 1 mm** thick

Up to **3.5m²**
per plate

Connection up to
DN500



Innovation in heat exchanger

GRAPHITE HEAT EXCHANGERS

GRAPHILOR® 3, the only impregnated graphite with ultra-fine grain isostatic graphite.

PROPERTIES :

- High resistance to corrosion
- Resistance to temperature and thermal shock
- The highest mechanical resistance certified by TÜV.

IMPREGNATION

- BS: Phenolic highly cross-linked resin
- C: highly-temperature treated carbon → exclusivity Mersen
- TH: PTFE = Teflon → exclusivity Mersen

EXCEPTIONAL TÜV HOMOLOGATION

- XBS: up to 220°C: G20-00-200 for blocks / up to 220°C: G30-00-220 for tubes
- XC: up to 430°C: G18-00-400
- XTH: up to 250°C: G15-00-250

6-METER-LONG TUBES IN GRAPHILOR® 3 WITHOUT A JOINT

The absence of a joint makes the tubes less fragile. Tubes can be optionally reinforced with carbon fiber.



- Particularly high resistance to corrosion
- Highest mechanical resistance, certified by TÜV
- Temperature resistance up to 230°C and 430°C

- Tubes are more mechanically resistant
- G30-00-220 TÜV certification

RIGILOR® is a treatment of graphite parts with a carbon fiber based layer. Rigilor® is used for large blocks and tube-sheets.

- Mechanical resistance is increased by two
- Erosion resistance is increased by six



ML TECHNOLOGY is used to produce blocks with a diameter greater than 36".

- Higher mechanical resistance than monolithic graphite in large diameters
- Similar to small diameter mechanical resistance properties



METALLIC HEAT EXCHANGERS

CL-CLAD®

The Mersen Research and Development Department has developed an expertise in materials and innovative processes which has resulted in a new brazing process – CL-Cad® – for tantalum and zirconium cladding of carbon and stainless steels. CL-Clad® plates are used in the manufacture of pressure equipment as well as bonnets and tube-sheets.



CL-Clad® Flexible technology for bonnet, tubesheet and shell

Full vacuum resistance (thanks to the strong bonding between Tantalum / Zirconium sheet and steel base plate)

Safe design (can be fully welded – gasket-free design)

Mechanical and thermal resistance

TANTALUM HEATEX Tantalum welded plate heat exchanger specially designed for pharmaceutical and fine chemical industries, to comply with highly corrosive environments.



HXC FREE FLOW

The corrugated welded plate heat exchanger has a special design that allows a gap up to 25 mm between plates, while resisting pressures of 14 bar and temperatures of 250°C. The HXC free-flow is suitable for applications with one fouling fluid and one clean fluid.

- High thermal efficiency
- Cleanable on one side
- No risk of plugging

