



HEAT  
EXCHANGE  
MASTERY

MADE IN ITALY SINCE 1951 ● ○ ●

# PILLOW PLATES



FIC S.p.A. – Industrial Division

## PILLOW PLATES

### Heat Exchange Steel Heart

All industrial processes involve **Heat Exchange**: oil & gas, chemical, power, metallurgy, food, textiles and many others.

In all these areas, FIC S.p.A., **with the Pillow Plates technology, is capable to give customized solutions**, guaranteeing efficiency and energy savings.

#### TECHNOLOGY

The Pillow Plates system consists of two stainless steel sheets welded together and further deformed by inflation to obtain a cross section.

- The welding technology can be **laser** or **multispot resistance**. FIC defines the most appropriate technology and the best weld pattern in order to meet the project's purpose.
- The exchange surface **works 100%** without dead areas.
- The high turbulence inside the plate **guarantees high heat-transfer coefficients**.

Pillow Plates to be assembled in batteries



## SINGLE OR DOUBLE-EMBOSSED

### Two types of Pillow Plates

**Single embossed** defines a Pillow Plates with only one deformed sheet.

The laser permits to control the welding penetration leaving the surface of the thickest sheet completely unaltered. This type is often used for pharmaceutical and alimentary applications.



SINGLE EMBOSSED



DOUBLE EMBOSSED

The **double embossed** Pillow Plates, on the other hand, involves the deformation of both sheets, guaranteeing larger sections of passage. This type is mainly used for falling films, heat recovery, immersion batteries.



#### MATERIALS

**All stainless steel**, even duplex, can be used: AISI 304, 316L, 316Ti, 321, 904L, SAF2205, SAF 2307, LDX 2101, SMO 254, etc.

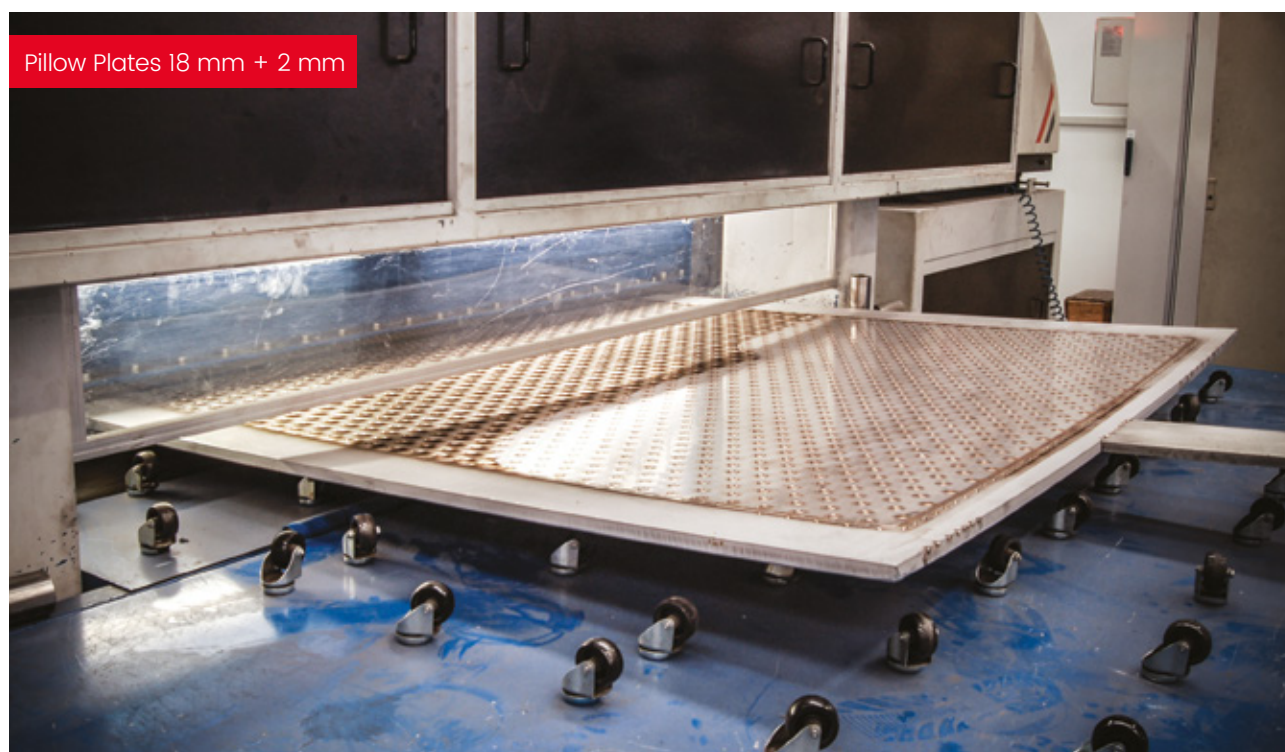
**Also special alloys** (eg Hastelloy).



#### DIMENSIONS AND THICKNESSES

Dimensions up to 2000x12000 mm and more.

Thickness starting from 0.6 + 0.6 mm up to 4 + 4 mm and from 1.5 + 0.6 mm up to 18 + 2 mm and more.



# OPERATING CONDITIONS

## Great flexibility for multiple applications

Pillow Plates can be designed for a wide range of pressures from 2–3 bar up to 80 bar. Working temperatures can range from  $-200^{\circ}\text{C}$  to  $600^{\circ}\text{C}$ .

### COOLING/HEATING MEDIA

Freon – Glicole – Water –  $\text{CO}_2$  – R717 – Steam – Thermal oil

### ASSEMBLY TYPE AND EXECUTIONS

There are possible embodiments in various shapes and sizes, depending on the uses:

Chemical industry (e.g. galvanic industry for industrial refrigeration)



**SINGLE PLATES**

Typically for tanks, both existing – with the “clamp-on” solution – or for new ones



**JACKETS**

Beverage, dairy and chemical industries



**CONICAL OR DISHED BOTTOMS**

Granular solids and in the food industry



**TRAYS, HALF PIPES**

Ideal for liquid to liquid or liquid to gas applications, and for refrigeration



**BUNDLES**

In the textile, food and dairy industries



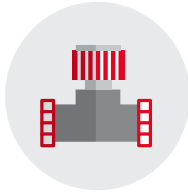
**RINGS, HOODS, TUNNELS**

### OTHER TYPE

- **HOPPERS**, for high viscosity products
- **TANKS**, e.g. for the dairy industry or the textile industry
- **SANDWICH PLATES**, special constructions with the two perfectly flat and smooth surfaces used in the pharmaceutical and food sectors
- **OTHER GEOMETRIES**

## FIELDS OF APPLICATIONS

**Pillow Plates** technology is used in many industrial sectors:



Oil&gas



Chemical



Beverage,  
beer, enology



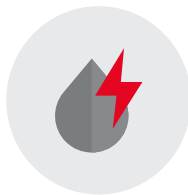
Dairy



Food



**Heat recovery**  
from industrial  
or civil dirty waste  
and sewage



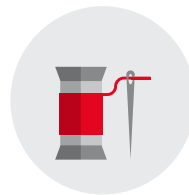
**Generation  
of energy from  
renewable  
sources** in the  
hydropower  
generation



Aerospace



Pharma



Textile



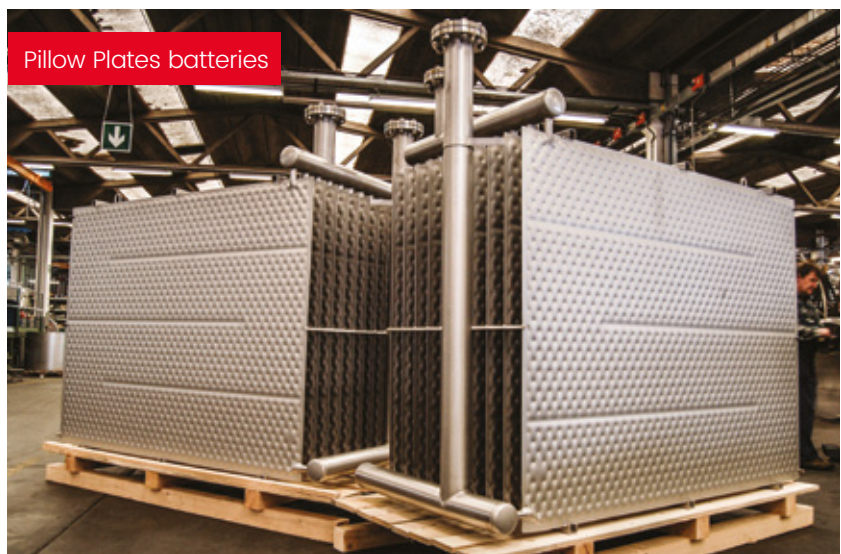
Cosmetics



Pillow Plates assembled in bundle



Cones with Pillow Plates



Pillow Plates batteries

# FIC – HEAT EXCHANGE MASTERY

## Market leader for more than 50 years

FIC S.p.A. is the **world leader in the heat exchange technologies**, a sector in which it has been present since 1951. Thanks to a constant process of technological innovation, today the company represents a reference for the global market exporting in more than 60 countries worldwide.

### CUSTOMIZED DESIGN AND PRODUCTION

FIC thanks to its team of specialized engineers can study **customized and innovative solutions**, according to a work-flow based on sequential steps:

- **listening to the clients** and their needs;
- **data collection**;
- **study of the solution**, thermal and mechanical sizing;
- **detailed engineering** and drawing;
- **discussion of the project** with the client;
- **operational phase**: construction, inspections;



**40.000 sqm**  
of production area



**35 tons**  
lifting capacity



**1.500 tons**  
of steel worked  
every year



**130**  
employees

CO<sub>2</sub> laser welding



FIC S.p.A.



- **test** based on one or more checks: bubble test, He test, Hydro test, burst-test, metallographic analysis, dye penetrant, visual and dimensional controls, FAT;
- **delivery** of the product and of the necessary documentation;
- **after sales**: technical assistance and availability of spare parts.

Thanks to three laser welding lines and a multispot resistance welding line, **lead time are always quick.**

## CERTIFICATIONS

FIC S.p.A. is certified according to:

### ISO 9001:2015

Quality  
standard

### ISO 3834

Quality requirements or  
every welding process  
of the company

### PED, 2014/68/UE

Pressure  
Equipment Directive

### ASME U-Stamp

For the pressure  
equipments

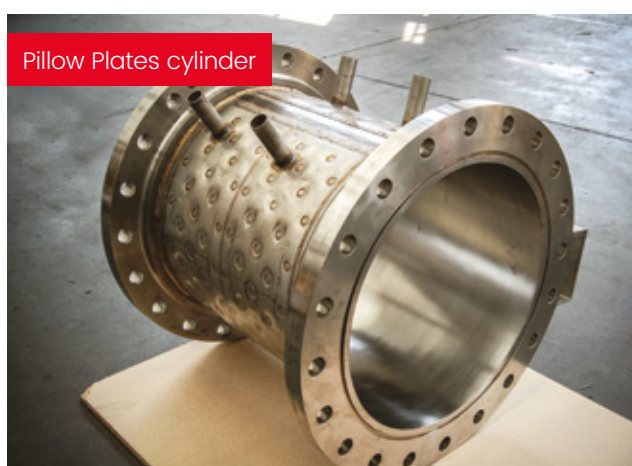
The company designs according to the **ASME and AD2000 calculation codes**.  
FIC S.p.A. cooperates with **internationally recognized Notified Bodies** (RINA)  
for periodic updates and qualifications of welding processes and of its  
qualified welders.



Pillow Plates high inflation



Qualifield welders



Pillow Plates cylinder



AZIENDA CON SISTEMA  
DI GESTIONE QUALITÀ  
CERTIFICATO DA DNV-GL  
" ISO 9001 "



REV.0 - I dati tecnici possono essere modificati senza preavviso | Any specifications may be modified without notice



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EXCHANGE  
MASTERY

MADE IN ITALY SINCE 1951 ● ○ ●

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