

Threaded closure type heat exchangers





HISTORY

In 1960 Standard Oil Co. in California developed the Breech Lock type heat exchangers and 6 years later it was put into operation.

The several numbers of Breech Lock fabricated and still in operation in the world demonstrate that the developed design was well embraced by the market.

Today Breech Lock technology has been modified and improved by manufactures according to their own experience and fabrication capabilities.

In 1984, FBM-Hudson Italiana has developed design and manufacturing know-how to prevent hydrogen and high temperature embrittlement and cracking of the base material and the disbonding of the stainless-steel weld overlays which may occur in Shell & Tubes Exchangers built for Hydrocracking, Hydro-sulphurisation, Residue Desulphurisation and similar applications.



Figura 1: Threaded Closure HE delivered for a Refinery Conversion Project in Portugal



WHY THREADED CLOSURE IS PREFERRED?

Threaded closure type heat exchangers are different from the other conventional type of High Pressure heat exchangers due to their particular internals. They are an alternative to the conventional Bolted Closures and their application is useful when the following points are required:

1. Reduction of criticality of large bolted joints and channel weight.
2. Faster opening and closure of cover of cleaning.
3. Re-setting of gasket seating in operation.
4. Faster opening when maintenance on tube side is required.

Special tool for assembly and disassembly of closure is provided by FBM Hudson Italiana (see fig.2).

This tool is interchangeable on different items and allows safe bundle extraction

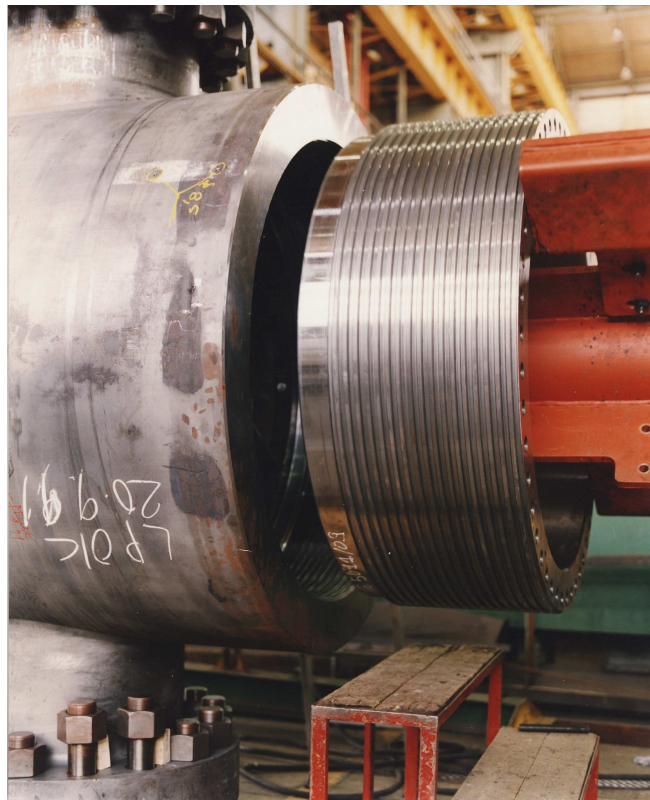


Figura 2: Threaded cover assembly/disassembly with special tools.

FIELD OF APPLICATION

Threaded closures are typically applied in High Pressure and High Temperature units in refinery service such as Reactor Feed/Effluent Exchangers.

FBM Hudson Italian can provide two different designs depending on whether differential pressure or full pressure shall be used for the calculation of the tubesheet.

The first design is called "HH Type" and is used when tubesheet is designed at differential pressure for both sides (tube side and shell side) or differential pressure for shell side and full pressure for tube side. In 'HH Type' configuration the tubesheet is removable.



The second design is called “HL Type” and is used when tubesheet is designed at full design pressure. In this type of equipment, the tubesheet is welded or is an integral part of the channel. Shell will be connected to the tubesheet by using a shell flange.



Figura 3: Threaded Closure Heat Exchanger with tubesheet designed at differential pressure.



Figura 4: Tube bundle of Threaded Closure Heat Exchanger with tubesheet designed at full pressure.



Figura 5: Threaded Closure Heat Exchanger with tubesheet designed at full pressure.