

EXPLOSIVELY WELDED PLUGS

TEi YIMPACT provides tube plugging, tube expansion, tube-to-tubesheet welding for heat exchanger users and manufacturers, and debris removal from industrial plant by the use of controlled explosive charges.

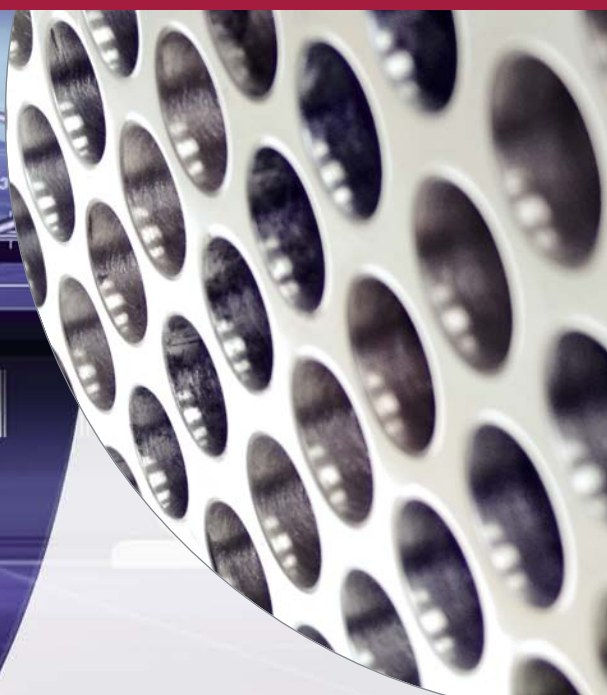
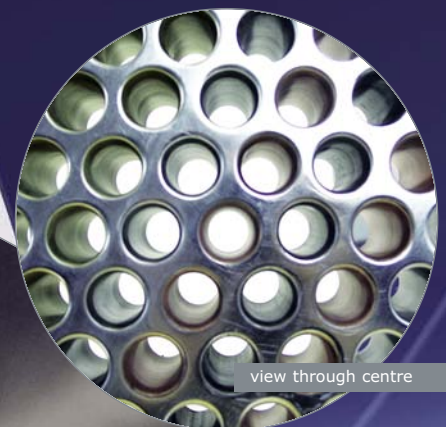
THE PROBLEM

Fusion welded or mechanically fitted plugs have been used in the past for effecting repairs to leaking heat exchanger tubes and/or joints. Welding a plug into a feedwater heater on-site is, however, an extremely difficult job. Working conditions are normally very poor, and in a plant breakdown situation, conditions can rarely be improved sufficiently to allow the weld preparation and the weld process itself to be carried out with the degree of precision required for the task. Also in recent years the use of high pressure/temperature exchangers has revealed shortcomings in those traditional methods of repair.

THE SOLUTION

YIMPACT explosively welded plugs provide an economical and highly reliable method of overcoming these problems.

Since 1971 thousands of YIMPACT plugs have been fitted, particularly in high pressure feed water heaters used in conjunction with turbine generators. These plugs have proved 100% effective.



The ADVANTAGES

- Explosive welding achieves a true metallurgical bond. The quality and reproducibility of the weld is assured because the correct geometry is designed into each plug and the optimum explosive charge is pre-engineered to match.

The weld is therefore not dependent on operator technique.

- Leak tightness can be confirmed on-site by hydraulic or pneumatic tests.

During hydraulic testing plugs have been subjected to an external pressure of 10,000 p.s.i. and an internal pressure of 35,000 p.s.i.

Additionally, during thermal cycling testing, plugs / tubesheets have been heated to 700°C (1325°F) and then plunged into cold water, the operation being repeated 10 times. Despite the extreme thermal shock applied to the joints, they remained tight, even after an external hydraulic pressure test of 10,000 p.s.i.

- The YIMPACT service is available on or off-site to fit in with planned maintenance schedules or as an emergency response.

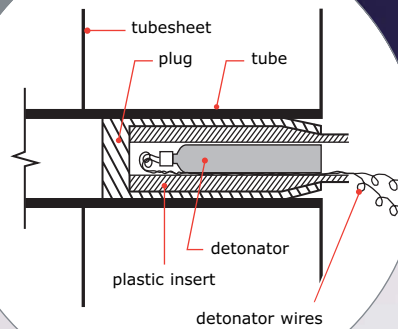
THE METHOD

The tube bore or tubeplate hole requires little preparation. No special machining of the hole is required. It is only necessary to remove surface oxides and scale from the weld area.

A YIMPACT plug containing an explosive charge is inserted into the prepared tube / tubeplate hole and the charge initiated to produce an explosive weld between the plug and the tube / tubeplate.

SEQUENCE OF EVENTS

YIMPACT Explosive plugging of a feed water heater:



typical explosive plug configuration



section through an explosive plug that has been hydraulically tested to 10,000psi.



range of explosive plugs

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