

EXPLOSIVE EXPANSION

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

THE PROBLEM

Wherever heat exchanger working conditions are such that mechanical tube-to-tubesheet joints provide plant integrity then, almost invariably, such joints have been produced using roller expansion techniques.

However, despite the extensive use of roller expansion methods and their undoubted suitability for very many applications they do possess some inherent limitations and disadvantages.

THE SOLUTION

YIMPACT explosive expansion provides an effective alternative to the fabrication of high integrity mechanical tube/tubesheet joints for many heat exchanger designs and tube/tubesheet problems.

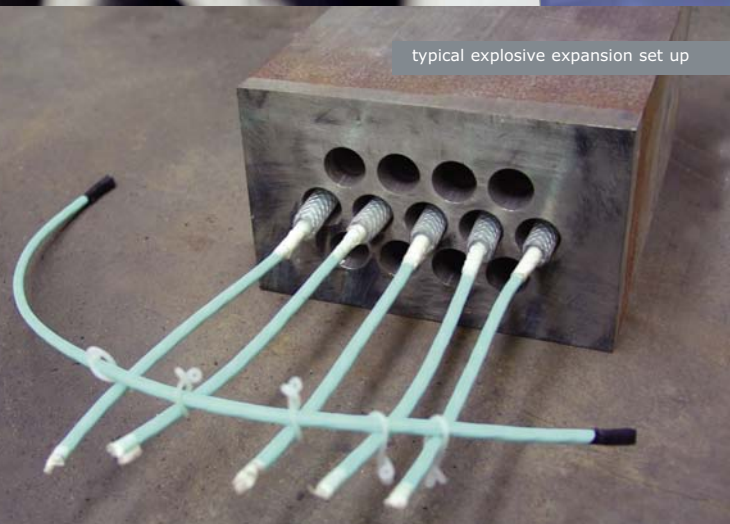
Multiple detonations of pre-engineered explosive charges, designed for specific tube/tubesheet material and size combinations enable tubes to be rapidly and securely mechanically fixed and sealed into tubesheet holes. The process offers significant cost savings and other advantages over other mechanical tube/tubesheet jointing systems.



face of tubeplate



view through centre



typical explosive expansion set up

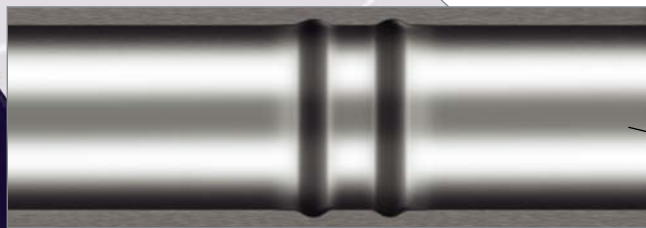
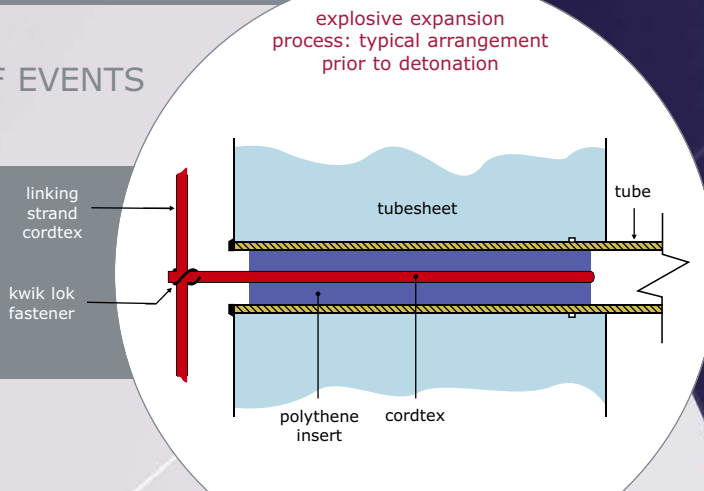
The ADVANTAGES

- No practical limitations exist on the length of expansion that can be produced by one detonation - multiple/stepped roller expansion can often be avoided with consequential, much reduced joint production times and costs.
- A number of explosive expansion charges can be detonated in one 'shot' - significantly reducing production times/costs.
- Restricted access is often much less of a limitation than with other mechanical tube / tubesheet fixing methods.
- Tube wall thinning, work hardening and lengthening of the explosively expanded sections of tubes are normally negligible.
- Satisfactory joints can often be produced in tubesheet holes where ovality and surface finish would preclude the use of alternative mechanical jointing systems.
- YIMPACT explosive expansion can be carried out 'on site' or 'in works' - either as a primary system for jointing or as a secondary system 'behind' front face fusion welding / YIMPACT explosive welding. The process has also been successful when fitting inlet end ferrules and tube end replacement sleeves and in re-expanding leaking tube / tubesheet joints.

THE METHOD

The controlled detonation of specific and precisely positioned explosive charges generates high pressures in the bores of the tubes resulting in the almost instantaneous expansion of the appropriate sections. The outside of the expanded lengths of tube are 'coined' or pressed into the tubesheet holes - resulting in a high integrity bond regardless of tubesheet hole ovality or surface finish.

SEQUENCE OF EVENTS



**ROUND PEG,
SQUARE HOLE?
NO PROBLEM!**



0017 0018

PO BOX 80 CALDER VALE ROAD
WAKEFIELD UK WF1 5YS

TEL: +44 (0)1924 780216
FAX: +44 (0)1924 780408

yimpact@tei.co.uk
www.tei.co.uk



CERTIFICATE NUMBER 902035