

"We thought they had sent the wrong exchangers, they were so small!"



Traditional Shell & Tube and equivalent Vahterus PSHE

Often an existing plant needs an upgrade and it is likely higher capacity exchangers are required. Usually the existing tubulars cannot be modified sufficiently to cater for the increased duty therefore it is necessary to buy new – and here is the dilemma – often there just isn't enough space for the replacement exchanger.

That is where Vahterus comes in: The Vahterus PSHE can give the same performance as a tubular in only 20 to 30% of the space.

Consider this example from one of our clients who had such a problem. It was necessary to upgrade the plant to cater for an increase in capacity of 20%. Whereas pumps, valves and associated pipework was not such a major issue the original design of tubulars was such that no more room was available in the existing plant room to accommodate larger exchangers.

### The Problem

- 20% increase in Plant capacity required
- No space available for larger heat exchangers
- Elevated installation

The first unit positioned 5m up in the plant room measured 1.1m in diameter and had a total overall length of 12m. The second, higher capacity exchanger measured 1.4m in diameter and length of 14m – this one was positioned 15m from the plant room floor, posing an even greater headache to replace.

To obtain 20% more heat transfer capacity would have meant an equivalent increase in exchanger size and also an increase in weight of similar magnitude. The space was not available and the potential increase in weight would have meant strengthening the existing structure.



Existing Tubular exchanger LEL1 in situ



Tubular exchanger LEL2 being dismantled

## The Solution

- Tubular exchangers replaced with Vahterus Plate & Shell units
- Heat transfer capacity increased by 20% as required
- Footprint reduced by 80%
- Weight reduced by >50%

The Vahterus PSHE solution was quite simple and avoided any structural alterations, other than moving some Pipework.

LEL 1 was replaced with a Vahterus PSHE 9HH-714/1/1 - this unit was of similar diameter to the tubular but only 2.3m long – an envelope decrease of 80% despite the increase in thermal capacity of 20%.

It was a similar story for LEL 2 – the Vahterus unit, 14HH-458/1/1, was slightly larger in diameter but the length was reduced to 2.4m – an 83% reduction in length



PSHE replacement for LEL1 in production



Before and after. PSHE is on the right

Moreover both units weighed only 30% and 45% respectively of the Shell and Tubes that they replaced. Each of the tubulars needed to be arduously cut into 5 pieces and carefully craned down from their installed positions – the Vahterus units went into place in a single lift.

Once installed the units have to date given 4 years of trouble free service.