

Engineering tear-down study:

Working with major UK based manufacturer of industrial and domestic central heating boiler systems

Project Objective:

To make an evaluation of the current fixing methods used today and identify potential alternative methods that offer more cost effective in-place solutions. Typical areas that will be evaluated are fixing type, process comparisons and the ability to rationalise.

It must be noted that cost savings referred to in this report are the total savings of installing the fastener from the procurement process to the end of production and not just piece part price of the fastener.

The recommendations of this report are only recommendations and not guarantees of performance. It is advised that physical tests are conducted to ensure suitability of the recommendation in application.



Teardown Summary

The teardown established that there are good potential cost savings on this unit, these being;

- **Elimination of parts**
- **Change in engineering technique using the latest type of thread forming screws designed for use in Alloys to replace the drilling and tapping operations**
- **Rationalisation of part numbers**

There are currently 45 fixing used with 11 different parts. It may be possible to show inventory and logistical savings by reduce these down to 35 parts with 4 different part numbers, at the same time show a dramatic cost reduction in the assembly / manufacturing process.

There is the possibility to eliminate 8 parts completely along with the assembly of the parts.

Finally it is possible to eliminate 18 drilling and tapping operations. Only one application requires further evaluation.





Application 1

The current method is to screw the M6 screw into a drilled and tapped hole in the casting. The proposal is to eliminate the drilling and tapping operation and use a cored hole in the casting and replace the M6 machine screw with an Altracs thread forming screw

Benefits:

- **Cost saving in process eliminating the drilling, tapping, cleaning and inspection of the machined thread.**
- **Elimination of consumables i.e. drill & taps**
- **Increased production throughput**



Application 2

Eliminate the Hexsert and either thread-form into a cored hole with SHEETtracs / Altracs thread forming screws into 2.7mm material or for improved performance increase the thickness of the sheet material and core a hole to accept an Altracs. In either case the lock washer would become obsolete due to the retentive properties of the thread forming screws.

Benefits:

- **Cost saving by eliminating the Hexsert and lock washer**
- **Cost saving in process time installing the Hexsert and lock-washer**
- **Elimination of Hexsert installation tooling**



Application 3

Replace Taptite with Altracs thread forming screw for better performance and rationalise this part with those in application 7 & 8

Benefits:

- **Better performance using Altracs over Taptite**
- **Reduced inventory costs**



Application 4

The current method is to screw the M6 screw into a drilled and tapped hole in the casting. The proposal is to eliminate the drilling and tapping operation and use a cored hole in the casting and replace the M6 machine screw with an Altracs thread forming screw

Benefits:

- **Cost saving in process eliminating the drilling, tapping, cleaning and inspection of the machined thread.**
- **Elimination of consumables i.e. drill & taps**
- **Increased production throughput**



Application 5

The current method is to screw the M6 screw into a drilled and tapped hole in the casting. The proposal is to eliminate the drilling and tapping operation and use a cored hole in the casting and replace the M6 machine screw with an Altracs thread forming screw

Benefits:

- **Cost saving in process eliminating the drilling, tapping, cleaning and inspection of the machined thread.**
- **Elimination of consumables i.e. drill & taps**
- **Increased production throughput**

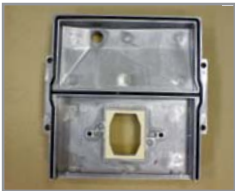


Application 6

There are two fixing joints two of the screws are used into Hexserts and the other two used as stud fixings. The proposal is to eliminate the Hexsert with either an Altracs or SHEETtracs screw directly into the casting. With regard to the Countersunk screw consideration should be given to use the Hexagon cross recess head screw in the stud application.

Benefits:

- **Cost saving by eliminating the Hexsert**
- **Cost saving by rationalization of the screws**



Application 7

Replace Taptite with Altracs thread forming screw for better performance and rationalise this part with those in application 3 & 8

Benefits:

- **Better performance using Altracs over Taptite**



Application 8

Replace Taptite with Altracs thread forming screw for better performance, standardise on one screw length and rationalise this part with those in application 3 & 8

Benefits:

- **Better performance using Altracs over Taptite**
- **Reduced inventory costs**



Application 9

Replace Taptite with Altracs thread forming screw for better performance and rationalise this part with those in application 3 & 8

Benefits:

- **Better performance using Altracs over Taptite**
- **Reduced inventory costs**