

## Cost and logistics study:

### Self piercing fastener creates one sided assembly and part reduction



Advanced process developments in steel production driven by competition from lighter materials, specifically aluminium, means that modern manufacturing has its widest ever choice of metal to metal combinations to work with.

Engineers almost have a 'pick and mix' pallet in front of them hence the logical combination of different metal types in the assembly process, providing that consequential fixing issues don't outweigh the benefits to the finished assembly.

It was this development that drove EJOT to design a flowdrilling fastener specifically for high strength assembly of different metal types; the self piercing FDS.

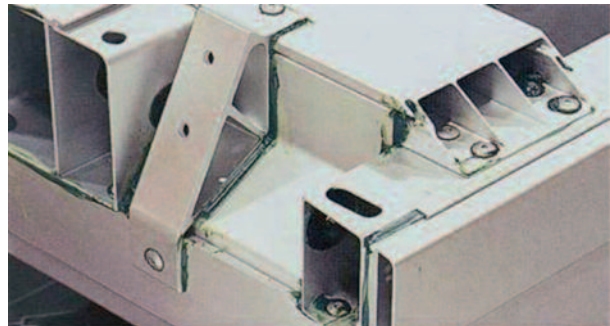
It is the FDS fastener's ability to increase thread engagement in the through draught that makes it such a unique solution. The metric female thread forms without creating chips during the insertion process creating a backlash-free thread engagement that is waterproof, gastight and able to withstand both high pullout and shear forces.

The precision behind EJOT's capability to engineer highly technical solutions is exemplified by the fact that the heat generated by the piercing action of the FDS falls well within all safety limits but still gives exactly the right expansion of the joint to create high dynamic safety as shrinkage takes place.

An excellent example of EJOT's application technology in action is the assembly of the high performance Lotus Elise. When engineers at Lotus developed the chassis for this highly acclaimed performance car, they needed a fastener that was capable of creating a one sided assembly process which would effectively eliminate drilling, punching, and tolerance issues.

The FDS fastener ticked all the right boxes by providing a proven capability for high quality assembly of thin steel or aluminium sheets, without the need for pre-drilling or punching or the time-heavy process

continued...



of lining up holes. The EJOT® Applitec design team worked to perfect a variation of the FDS fastener capable of joining different metal types, whilst maintaining shear resistant joints.

It was the depth of the EJOT solution that drove a second UK high performance vehicle manufacturer to choose the FDS in a very similar way, except that total robotic assembly was achieved. Fifty fasteners per aluminium chassis were programmed to be inserted into the structure, many into blind areas of fixing where insertion is only possible from one face. The manufacturers only other option was to revert to a welding process which created the obvious time heavy issues along with a need for fume extraction.

Several types of the FDS fastener have been developed to provide a solution for a wide range of assembly propositions; from fully automatic assembly through to manual assembly options, with and without the need for pilot holes. In manual fixing applications there are endless examples where part reduction has been a significant enough reason to choose FDS and the fastener has been adapted for cover fixings over electrical contact areas on microwave ovens, refrigerator door handle assemblies, electric oven interiors and drum assemblies in washing machines; the latter because of the fasteners strength and resistance to vibration. Beside providing one-sided access and extreme high strength, the fastener is designed to remove easily, especially if application recycling is key.

**EJOT UK Limited,**  
Hurricane Close, Sherburn Enterprise Park,  
Sherburn-in-Elmet, Leeds  
LS25 6PB

Call: 01977 68 70 40  
Fax: 01977 68 70 41  
[info@ejot.co.uk](mailto:info@ejot.co.uk)