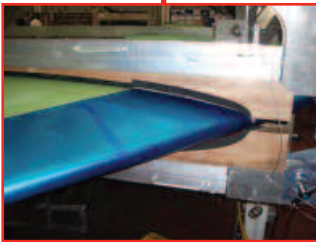




## Bombardier Tail Wing Rotation Rig



What do you do when you need to pick up  $\frac{3}{4}$  Tonne of a half assembled tail wing from an executive jet, rotate it through several positions during the assembly stages, then precisely position it on a special shipment rig, whilst evenly distributing the load to prevent crushing of the wing?

from the wing surface. A combination of a thin rubber insert and shims within the clamping mechanism ensured that the clamping force could be kept even. Advanced design technology allowed a model of the wing to be created, so isolating the "safe" sections to clamp to, as well as analysing the loadings as the wing is lifted and rotated.

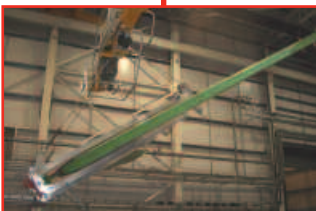
This was the problem Bombardier Aerospace encountered before calling in Street CraneXpress Ltd to find a solution.

Perfect in theory but just how do you manufacture such a long thin surface that varies in three planes at the same time? Rotherham based casting company Castings Technology International were able to use their pattern making expertise to help solve the problem. Using the CAD models Street CraneXpress had created they were able to produce wooden profile boards that exactly followed the wing surface.



The rotation of the wing was relatively simple, Street CraneXpress's experience in the use of inverter drives and absolute positioning systems meant they could produce a radio controlled, bespoke turning system which allowed movement to set positions, plus over-ride options as required.

Once assembled the turning rig was proof loaded and calibrated for position before being shipped to the client for final testing. Precision control of the wing rotation allows the client's engineers to quickly and safely manoeuvre the tail wing structure with an efficiency even Bombardier were surprised at.



The difficulty arose with regard to the need for evenly distributed loadings along the wing spars. The final design involved two clamps to sandwich the wing, with each clamp-half exactly matching the wing profile, as the basis of an adjustable and detachable mechanism.

The clamp itself has to ensure that enough clamping pressure is applied to the wing, but without over-tightening as this would bend the clamp beam away