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Science & Technology Facilities Council

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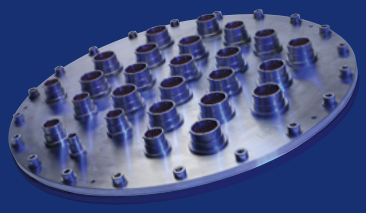
Connector assembly for the world's largest telescope

Martec was commissioned by the Rutherford Appleton Laboratory, an Oxford based research unit operated by the Science and Technology Facilities Council, to create a special connector assembly for VISTA (the Visible and Infrared Survey Telescope for Astronomy). VISTA is located at the European Space Observatory in Paranal, Chile, and is being used with the VISTA infrared camera to map vast areas of deep space.

Martec was asked to create a plate that would act as a barrier from within the telescope to retain charged gas whilst providing conductive paths for 909 signals.

Martec expertise:

- Custom design
- One-off part
- Very large part assembly
- Harsh/hostile environment
- Match existing interface
- Advanced production and sealing



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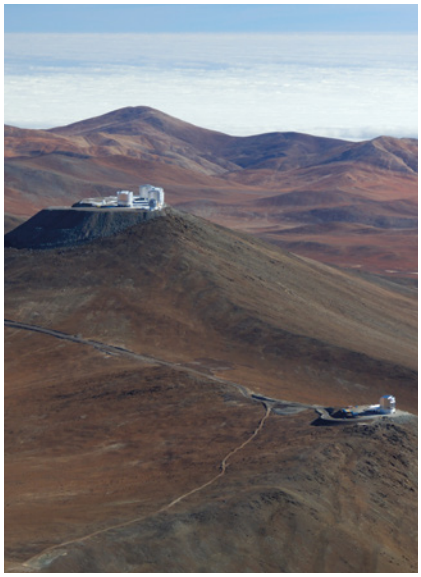

MANUFACTURING CHALLENGES

The size and weight of the plate made this the largest connector assembly Martec had ever undertaken. The project timescales were extremely tight and the finished VISTA plate had to be transported to Chile, so it was no surprise to learn that many other companies had declined to even consider the project!

The complete assembly had to be hermetic to 1 x 10-8 cc/sec at 1atm. The position of the connectors was critical with tolerances down to +/- 5%, and each individual connector would need to be Electron Beam (EB) welded into the plate.

DESIGNED

We started by making sure we had a very clear understanding of the final operating environment and the customer's exact requirements. Our in-house design team considered several design iterations and manufactured a smaller scale plate of the chosen design to understand the effects of the assembly process with respect to bending and distortion. The data gathered from this process was reviewed and a test unit was manufactured and assembled with the customer present.

TESTED

- The hermeticity of the plate, connectors and individual EB welds
- The maximum flexure of the plate without damaging the integrity of the connectors
- The location and positional tolerances of the connectors within the plate
- The interconnection of 909 signals through the plate

DELIVERED

Size	**Diameter 430mm, thickness 8mm**
Material	**Stainless steel 316**
Interconnection	**26 MIL-DTL-26482 series 1 hermetic connectors** **Shell sizes 8, 14, 18 and 20 with respective pin counts of 3, 19, 32 and 41** **Pcb pin terminations to mount on flex circuits:** **- Sixteen: 20-41 plan forms** **- Four: 18-32 plan forms** **- Five: 14-19 plan forms** **- One: 8-33 plan forms**

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