Processes Qualified

Process Qualification of Gas Tungsten Arc Welding (GTAW) process

Gas Tungsten Arc Welding (GTAW) Process qualification was taken up with aim to provide more reliable welded joints with quick delivery of the components, particularly for wave guide plumbing.

• Material : Al-alloy 6061-T651, thickness range (0.5mm to 6.0mm)



Al. Alloy 6061-T6 test samples fabricated by GTAW for Process Qualification

- The above GTAW test samples prepared for Fillet Weld in accordance with QA Plan: SAC/SRA/QACMG/TR /002/MAY-2011.
- PID No. : SAC/MESA/MSFG/FSF/TR/01/OCT-2012, is prepared & approved. Process is made operational inhouse.
- Executed the Annual Rate Contract (ARC) for supply of Ultra High Purity Argon Gas Cylinders for this process.

Sheet metal joining process by Clinching technique

- Developing Clinch Joint for joining Al Alloy 6061-T6 and Aluminum 1100 grade sheets by cold forming process.
- Process Characteristics:
 - Cold Forming Process, so no thermal effects on clinch area.
 - Suitable for joining sheets of different materials and thicknesses.

• No additional fasteners (screws, rivets) required, so component mass is reduced.



• Shear and Pull Strength can be correlated to the joint geometry by measurement of combined thickness by Scissor Gauge, So NDT of joint strength possible.



- Qualification Test Samples were prepared in accordance with QA Doc No. : SAC/SRA/QACMG/TR/003/FEB-2012.
- PID No. : SAC/MESA/MSFG/FSF/TR/02/MAY-2013, is prepared & approved by QACMG /SRA. Process is made operational at FSF Sheet Metal Forming Section.

Precision Twisting Mechanism for Waveguide Twist

➤ Major Aim of Precision Twisting Mechanism is to provide reliable & Consistent Twist of Waveguide runs, Fabricated in-house with quick delivery of the components, in particular waveguide plumbing with specified dimensional accuracy in large quantity



Mechanism Developed for Waveguide Twist

In-house fabrication of components from Aluminum Honeycomb Panels

- We have been given this activity to be developed within a short time. And we successfully completed the fabrication of Aluminum Honeycomb components for different projects of the centre.
- For this, developed Special Cutters, Space grade Adhesive, Potting Fixtures and applied different processes such as Sawing, Drilling, Routing, Potting for fixing various through inserts, blind inserts and side inserts, Corner Joints, T joints and End Closure on Al Honeycomb Panels.



<u>S-E Honeycomb</u> Feed Bracket Assembly



Till now fabrication of components such as Feed



Honeycomb Feed Brackets Fabrication by Sawing, Drilling and Routing Process



Honeycomb Brackets Potting Process



Potting Nozzles



<u>Tri Panel Fixture</u> Size: 1966 x 1716 x 3075 (mm) GSAT-16

Press Work Tooling for Thin Sheet Components

 Press tools developed and fabricated to realize the Cable Tie Mounts and SMA Shims from thin sheet metal and to be used during wave guide plumbing and connector mounting.





Shims for SMA Connectors

- Material : Al. Alloy 6061-T6 (0.25 mm, 0.5 mm thick), Invar (0.1 mm thick)
- Overall size : 12.7 mm (L) X 12.7 mm (W) X 0.1 mm (thick)
- Process : Blanking & Piercing on Compound Die





Material : Aluminum Alloy 6061 T6

- Overall size: 18mm X 10mm X 3.9 mm X 0.8mm thk
- Process: Stamping Process on Combination Die
- Specified dimensional accuracy is achieved and fabrication was completed in short time for large quantity.

Tie Mounts



Hydraulic Press • Capacity: 10T



NC Press Brake

- Capacity: 100T
- Repeatability : 0.01 mm
- Storage of Operation Parameters