

**CTF3 – TL 2 VACUUM CHAMBER
FABRICATION STATUS REPORT**
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Vacuum chamber fabrication

- Dipole Chambers – 5 nos –
- From Al 6061 T6 grade 25 mm thick plates
- Machining on vertical machine centre with special cutter for surface finish of 0.3 microns.
- Machining of all dipole chamber completed
- Taper chamber wire cutting inside portion & outside CNC milling

Race track chambers – 22 nos

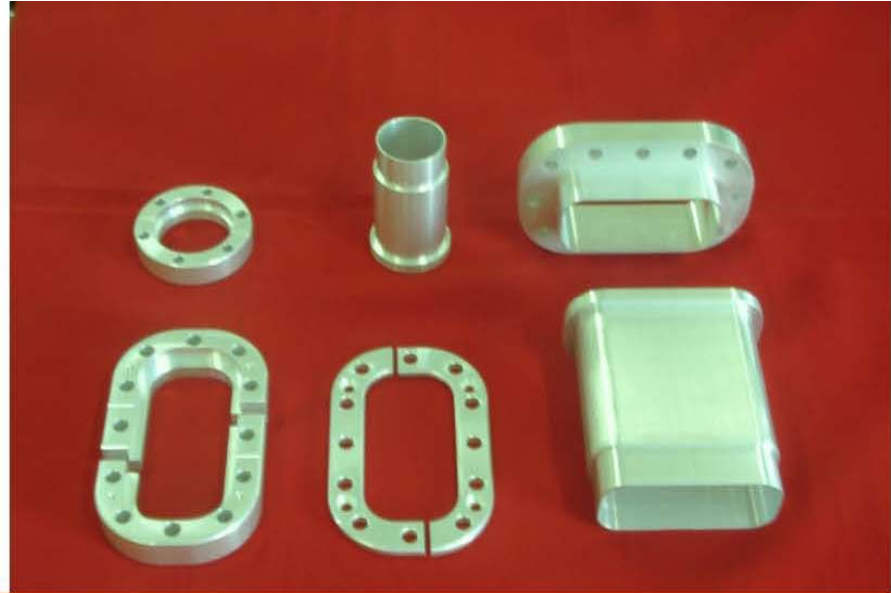
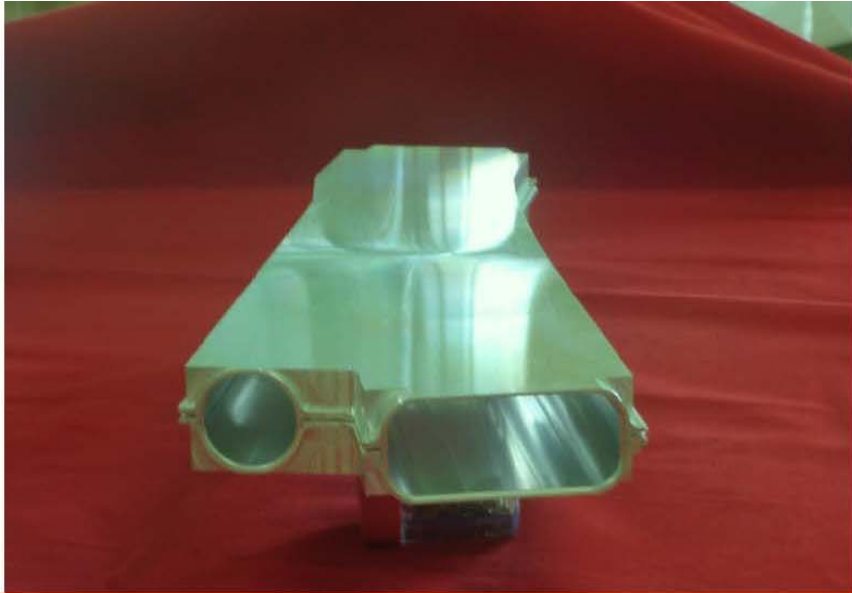
- Cold drawn extruded section
- End machining on horizontal CNC milling machine
- All machining work completed

Cylindrical chambers – 31 nos

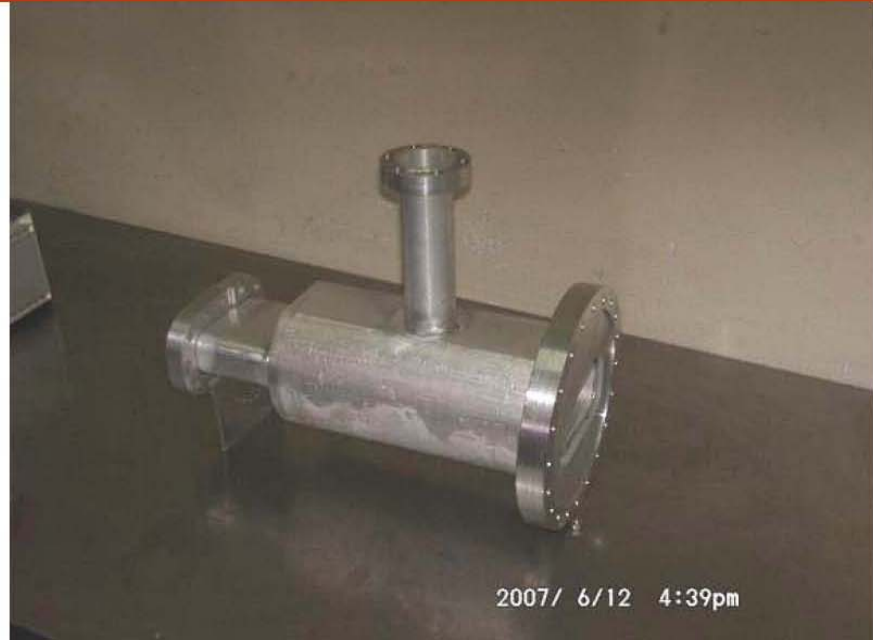
- Cold drawn tubes from AL 6061 T6 grade
- 40 mm inside diameter
- End machining on lathe
- All chamber machining work completed

Flanges –all types

- For Dipole chambers, race track chambers, cylindrical chamber
- Rotatable & demountable flanges on CNC milling machine, race track flanges inside portion by wire cutting, cylindrical flanges on lathe
- All flange machining is completed



Parts of Prototype Dipole Chambers



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Vacuum Chamber Testing

- These vacuum chambers were chemically cleaned after machining.
- These were welded after chemical cleaning.
- Helium leak testing at 5×10^{-10} mbar-Lit/sec were carried out.
- Baking at 150 degree C at 5×10^{-7} mbar vacuum was carried out for 24 hr. There were pumped by SIP for 24 hrs to get ultimate vacuum of order of 5×10^{-10} mbar.

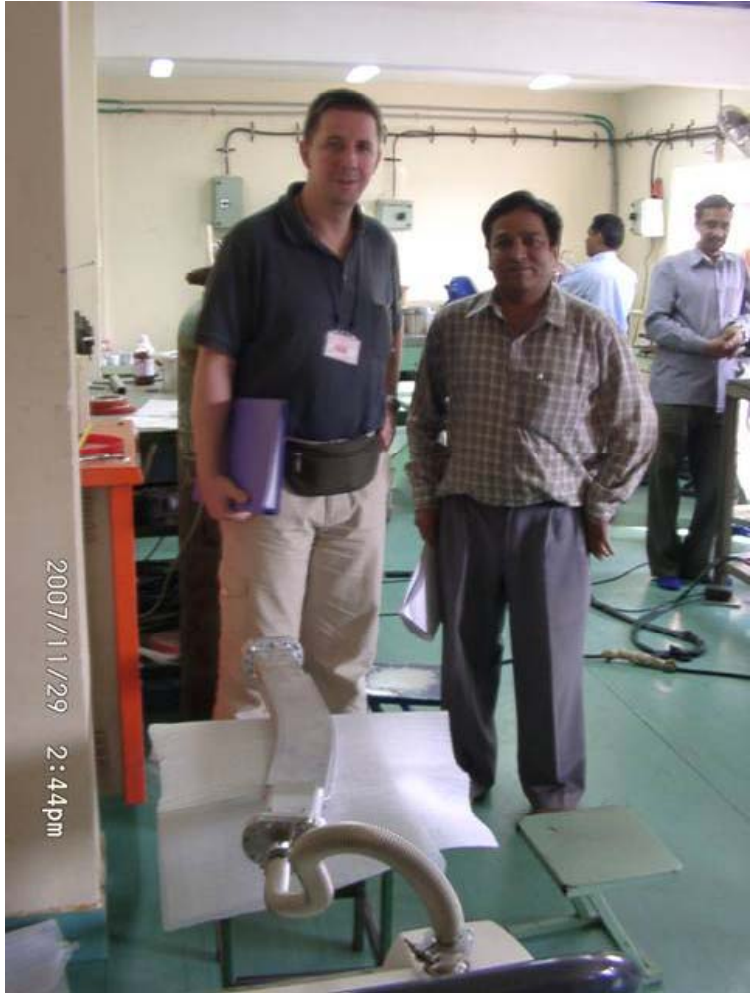
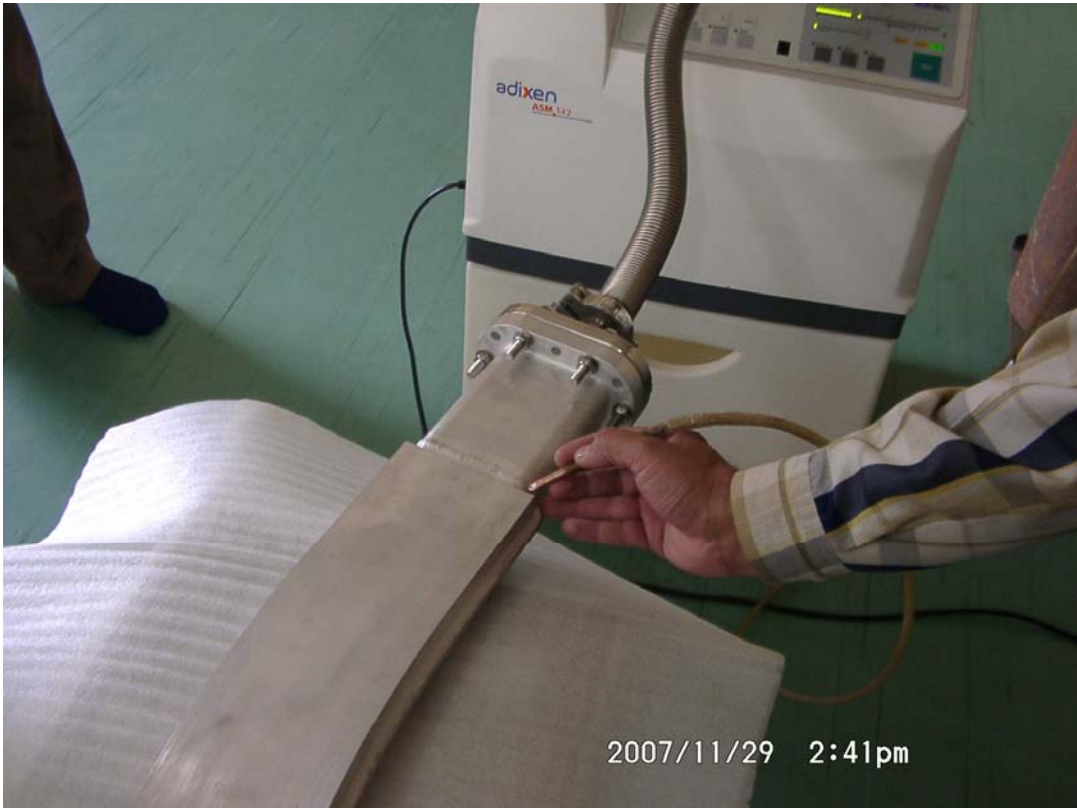














STATUS OF FABRICATION OF CTF-3 VACUUM CHAMBERS

| S.No. | Description | Machining of chamber | Chemical Cleaning | Welding of chamber | Leak test | Ultimate vacuum test |
|--------------|----------------------|-----------------------------|--------------------------|---------------------------|------------------|-----------------------------|
| 01 | Dipole chamber RT 53 | Complete | Complete | Complete | Complete | Complete |
| 02 | Dipole chamber RT 63 | Complete | Complete | Complete | Complete | Complete |
| 03 | Dipole chamber RT 16 | Complete | Complete | Complete | Complete | Complete |
| 04 | Dipole chamber RT 43 | Complete | Complete | Complete | Complete | Complete |
| 05 | Dipole chamber RT 73 | Complete | Complete | Complete | Complete | Complete |

| | | | | | | |
|----|--|-----------|----------|--------------|-------------------|--|
| 06 | Cylindrical chambers (31 Nos.) | Completed | Complete | Not required | Completed | 8 nos. completed. Second lot in progress |
| 07 | Race track chambers (22 Nos.) | Completed | Complete | Completed | 18 nos. Completed | First lot being assembled |
| 08 | Cylindrical bent chambers (04 Nos.) | Completed | | Not required | | |

THANK YOU FOR YOUR ATTENTION