G & A Engineering

Slow Control Electronics for the AMS02 TRD Gas System

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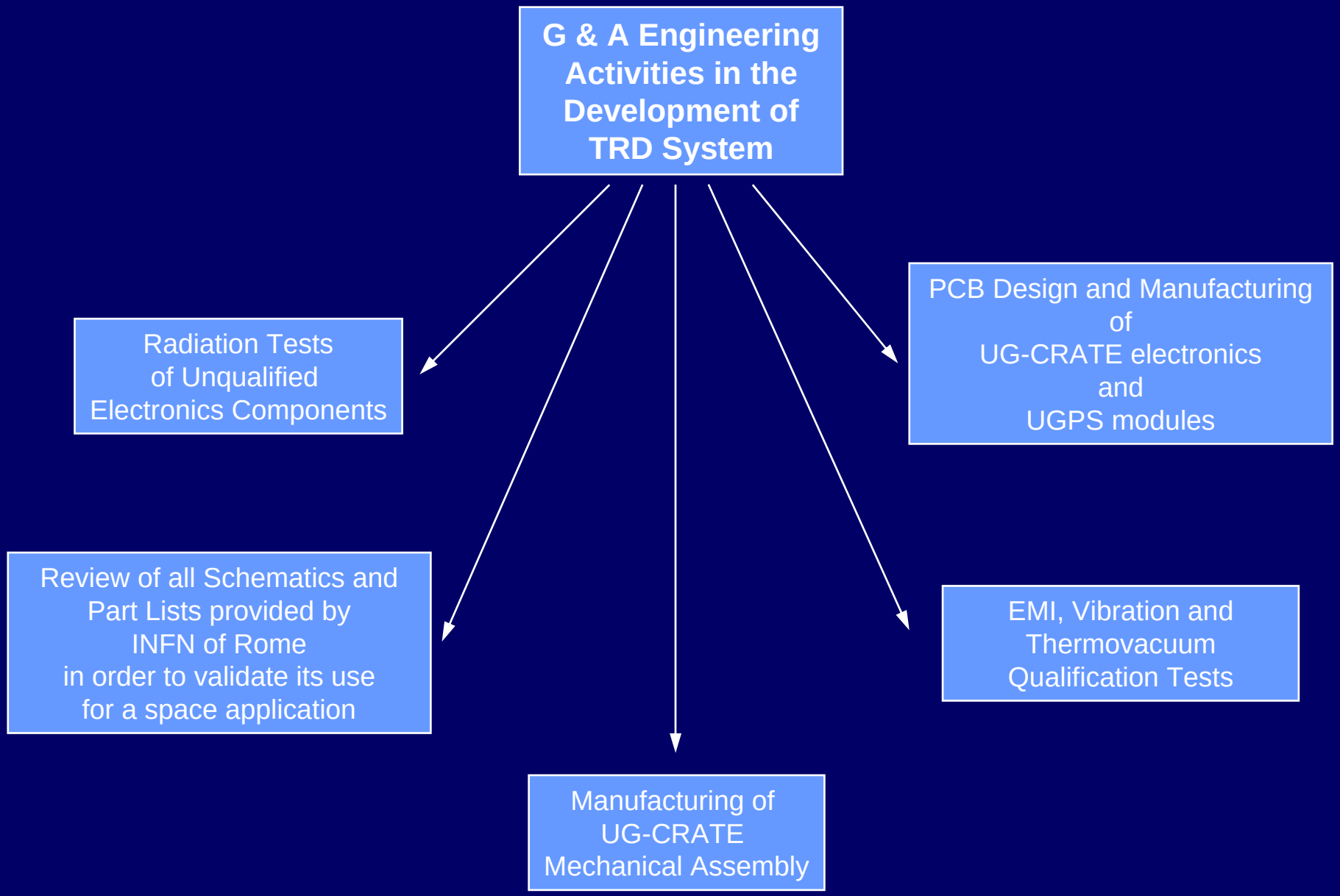


PERFORMING RADIATION TESTS AT GSI

FACILITIES:

GSI LOCATED IN DARMSTADT (GERMANY)

RADIATION TESTS TARGET:

DETERMINING THE SEE (SINGLE EVENT EFFECTS) THRESHOLD OF THE FOLLOWING ELECTRONICS COMPONENTS NOT INCLUDED IN THE AMS PPL AND NOT QUALIFIED BY THERD PARTIES:

-Si4544DY (N & P CHANNEL MOSFET)
-Si4966DY (DUAL N CHANNEL MOSFET)
-SUB65P0620 (P-CHANNEL MOSFET)
-Si4840DY (N-CHANNEL MOSFET)
-MAX225EWI (RS-232 LINE DRIVER)

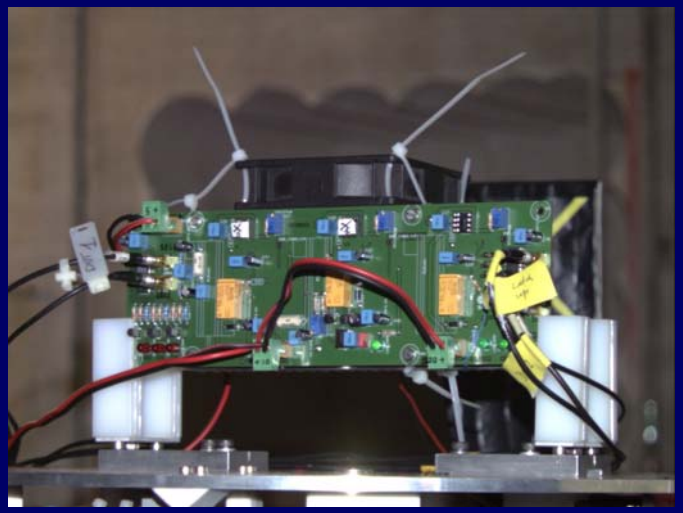
PERFORMING RADIATION TESTS AT GSI

Control Room

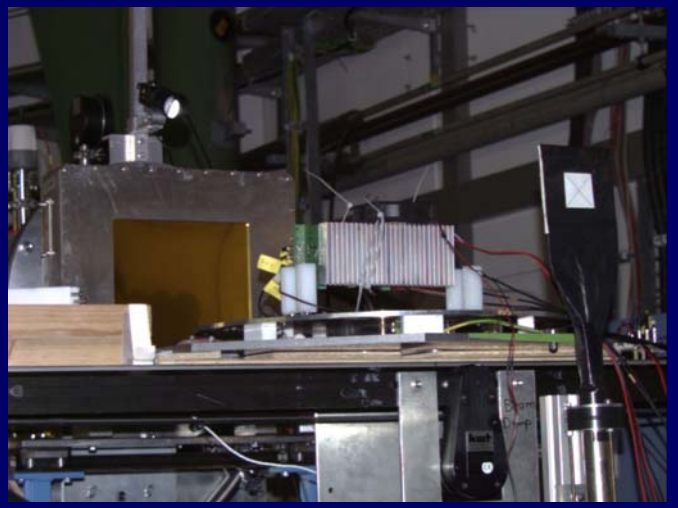
BEAM SPECIFICATIONS:

U92 Ion beams with energies 200-900 MeV/nucl
U92 LET 32-15.9 MeV/cm2/mg
(During the SEE radiation test all components were exposed to an equivalent TID of about 10kRad)

TEST RESULTS
For all components under test no latchup or malfunctioning were observed for the entire probed LET range.
All components were accepted for use in the AMS02 space environment.



TEST SETUP INSIDE THE CAVE



IN PROGRESS ACTIVITIES

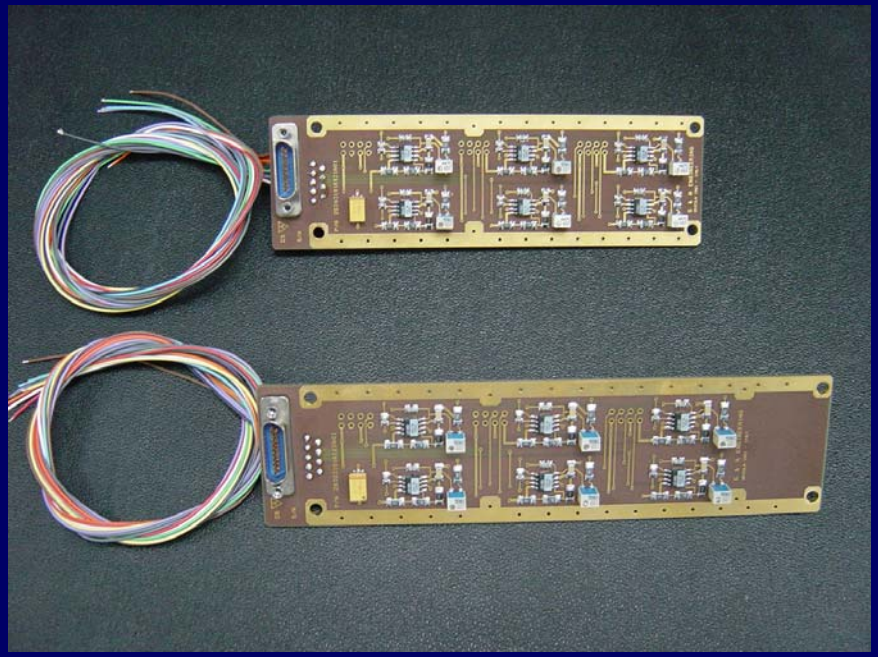
PCB DESIGN AND MANUFACTURING

UGPS 8 QM + 20 FM
UGFV 4 QM + 6 FM
UGBS 2 QM + 3 FM
UGBC 2 QM + 3 FM
UGBP 1 QM + 2 FM

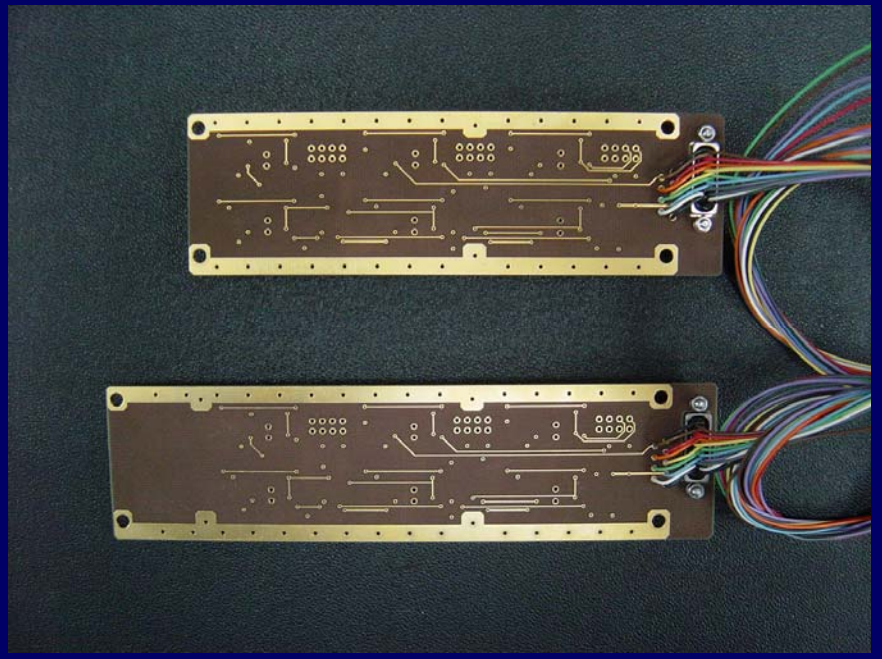
MANUFACTURING OF UG-CRATE MECHANICAL ASSEMBLY

1 Training Module
3 QM / FM

DESIGN AND MANUFACTURING OF UGPS MODULES



TOP SIDE



BOTTOM SIDE

PCB SPECIFICATIONS:

-SUBSTRATE = FR4
-FINISHING = Au/Ni
-CONFORMAL COATING = Silicon Resin (NUSIL)

COMPONENTS PROCUREMENT:

According to AMS Electronics Preferred Part List and Requirements

MANUFACTURING OF UG-CRATE MECHANICS

All mechanical parts have been realized according to Carlo Gavazzi project design

MATERIALS: Aluminium-Zinc Alloy 7075 T7351

GENERAL SURFACE TREATMENT: Clear Anodizing according to MIL-A-8625 Class 1

LOCAL SURFACE TREATMENT: Alodine 1200 according to MIL-C-5541 Class 3
(to warranty bonding properties)