



Space – Defence - SatCom

Company Profile

Equipment List

Defence & Homeland Security

Version 5 – Date 30/07/2017

Internal Facilities Overview:

Engineering CAD Software:

The Data Centre is equipped with n.5 physical Servers running Windows for the infrastructure and domain, and Linux Operative system.

The engineering use updated high performance workstations, with the following software tool:

- *Mechanical Design:*
 - Autodesk Inventor as:
 - 3D Modeler for Mechanics design and Simulation
 - FEM Analysis,
 - fully integrated with Autodesk Vault PDM and Fluentis ERP softwares.
- *Radio Frequency Design:*
 - HFSS for microwave components,
 - FEKO,
- *PCB Routing:*
 - Mentor Graphics
 - PADS Power PCB
 - Spice
- *Software and Firmware*
 - K Develop C++
 - Embarcadero C++ Builder
 - Microchip - Development software
 - Analog Device DSP development software
 - Moog and Danaher motion control software and tools
- *SilkScreen, labelling, graphical layout.*
 - Corel Draw
 - ATS Cutscrip

Engineering CAM (Computer Aided Manufacturing) Software:

- *Sheet Metal:*
 - Punch NC
- *Machining*
 - FeatureCAM
 - HiMill
- *Printed Circuit Board:*
 - Cam 350

The Engineering department, and all the company, is under the yearly quality audit from customers and authorized to design, develop and manufacture E-GSE, M-GSE, Space PCB, Satcom and Defence product.

Equipment List – Data Management:

Data Centre Software Infrastructure:

Engineering Design Collaboration and Document Management Tool

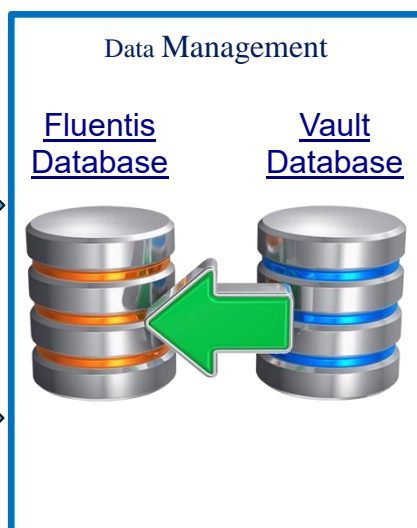


Accounting,
Management
and Operation
Workstations



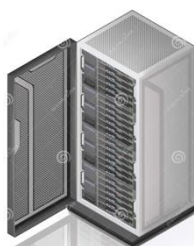
**AUTODESK
VAULT**

Engineering
Workstations

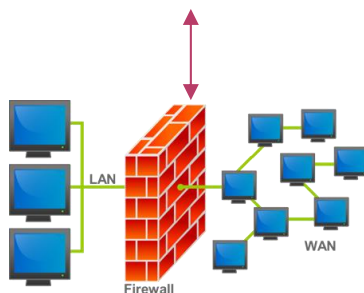


FLUENTIS ERP:

- ✓ Accounting
- ✓ Manufacturing
- ✓ Logistics
- ✓ Procurements
- ✓ Sales
- ✓ Business Intelligence



Main Server:
Domain Controller
Linux Server
Vault PDM Server
Fluentis ERP Server
Redundancy & Backup



Equipment List – Test Facilities:

Internal Test Facilities and Equipment:

- **Mechanical test,**
 - DEA with Renishaw 5 Axis CMM automatic head and PCDMIS CAD version.
 - POLI gantry CMM with Renishaw head and Panasonic camera head, CAPS Software,
 - **M&H Gauge 1μ** for O-GSE measurement,
 - N.5 Inspection Microscopes (Leica),
 - Metallographic Microscope (Carl Zeiss)
 - Hardness Measurement system (Wolpert)
 - Elastic limit measurement system
 - Surface resistance measurement
 - Torque Gauges
 - X-Ray deposition meter (Fischer)
 - Accelerometer & Shock (up to 100g)
 - Magnetic Field Gauge
 - Material surface resistance meter
 - Torque meter
 - Thermal reference,
 - Tensile/Compression test equipment
 - 3 axis Shock Recorder,
 - RPM measurement
 - Noise Level meter,
 - Light radiation meter,
 - Roughness meter
 - Coating Thickness meter
 - PH meter,
 - Thickness Gauge,
 - Peel Tester,
 - Pull Tester,
 - Thermometer,
 - IR Thermometer,
 - Theodolite,
 - Laser meter,
 - Dynamometer (from 50g to 10Tons),
 - Outside Callipers,
 - Inside Callipers,
 - Balances,
 - Turning speed
 - ISO Blocks
 - ISO Round callipers,
 - ISO Thread callipers,
 - Go-NoGo test gauges



Equipment List – Test Facilities

- **Structural test,**

- Load Gauge,
- Hydraulic Pump,
- Winches,
- Structural test Table
- Loading Devices
- Load Masses
- Gauges (mechanical)
- Electronic Gauges 100mm (electronics)



- **Leak Test:**

- **Varian Helium detector:**

Leak test on:
Satellite Transport Container
Housing.



- **DHMR compliant facility – Planetary Protection:**

- **dimensions 3500 x 3000 x 2900, 4° per minute:**

In the frame of Exomars Rover Transport Container, Elital has in-house a chamber DHMR compliant to the ESA standards.

- **Pitch and Roll Flight behavioural Simulator,**

For testing of platforms for moving Satcom antenna.

- **Metallographic test sets**

For material testing on items.

- **Paint Test Facilities:**

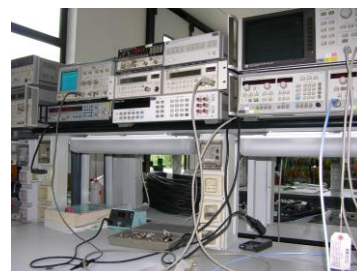
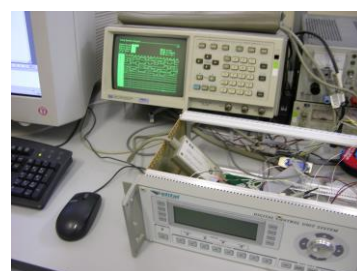
Coating thickness meter for Non Ferrous materials
Coating thickness meter for Ferrous materials
Coating adherence tester
Digital Colorimeter (Konica Minolta)
Gloss meter



Equipment List – Test Facilities

- **Electronic Laboratory test,**

- 10MHz Reference clock Generator GPS Disciplined,
- Network Analyser up to 26 GHz (Agilent/Hp),
- Signal Synthesized Generator 20GHz (Agilent/Hp),
- Sweep Signal Generator (Agilent/Hp),
- RF Counter 26GHz (EIP),
- Signal Synthesized Generator 2GHz (Agilent/Hp),
- Signal Synthesized Generator 1GHz (Agilent/Hp),
- QPSK Modulator (Agilent/Hp),
- Down Converter (Miteq),
- Up Converter (Miteq),
- LCR Meter (Agilent/Hp)
- Digital Multimeters (high precision) (Agilent/Hp)
- Digital Oscilloscope 500Mhz (Tektronics),
- Digital Oscilloscope 1GHz (Le Croy),
- Digital Oscilloscope 8GHz (Tektronics),
- Programmable signal attenuator (Agilent/Hp),
- RF Spectrum Analyser 40GHz (Tektronics),
- RF Spectrum Analyser 20GHz (Tektronics),
- RF Portable Spectrum Analyser 6GHz (Anritsu),
- Power Meter (Agilent/Hp),
- High Power Probe,
- Differential Power Meter (Gigatronic),
- RF High precision and reference connectors,
- RF Accessories,
- RF cables,
- RF Wave Guide,
- Digital controlled Wave guide attenuator (FMI),
- Wave guide Attenuator Set (FMI),
- WEE Cable test station (up to 9000 points)



- **Brazing Line (space qualified),**

For brazing of RF space/flight housing and packages.



Equipment List – Environmental Test Facilities (ETF):

- **RF Anechoic test chamber:**

RF test chamber set for testing RF equipment up to 26GHz.

- **Environmental Chamber -55 +120°C (dimension 2800 x 3000 x 2900, 4° per minute),**

High power water cooler and heater for guaranty the high performances of the chamber. The system can operate stand alone or PC remote controlled with logging capability.

- **Environmental Chamber -55 +200°C (dimension 2 cubic meter, 4° per minute),**

High power water cooler and heater for guaranty the high performances of the chamber. The system can operate stand alone or PC remote controlled with logging capability.

- **Environmental Chamber -85 to +200 °C (dimension 0,5 cubic meter, 10°per minute),**

Environmental chamber for electronics boards and equipment test. The operate stand-alone with the on board logging system.



- **Thermal Shock -85 + 150°C**

Environmental chamber for electronics boards and equipment test.

It can operate in stand-alone mode with the on board logging system.

- **Oven 0-350°C (internal dim. 55x55x55 cm),**

Oven for thermal treatment on mechanical parts

- **Oven 0-1200°C (internal dim. 30x30x30 cm),**

Oven for thermal treatment on mechanical parts



Equipment List – Manufacturing

Manufacturing Facilities:

- **Machining Facilities:**

- Fidia (Italian manufacturer) High Precision Milling Machine (600x600x400mm), 24.000 rpm Spindle, 24KW Power spindle (20 tools revolver),
- Fidia (Italian manufacturer) High Precision Milling Machining (2200x1000x850mm), 24.000 rpm Spindle, 30KW Power spindle (36 tools revolver),
- Doosan Automatic Lathe with milling capabilities,
- Rambaudi milling machine 1600x800x600mm,
- Nomo Arno milling machine
- Deckel milling machine,
- Charmilles EDM Machine,
- Grazioli Dania Turning Lathe 2000x600mm,
- EBM turning lathe
- Johnes and Shipman Internal External Grinding Machines,
- Tacchella Internal External Grinding Machines.
- J. Wang Plane grinder,
- Nesi Special tools grinder,
- Elbo System High Precision tools Setter



- **Sheet Metal Facilities:**

- Trumpf automatic Punch,
- Bystronic 250Tons, 4meter Bending Machine,
- Schiavi Promecam 75Tons 2 meters Bending Machine,



- **Welding Facilities:**

- Miller Tig 700A,
- ESAB Mig 500A,
- Hitachi Tig 500A,

- **Other:**

-
- MEP Shark SAW,
- ESAB Plasma Cutter,
- Doall SAW,
- 50Tons Hydraulic Press Brake,
- Chanfer machine



Equipment List – Manufacturing

- **PCB Manufacturing:**

- Pluritec drilling machine (120.000 rpm),
- Pluritec milling machine (60.000rpm),
- Pluritec combined machine (60.000rpm),
- Posalux drilling,
- BiEffeBi Hi temperature and vacuum press,
- ENIG Galvanic Line,
- OVERSIZE PCB machine,
- Copper deposition line,
- Hatching Line,
- Occleppo copper developer line,
- Resco Dry file developer line,



- **PCB Test Facilities:**

- 3x Leica inspection microscope,
- **CMM gantry type**, with Renishaw head and Panasonic camera head, CAPS Software,
- Metallographic Microscope (Carl Zeiss)
- **X-Ray** deposition meter (Fischer);
- Lloyd tensile/compression test equipment high precision load gauge,
- Ionic Contamination measurement;
- Vision Engineering Stereoscope,
- Thickness meter,
- Buried Resistors measuring tester,
- Viscometer,



- **Clean Room ISO8:**

- ORC Exposimeter,
- E.G. Photo Plotter,
- Kodak Developer Machine,
- 2x Ordyl dry film laminator,
- Solder Resist deposition table
- Solder Resist developer line,



- **Clean Room ISO7:**

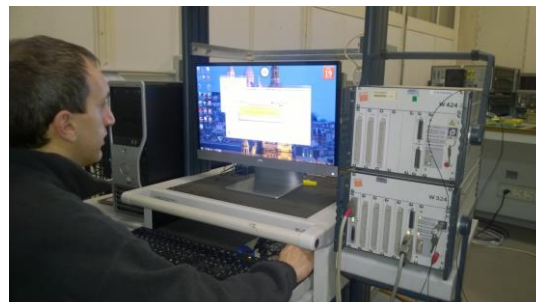
- Vitrosteel AT813 (n.3),
- 40x Wild inspection microscope (n.3),
- Yokogawa LR4110E,
- Furnace PCE CE105Z460,
- Leak Tester Varian BR15,
- Thermal shock to MIL-STD-883 meth.1010 B e C
- Microscope Olympus SZX12,
- Illuminator Leica LLS100,
- Precision Welding Phase Master 7,
- Unità Trattamento Aria SIDAN SD1500 1V,
- Ultrasonic cleaning Emag EMMI-40HC,



Equipment List – Manufacturing

- **Cabling Facilities:**

- Olympus microscope with Digital acquisition system,
- Vision Engineering Stereoscope,
- Daniels crimping tool set for military connectors,
- Daniels crimping tool set for RF connectors,
- Reworking tool complete set for military connectors,
- Pace reworking machine,
- High voltage cable tester,
- Ionization equipment,
- Weller welding stations,
- Electrostatic Measurement System
- LCR Meter (HP)
- Dielectric Rigidity measurement system



- **Silk Screen Facilities:**

- Exposition machine,
- Film developer,
- Silk-screening tables,
- Silk-screening automatic tables,
- Tampongraph machines,
- Roland cutting plotters,
- 2x Hereaus ovens.
- Tension meters,
- Peel tester,

- **Assembly, Integration and Test Area**

The Area is 400 m², some pictures about:



Helicopter



Satellite Transport Container



Military Trucks

Customer Feedbacks:

Airbus

See on the right side, the appreciation to Elital performances reported on the Airbus intranet information site:

ESA Estec

"I fully appreciate your effort in finalising the dip-coating machine, this seems to be a very nice piece of equipment"

ESA Estec

"ESA considers the work done good and promising. The activity is really challenging, risky but really innovative as well."

Thales Alenia space Italia

I'm very glad to thank you to everybody and to Each of You. This achievement was possible only with your support, always available when requested, in this difficult year.

Thales Alenia Space France

"I can report that my team and I are now satisfied with the design of the Container and that we are happy with the work that has been done so far."

OHB

"First of all I will like to say thank you for the effort which you have submitted for this first delivery.

Moreover I will like to inform you that myself and my colleagues from OHB, we are pleased by the work and the quality of the parts (MGSE) which you have delivered today.

Ones again, congratulation and we hope that in the future we will receive the same standards of quality. (I can tell you that some of my colleagues have mentioned the fact that this was the first time when Italians are beating Swiss peoples at quality)."

Airbus

"That's exactly what I wanted. Thank you."

CONAE

"For the rest, in general and in my opinion, the MGSE performs well and it is stable even with a wide temperature range."

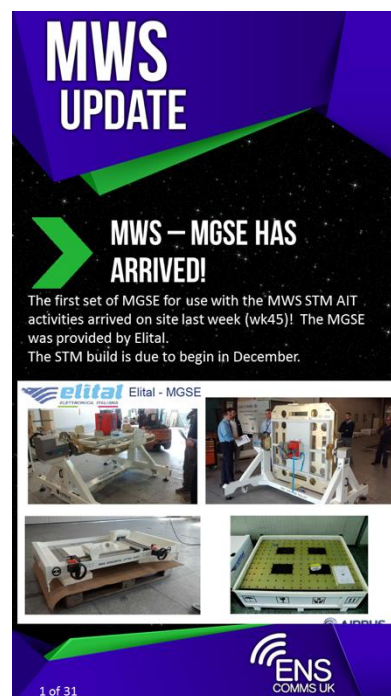
ESA ITT

ESA ESA ITT AO/1-7992/14/NL/MH

Title: AMC/METAMATERIAL ANTENNAS FOR BROADBAND CONNECTIVITY

1.2 Reference Documents

G. Arista, J. Brunetti, A. Cappelli, R. Centi, S. Coralluzzo, G. Pandoli, [...] "RESKUE Project: Transportable Reflectarray Antenna for Satellite Ku-band Emergency Communications", ESA ESTEC Annual Workshop on Satellite Antennas 2011



Addresses:

Hereafter the Elital addresses:

Modulo 1: via U. Nurzia - N. Ind. di Pile - 67100 L'Aquila

Modulo 2: c/o Polo Elettronico - ss.17 Ovest, loc. Boschetto N. Ind. di Pile - 67100 L'Aquila

Modulo 1:

Elital's Head Office, this plant is located at 400m from modulo 2. Facilities in this area:

- ✓ Direction and Management;
- ✓ Research and Development department;
- ✓ Meeting Rooms;
- ✓ Electronic and RF laboratories;
- ✓ Printed Circuit Boards Clean Room Class 100.000;
- ✓ Brazing laboratory in Clean Room Class 10.000;
- ✓ Cabling Department;
- ✓ Accounting;

Modulo 2:

- ✓ Mechanical workshop
- ✓ Assembling Integration and Test
- ✓ Test Facilities
- ✓ Stock house

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