



efacec

technology that moves the world

2011-11-28



efacec

Efacec Group

A Portuguese company present in over 65 countries in all 5 continents.

With more than 4.500 employees and over 1 billion euros of turnover.

Present in sectors that represent world future development, from energy to transportation and engineering, from the environment to services and renewable energy.

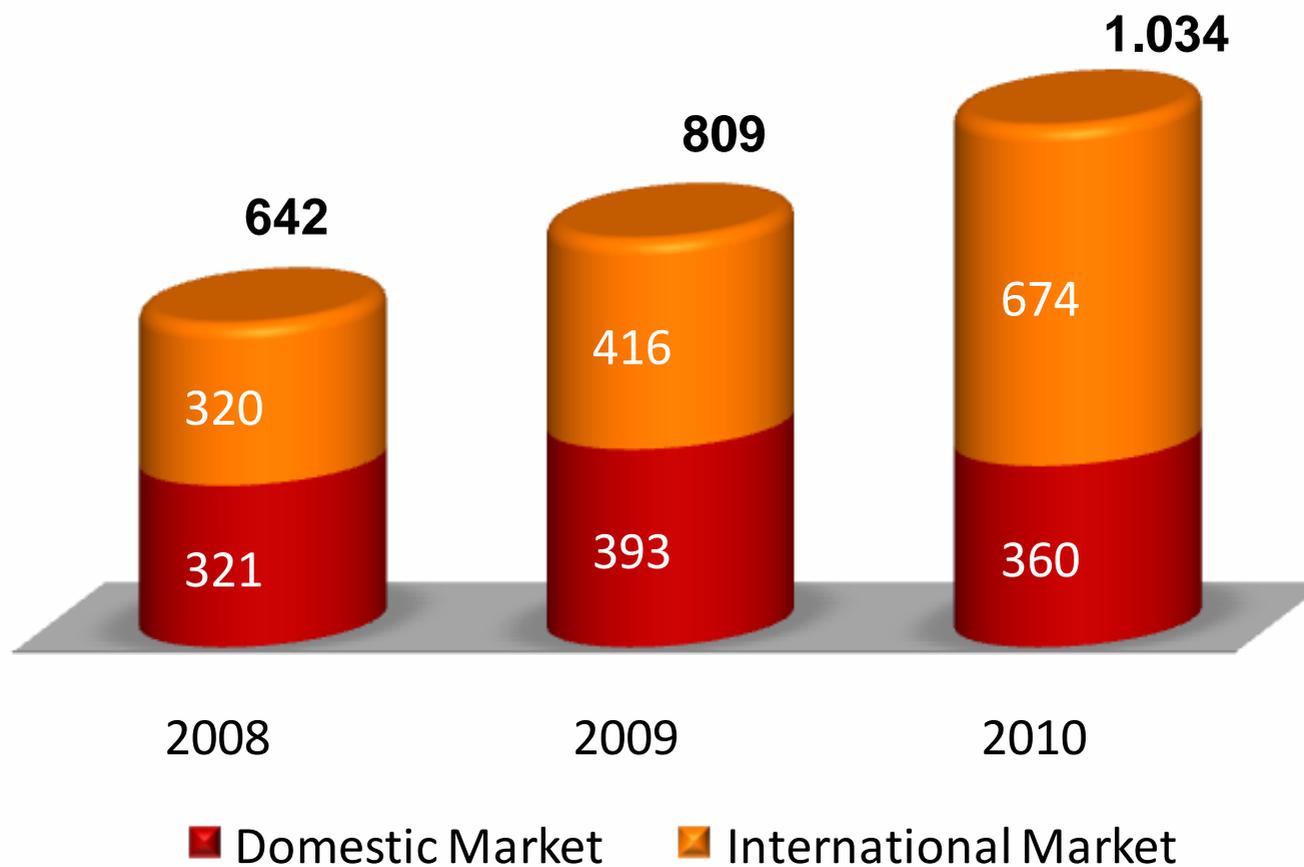
Developing the state of the art technologies through competence, quality and entrepreneurship.



Sales Trend

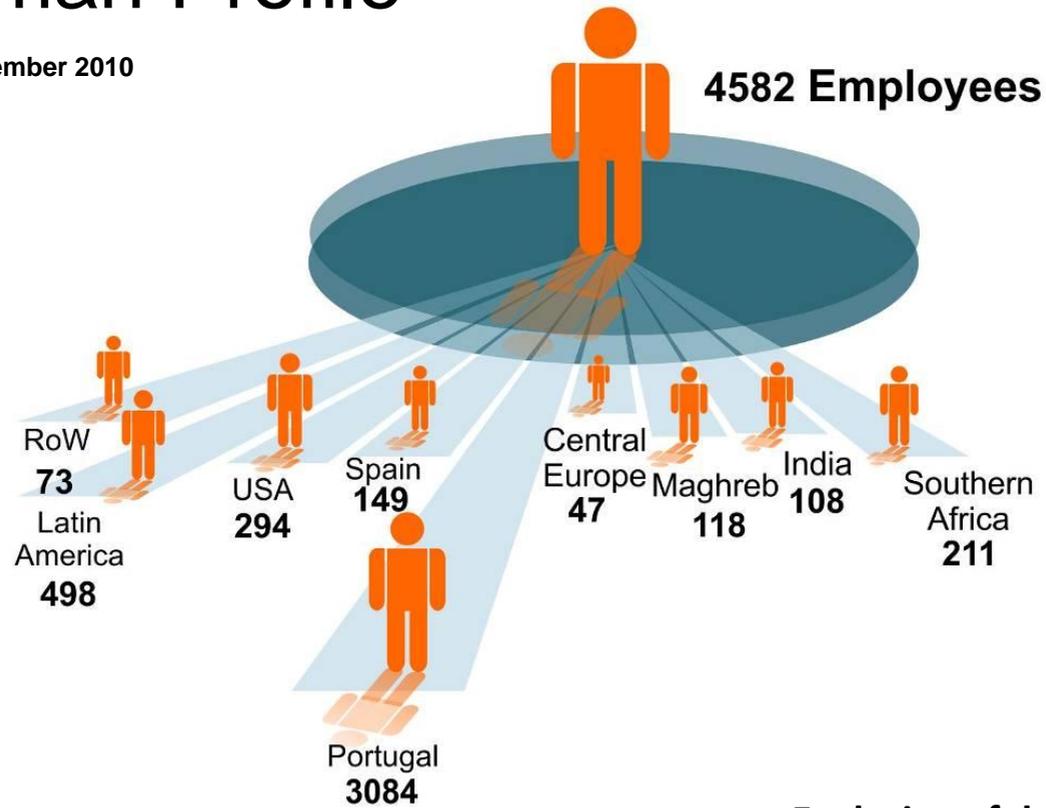
Domestic Market/International Market

Unit (M€)

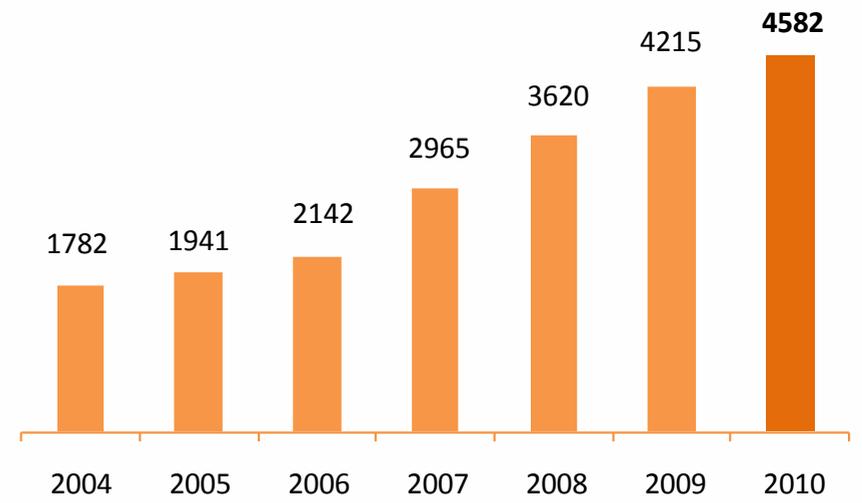


Human Profile

31st December 2010



Evolution of the number of employees



Business Areas

Energy

Engineering,
Environment
and Services

Transport
and Logistics

- **Transformers**
- **Switchgear**
- **Servicing**

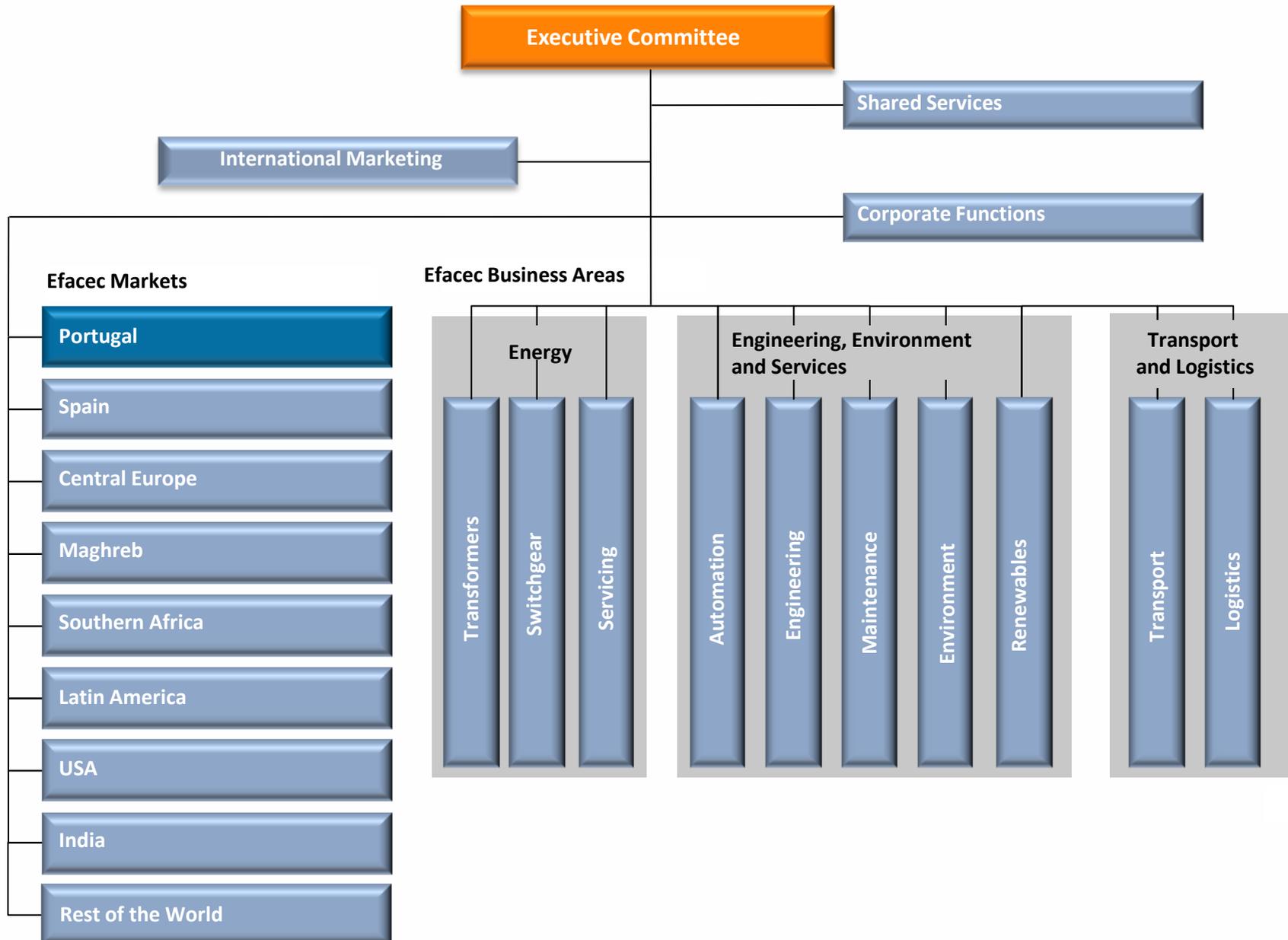
- **Engineering**
- **Automation**
- **Maintenance**
- **Environment**
- **Renewables**

- **Transport**
- **Logistics**



Business Units

Organizational Model



The Efacec SPACE Activity

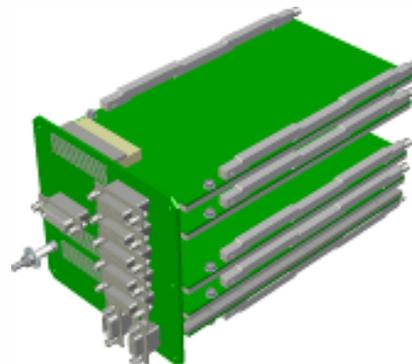
The SPACE activity projects, in EFACEC, started in the end of 2002 and are so far, developed in the frame of the Portuguese policy of investment in SPACE and in the rules of ESA that foresee the geographical return.

In this context EFACEC has been awarded the following contracts:

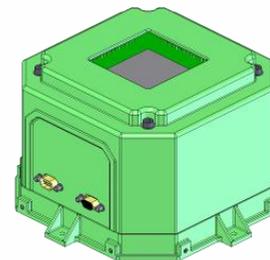
- EuTEMP – Autonomous Temperature Recording Unit
- CTTB – Components Technology Test Bed – phase B
- CTTB – Components Technology Test Bed – phase B1
- PIPS – Portuguese Interplanetary Particles Surveyor – Phase A
- MFS – Multi-Function Spectrometer – phase B0 (breadboarding)
- AEEF – Alphasat Environment Effects Facility – phase B0
- MFS – Multi-Function Spectrometer – phase B1 (engineer model)
- AEEF – Alphasat Environment Effects Facility – phase interim
- AEEF – Alphasat Environment Effects Facility – phase B
- AEEF – Alphasat Environment Effects Facility – phase C/D
- BERM – BepiColombo Radiation Monitor
- CTTB – In-flight preparation
- ABPA – Altimeter breadboarding



EuTEMP



CTTB



PIPS

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The **missions** where these contracts are applied are:

EuTEMP – International **S**pace **S**tation (External Columbus platform)

CTTB – Integrated on **Alphasat** (ARTES)

AEEF

PIPS – Aiming **Bepicolombo** (Mercury)

MFS – Aiming several missions (**Alphasat**, Bepicolombo, ...)

BERM



ISS



Bepicolombo



Alphasat

Capabilities

Strategic Profile:

To design and construct electronic systems and Instruments for Space Applications as well as integration activity.

Skills:

Electronics design;
Mechanical design;
Structural analysis;
Thermal analysis;
Radiation analysis;
Firmware and Software development and test;
Specialized procurement including test and qualification;
Manufacturing, integration, test and qualification;
Product Assurance.



The Efacec SPACE Activity



Capabilities

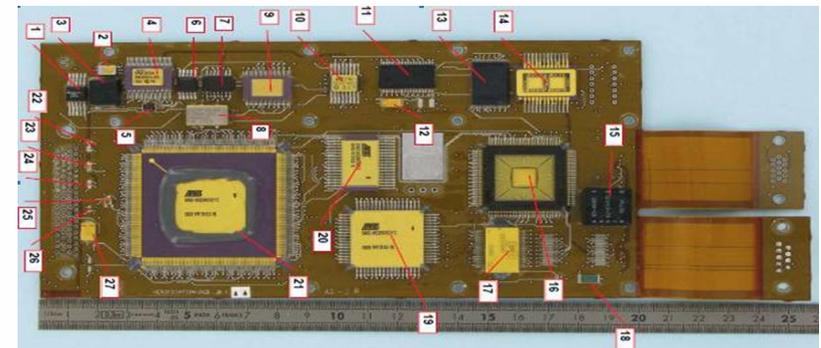
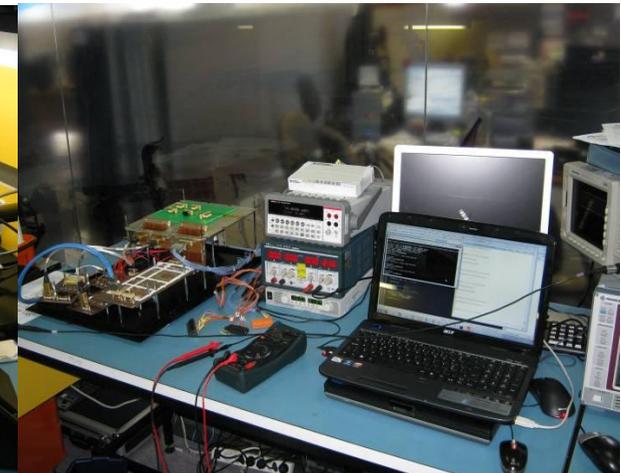
EFACEC has established an assembly capability for space electronics

Clean Room 100.000

Qualified (trained) personnel

Qualified processes

Verification Campaign



The EuTEMP

EuTEMP is an autonomous temperature recording unit completely designed and manufactured by EFACEC. EuTEMP was installed and checked-out on the International Space Station on the external platform of Columbus.

It has 6 temperature sensors that are glued to several of the EuTEF experiments designed by European scientists aiming studying several behaviours in the microgravity environment.



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The EuTEMP

EuTEMP was completely developed, designed, manufactured and tested by EFACEC. EFACEC also contributed to EuTEMP's integration and check-out.

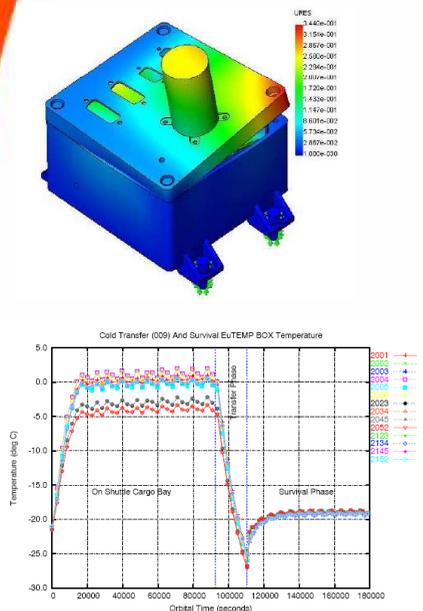
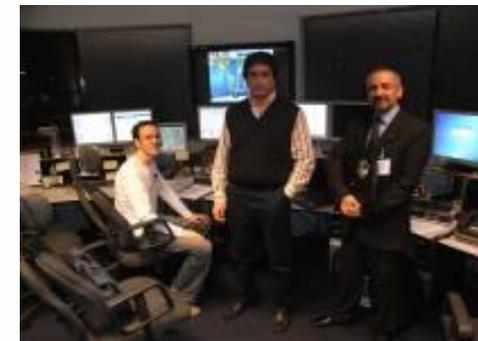


Figure 33: Temperature of EuTEMP Box in Transfer (009) and Survival



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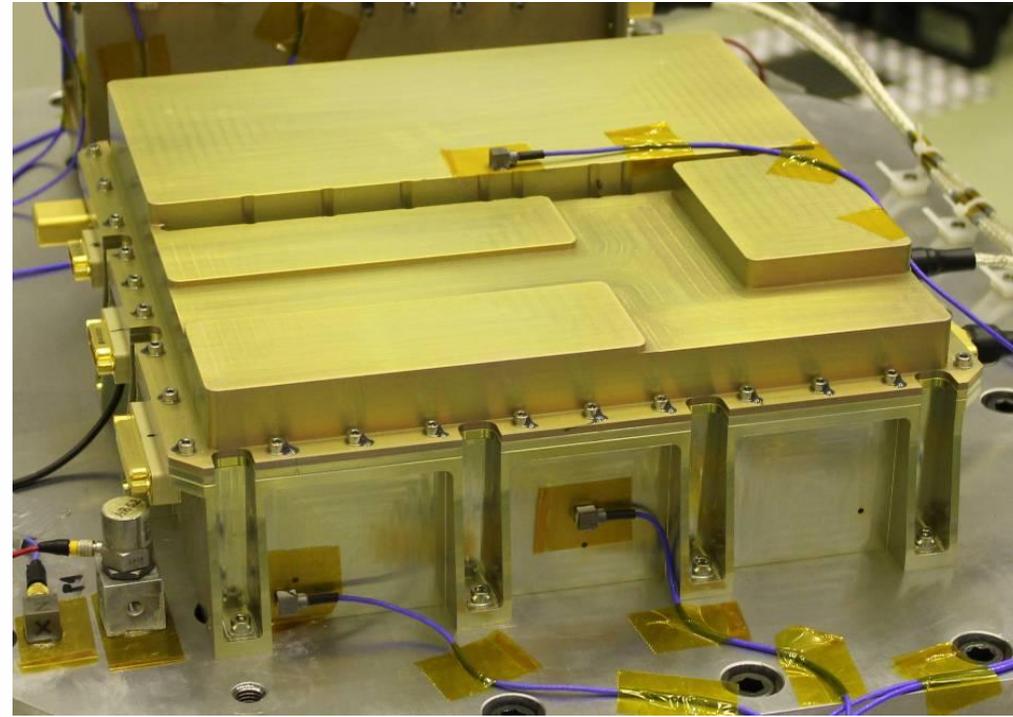
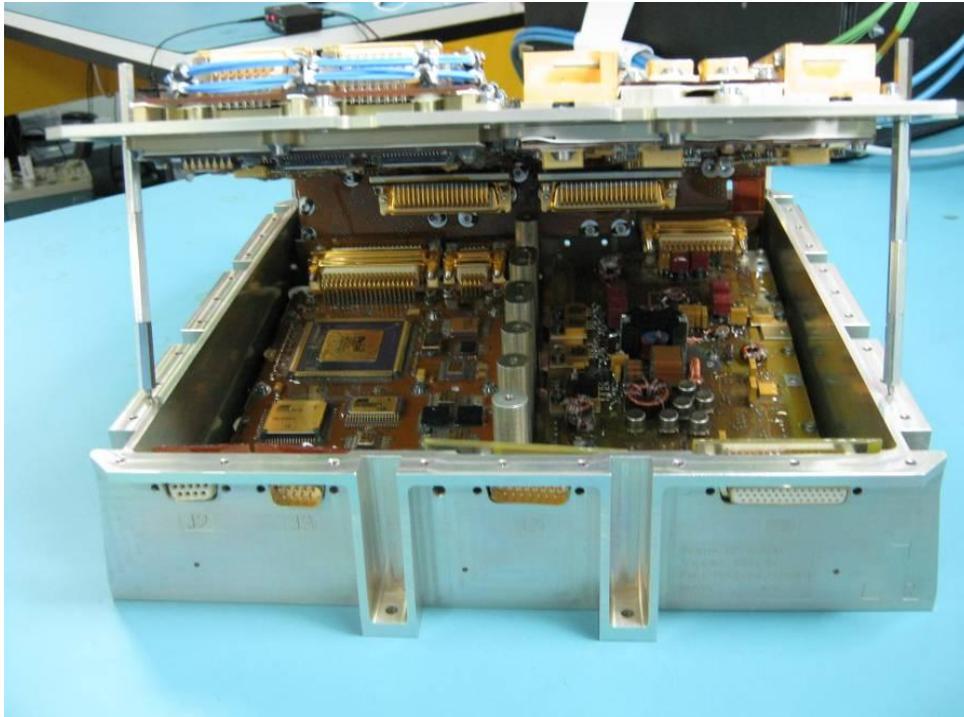


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The CTTB

CTTB is a component technology test bed aiming to create a test platform able to accept test boards holding EEE components whose behaviour, under Space radiation environment, is a target to study.

The CTTB has been build tested and qualified during 2010 / 2011



The Efacec SPACE Activity

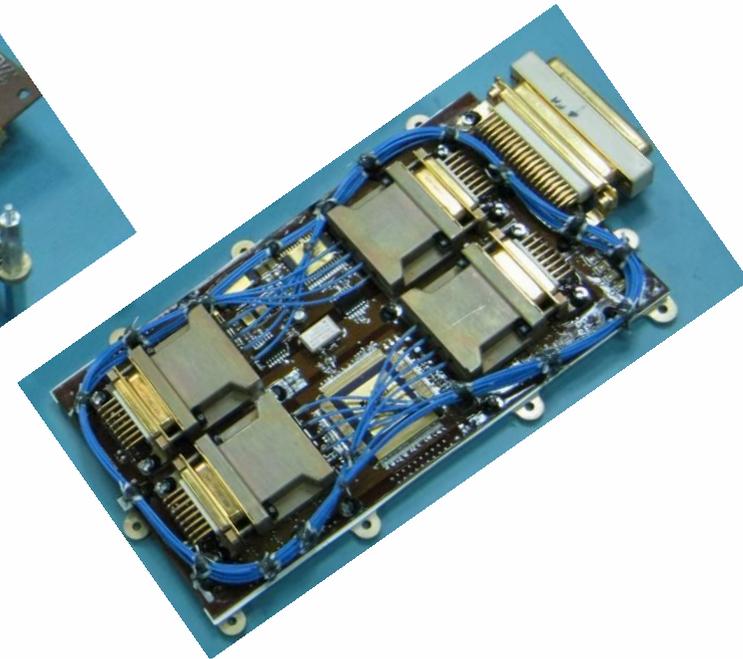
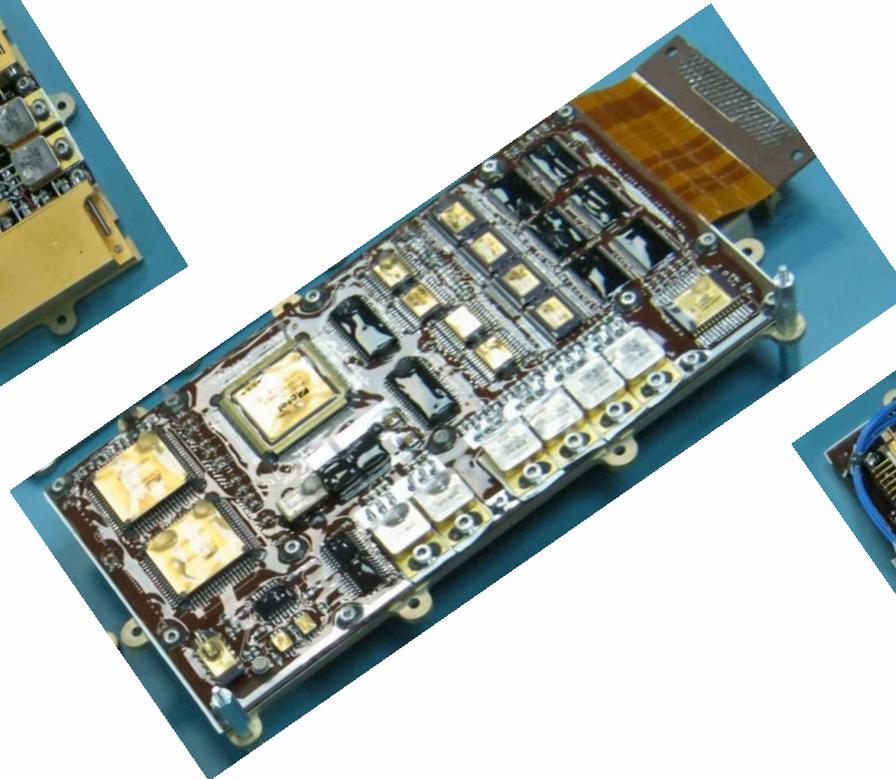
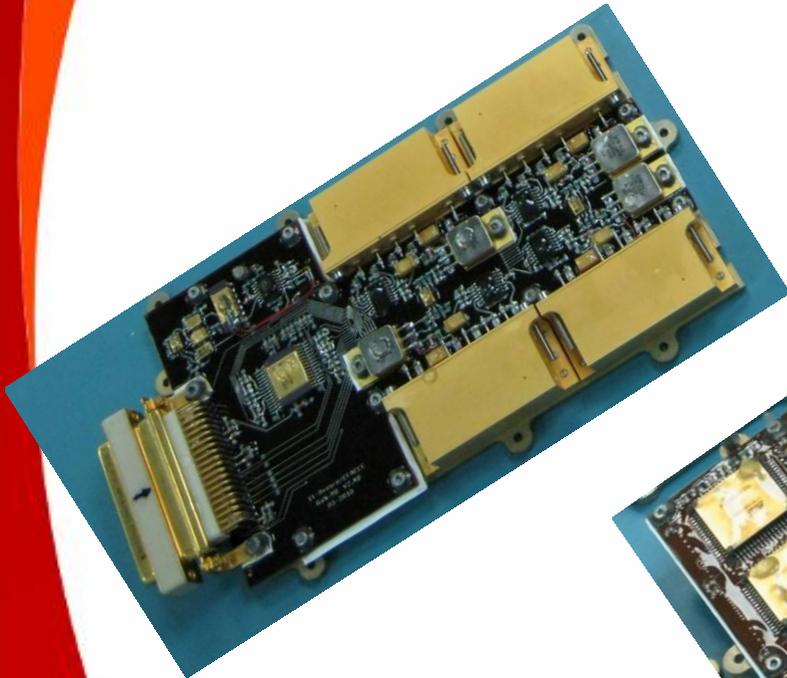
The CTTB

The CTTB now encompasses three experiment boards :

GaN Oscillators Board

Memory Test Board

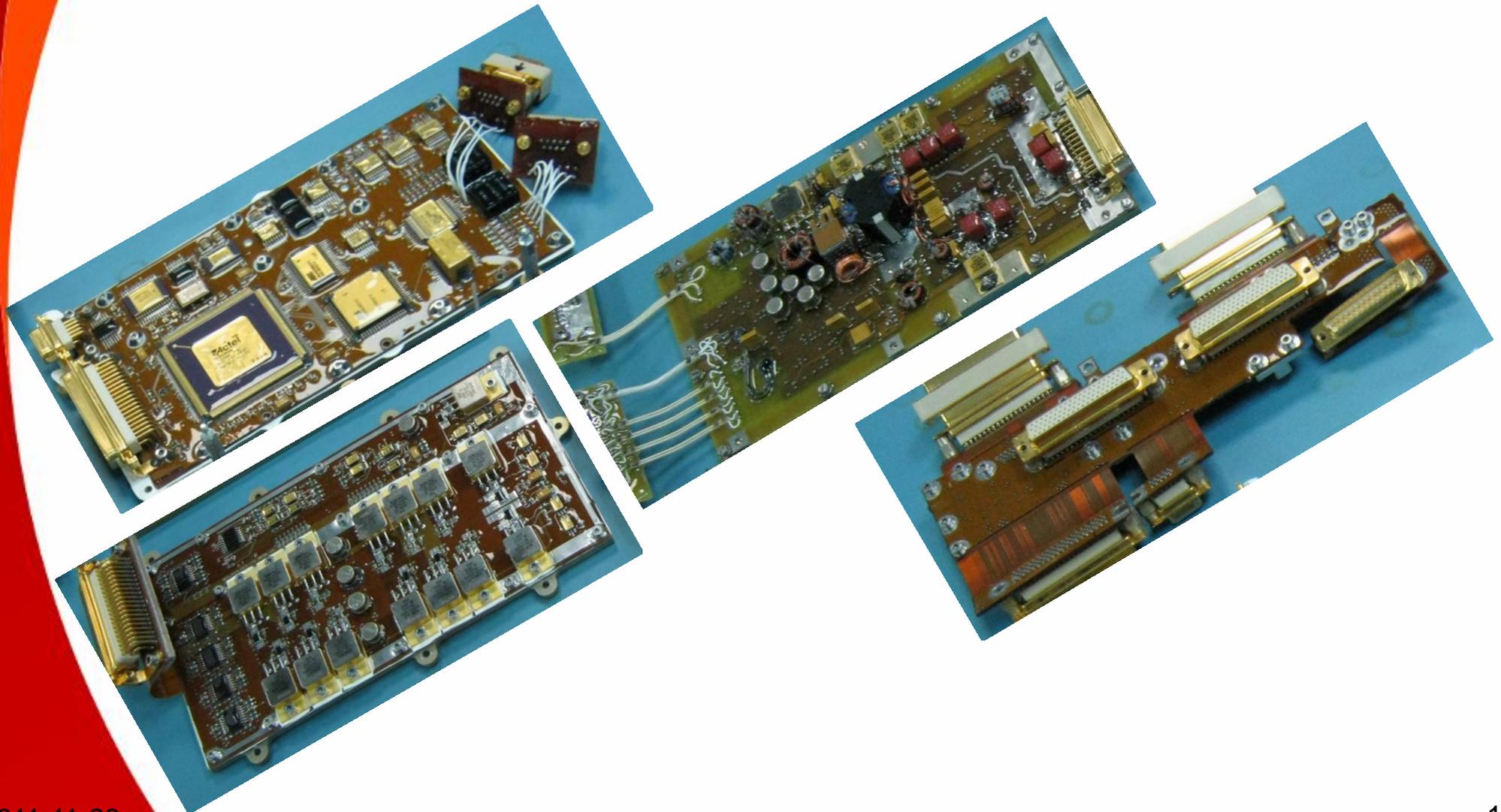
Optical Link Board



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The CTTB

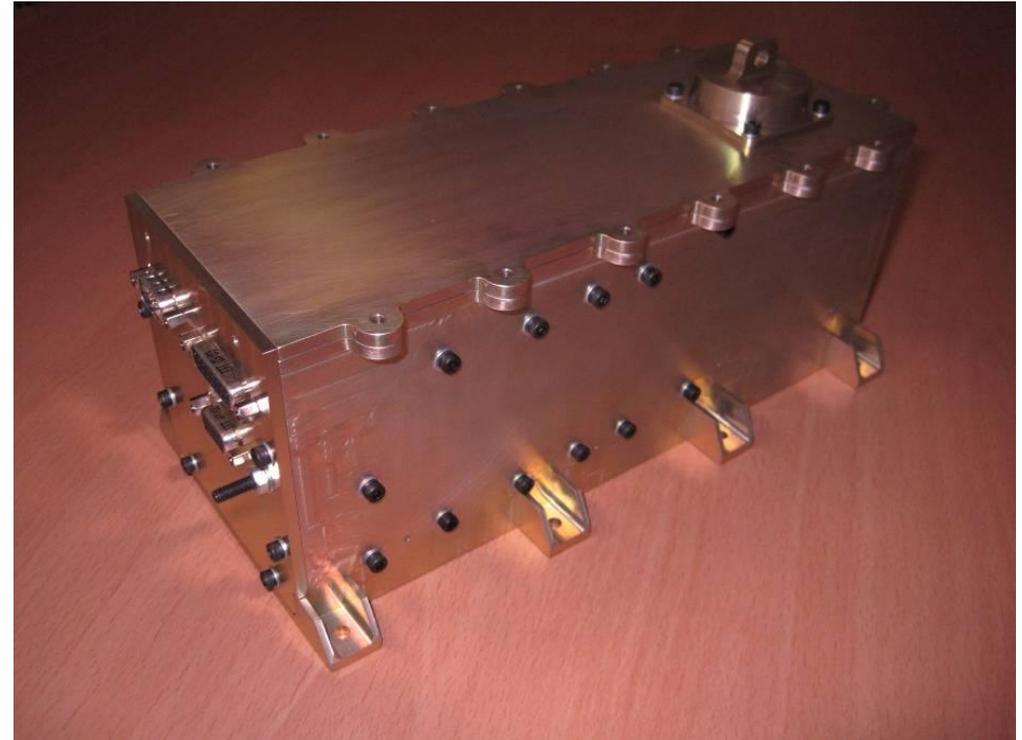
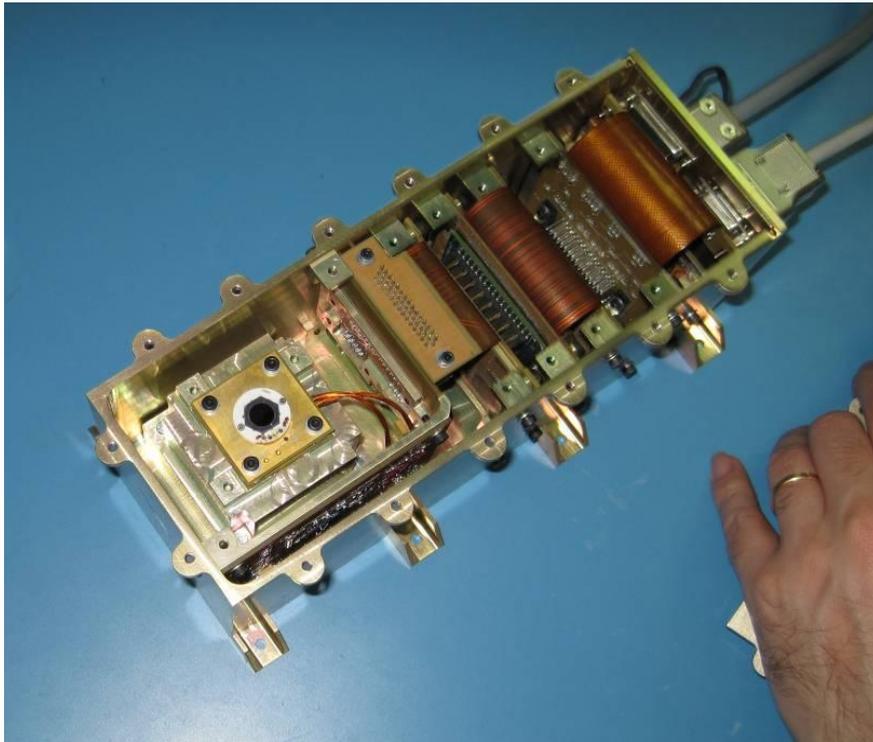
CTTB includes a core composed by a CPU board, a PDU board and a PSU board.
All these boards connect together using a backplane board



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The MFS

The MFS unit have been re-designed and build

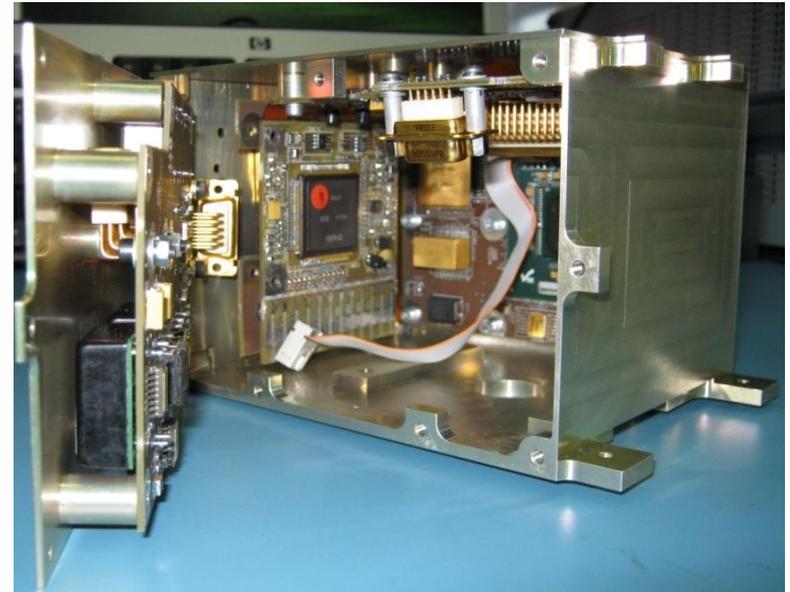


The MFS

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The BepiColombo

The MFS radiation Monitor evolved to BERM for the BepiColombo mission.
The BERM EM is already manufactured and tested;
It is smaller than MFS; it is lighter; it is powered by the SC 28V bus; it has a 1553 I/F.



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