ALTER

ALTER TECHNOLOGY

Inspired by Knowledge

AMICSA, 16 – 18 June 2025

TÜVNORDGROUP

Mobility
Intermodally
linked transport

Industry
Safety for the
digitalised industry

**Energy &
Resources**
Driving forward
the energy transition

**Digital &
Semiconductor**
Essential technologies
for a digital world

Certification
Certifications
build trust

**People &
Empowerment**
Empowering and strengthening
people

We create trust in technology

Below ground, on ground, in space.

ALTER

Alter Technology Group

82
Million Euro Revenues

470
Employees

36
Years in the market

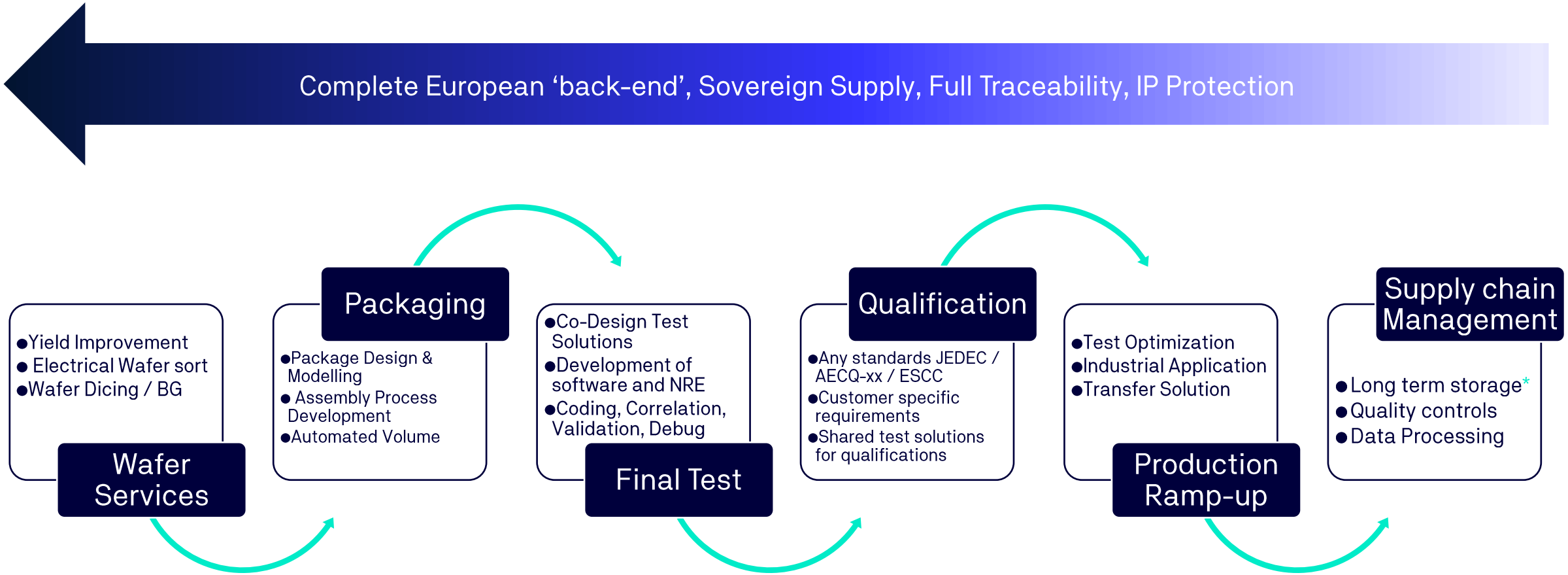
7
Sites

>8500
M² Laboratories

- ALTER UK – Livingston / Glasgow
- ALTER HTV - Bensheim
- ALTER France - Toulouse
- ALTER Spain - Seville
- ALTER Spain - Madrid

ALTER

OSAT - Full Turnkey Solution



* Thermal-Absorptive Gas-Barrier (TAB®) https://www.htv-gmbh.de/en/services/long-term-conservation

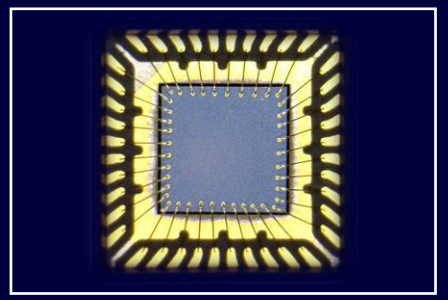
ALTER

End-to-end,
in-house capability

Microelectronics Packaging

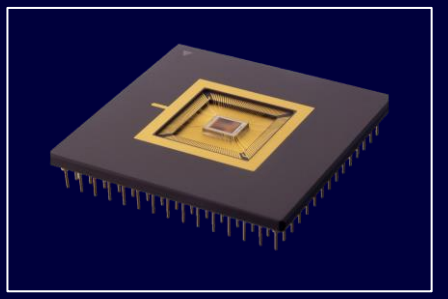
Fast ASIC Prototype

- MOQ 10pcs
- MPW Wafer Dicing
- Wide Range of Packages
- Accelerates time to market
- 10-day turnaround



Hermetic & Hi-Rel

- Space, Aerospace & Defense
- EN9100 Certified
- JOSCAR Certified
- ESA Process Capability Approval

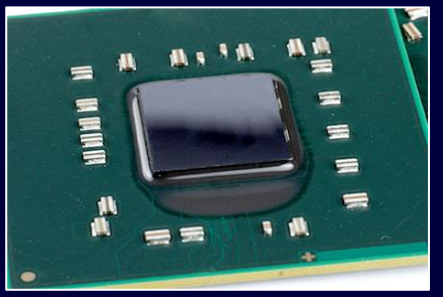


Overmolded QFN

- Production 1k to 10mpcs
- Low Cost & Scaleable
- Open-Tooled Leadframes In Stock
- Volume Testing

Chip-On Board

- LED CoB
- Flip-Chip
- Encapsulation



Capacity:
10m die placements per year
70m wire bonds per year

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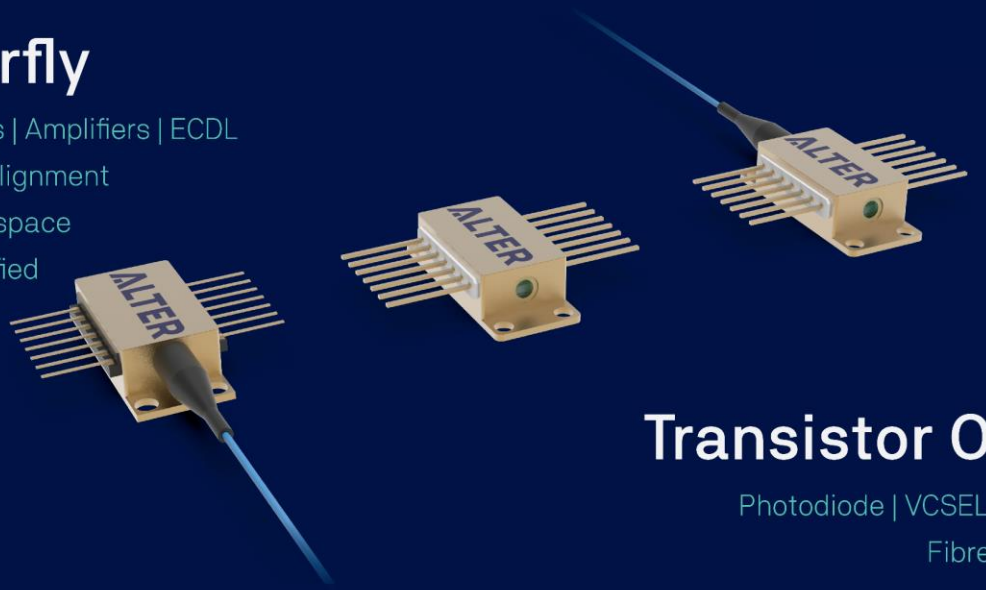
Photonics Packaging

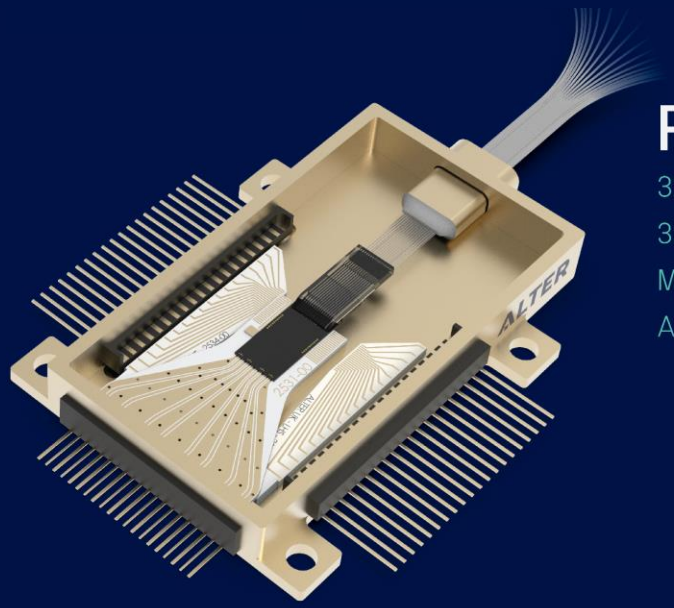
Butterfly

Laser Diodes | Amplifiers | ECDL
FAC & SAC Alignment
Fibre | Free-space
Space Qualified



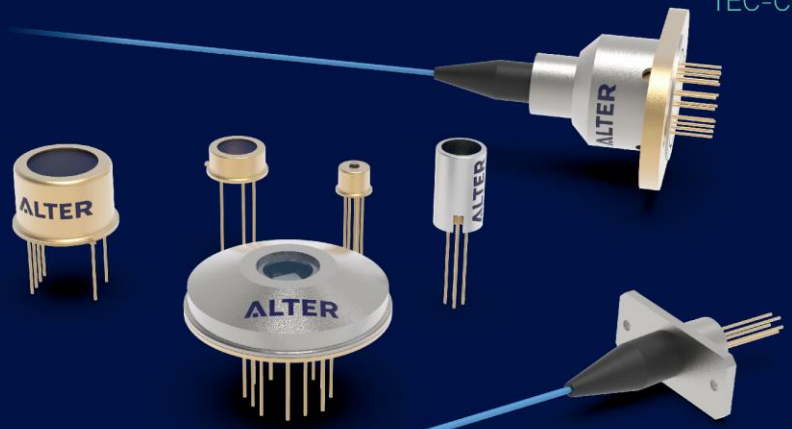
PICs

32 Optical Channels
30 GHz RF (GSG)
MPW Compatible
ADK Available



Transistor Outline

Photodiode | VCSEL | Laser Diode
Fibre | Free-space
TEC-Cooled



Quantum Sources

Highly Stable | Narrow Linewidth
Micro-optic Assemblies
Vapour Cell Reference

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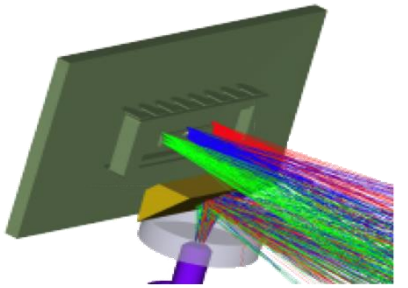
Prototype to Volume
Custom Photonic Solutions

Capacity:
10k active alignments per year

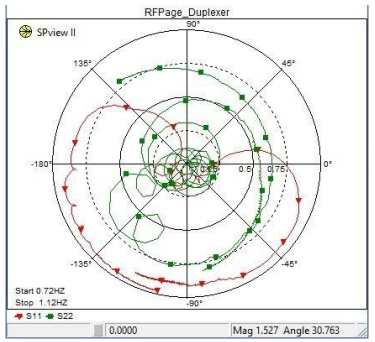
DESIGN & MODELLING

Finite Element Analysis Optical Design

Hi-Reliability Packaging Optimisation



RF S-Parameters



Custom Package Design

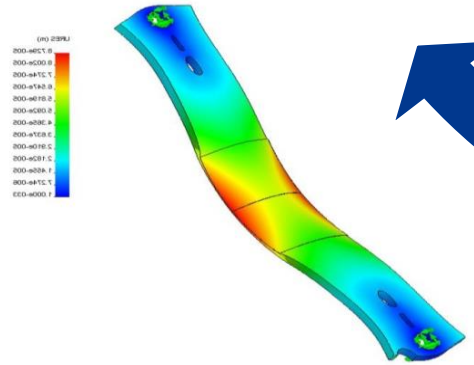
Zemax Optical Modelling

Mechanical Stress Modelling

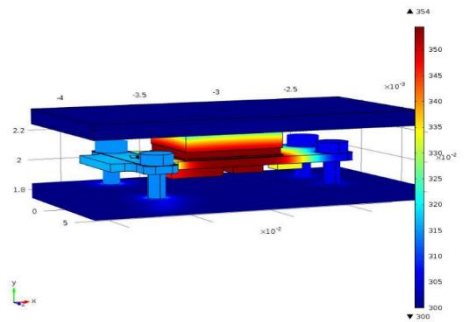
Thermal Modelling (FEA)

Microelectronic & MEMS Packaging

New Product Introduction



Optoelectronic & Optical Packaging



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Total semiconductor testing

As an NPI (New Product Introduction) facility, Alter Technology France provides comprehensive semiconductor electrical testing, component qualification, and characterization services.

Our offerings cover both wafer-level probing and final product testing, ensuring that each semiconductor device is validated against its intended application requirements and performance standards.

One Stop-shop

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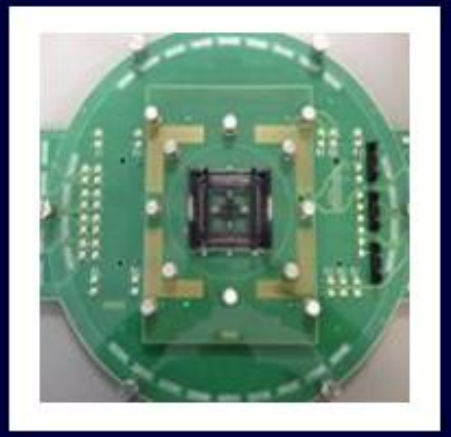
Total semiconductor testing

- Electrical testing in temperature -90°C up to +300°C
- Wafer Electrical Testing (Probe) in temperature -40°C up to +200°C
- Reliability tests
  - Burn-In,
  - HTOL,
  - HTRB/HTGB,
  - IOL,
  - ELFR,
  - HAST,
  - THB etc.
- Mechanical & Environmental testing
  - Mechanical shock
  - Vibration (Sinus & Random)
  - Acceleration
  - Salt Spray
  - Temperature Cycling
  - Temperature shock
  - Extreme Temperature cycling -185°C up to +310°C
  - Thermal Vacuum
- FPGA & Programmable component Programming
  - Support all programmable logic families - FPGA, CPLD, PLD, etc.
  - Support all programmable logic manufacturers - Xilinx,
  - Intel/Altera, Actel/Microsemi, Lattice
  - Pin counts to 1000+
- Total dose COBALT 60 (TID) radiation and TNID (Displacement Damage)



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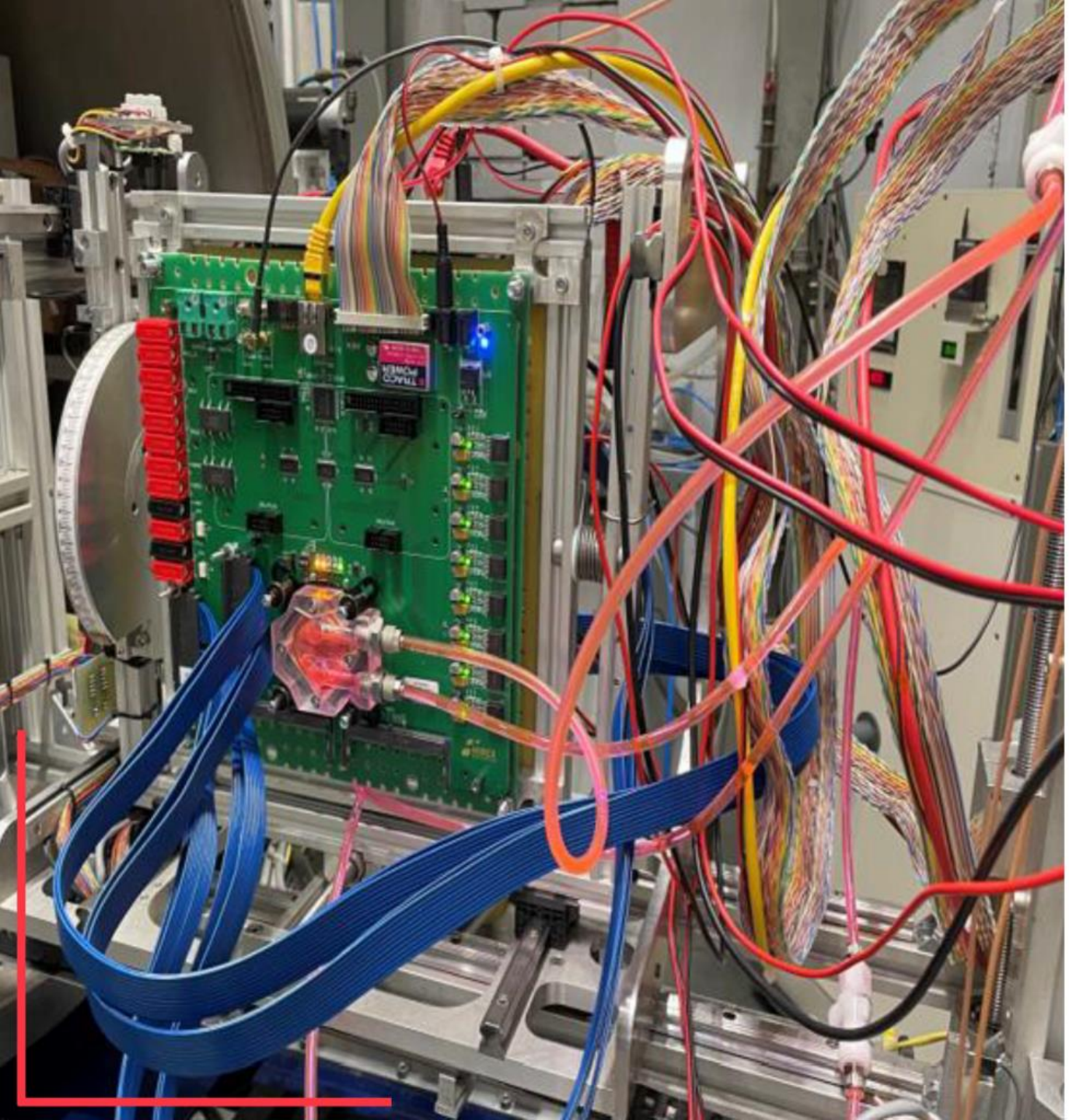

Radiations services

Radiation engineering at Alter Technology France leverages both industry-standard tools and **proprietary in-house software** to efficiently evaluate the behavior of semiconductor devices under radiation exposure.

In addition to simulation and analysis, ALTER France performs **radiation testing** on a wide range of semiconductor components, packages, modules, and electronic boards. These tests cover Single Event Effects (**SEE**), Total Ionizing Dose (**TID**), and Displacement Damage (**DD**), using exposure to **heavy ions, protons, neutrons**, and **cobalt-60 sources**, as well as **laser** and **X-ray** irradiation systems.

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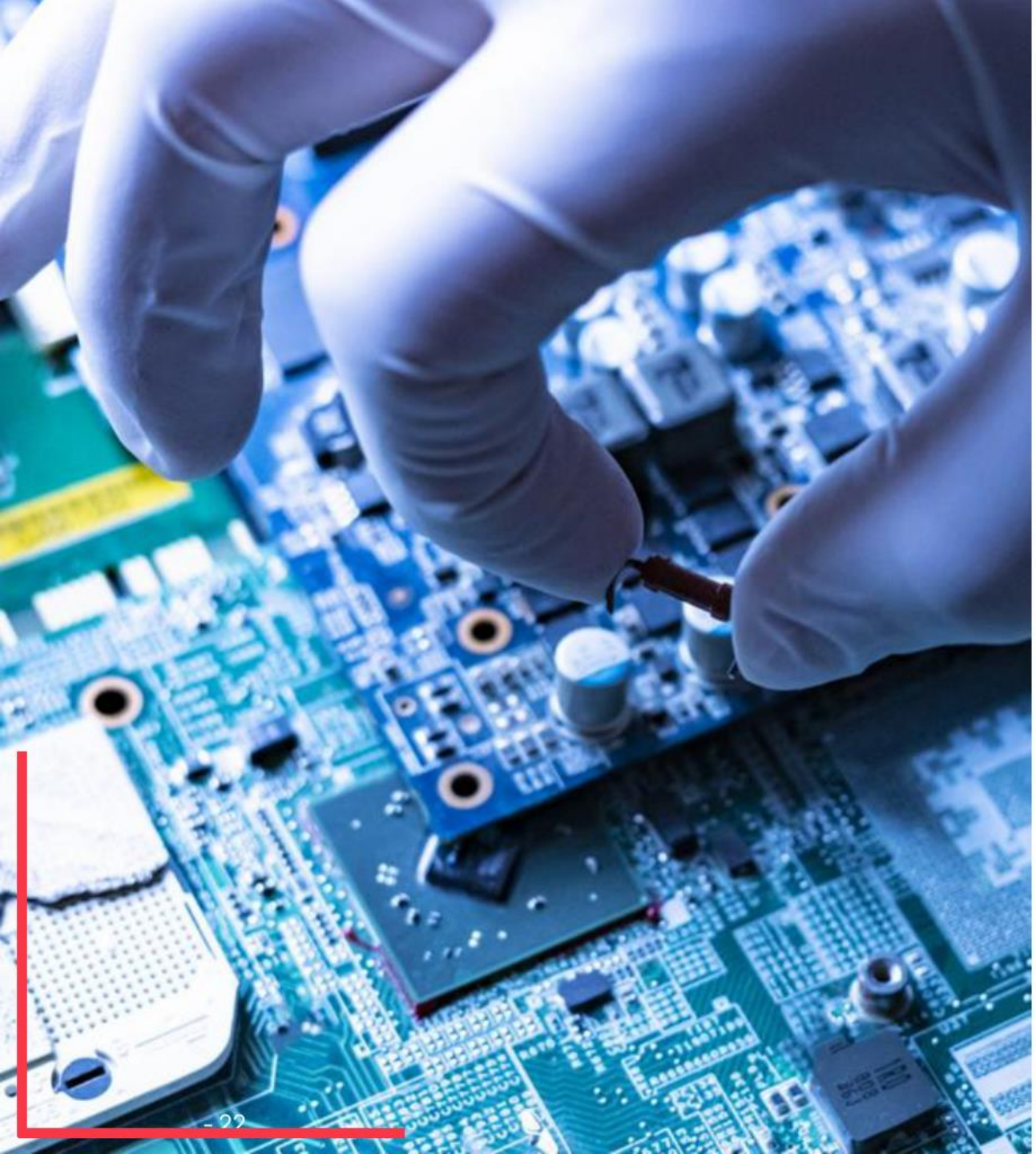
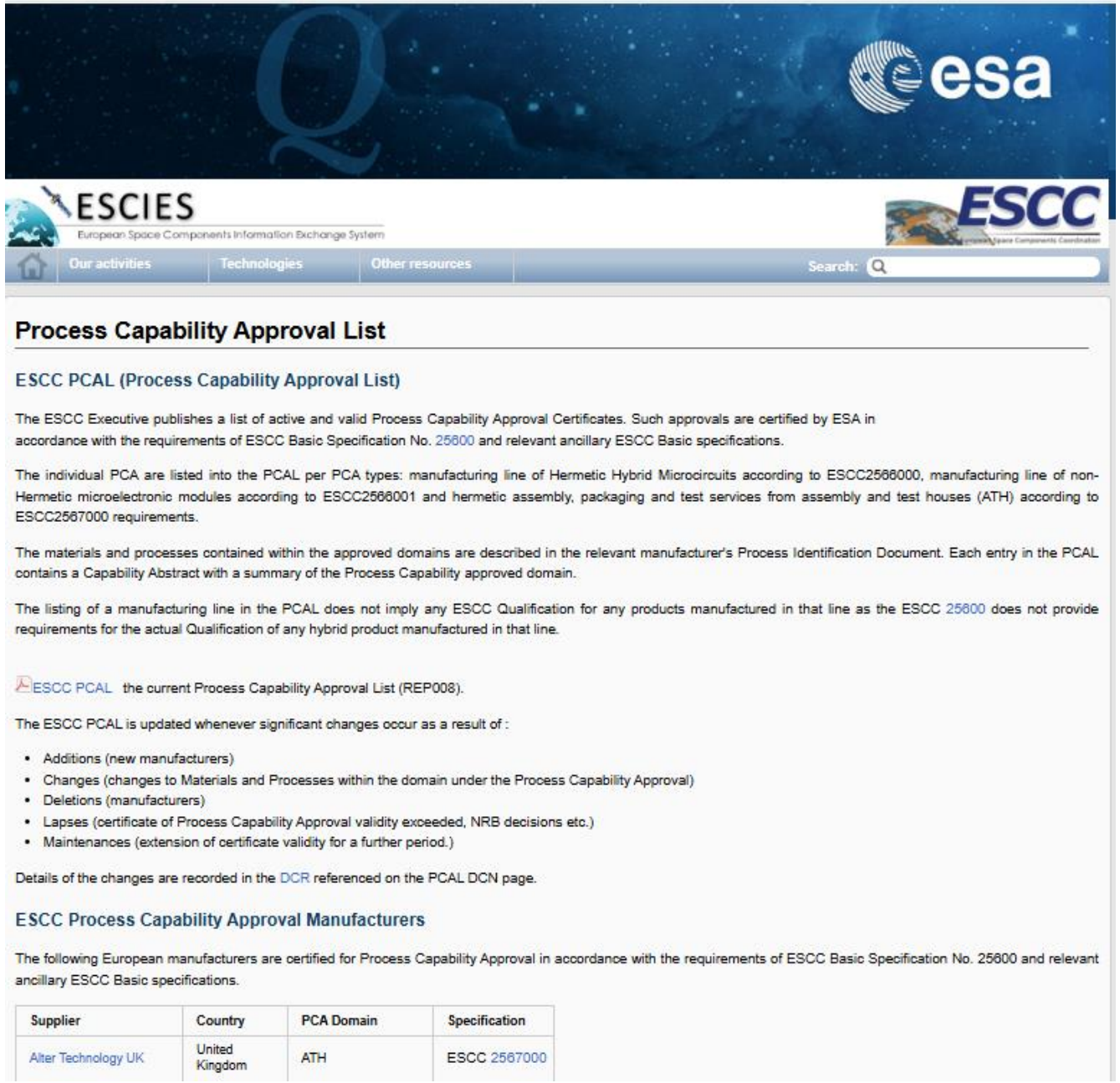


Procurement

- Ensure compliance with EEE part quality project requirements.
- Align test definitions with project mission.
- Organize meetings with manufacturers to guide design and select mission-compliant part references.
- Manage Outsourced Semiconductor Assembly & Test for obsolete parts and custom devices.
- Issue Part Approval Document (PAD) and procurement specifications.
- Conduct Parts Control Board (PCB) Meetings with end customer participation.
- Organize Equipment Radiation Control Board (ERCB) Meetings with end customer participation.
- Manage and optimize Declared Component List (DCL).
- Review alternatives to meet financial and lead time project requirements.



ESCIES
European Space Components Information Exchange System

ESCC

Our activities | Technologies | Other resources | Search:

Process Capability Approval List

ESCC PCAL (Process Capability Approval List)

The ESCC Executive publishes a list of active and valid Process Capability Approval Certificates. Such approvals are certified by ESA in accordance with the requirements of ESCC Basic Specification No. 25600 and relevant ancillary ESCC Basic specifications.

The individual PCA are listed into the PCAL per PCA types: manufacturing line of Hermetic Hybrid Microcircuits according to ESCC2566000, manufacturing line of non-Hermetic microelectronic modules according to ESCC2566001 and hermetic assembly, packaging and test services from assembly and test houses (ATH) according to ESCC2567000 requirements.

The materials and processes contained within the approved domains are described in the relevant manufacturer's Process Identification Document. Each entry in the PCAL contains a Capability Abstract with a summary of the Process Capability approved domain.

The listing of a manufacturing line in the PCAL does not imply any ESCC Qualification for any products manufactured in that line as the ESCC 25600 does not provide requirements for the actual Qualification of any hybrid product manufactured in that line.

ESCC PCAL the current Process Capability Approval List (REP008).

The ESCC PCAL is updated whenever significant changes occur as a result of :

- Additions (new manufacturers)
- Changes (changes to Materials and Processes within the domain under the Process Capability Approval)
- Deletions (manufacturers)
- Lapses (certificate of Process Capability Approval validity exceeded, NRB decisions etc.)
- Maintenances (extension of certificate validity for a further period.)

Details of the changes are recorded in the DCR referenced on the PCAL DCN page.

ESCC Process Capability Approval Manufacturers

The following European manufacturers are certified for Process Capability Approval in accordance with the requirements of ESCC Basic Specification No. 25600 and relevant ancillary ESCC Basic specifications.

Supplier	Country	PCA Domain	Specification
Alter Technology UK	United Kingdom	ATH	ESCC 2567000

Quality - Certifications

- ✓ European Space Agency - Assembly & Test House Process Capability Approval
- ✓ First ESA-recognized Laboratory for Small Satellites below 500kg. (ECSS-Q-ST-20-07C)
- ✓ EN9100 – Aerospace Quality Management System (incorporating ISO9001)
- ✓ JOSCAR Registered

- ✓ https://www.altertechnology-group.com/en/company/quality-certificates/

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Thank you

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AMICSA-25 Presentation: Wednesday 18th
Radiation Testing Session 11-12:30am

"Test Systems for the Experimental Evaluation of a Low-Power High Performance Four-channel ADC for Space Applications"