Positronic®

an **Amphenol** company

PRESSFIT Qualification

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THE SCIENCE OF **CERTAINTY**®

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New technology

- Each new technology needs to be evaluated:
  - Is it reliable ?
  - How to use it ?

Sales team

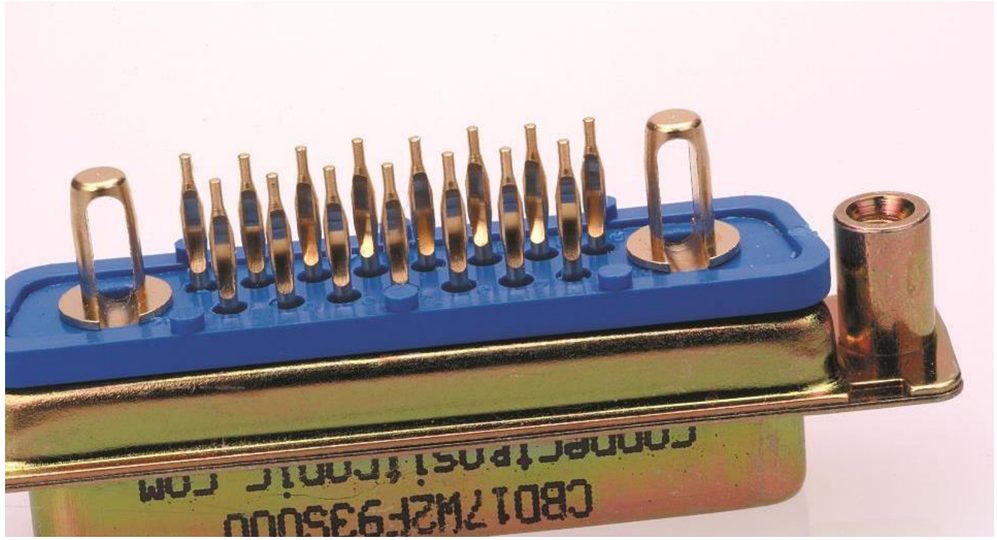
The Pressfit ?

- **SOLDERLESS TECHNOLOGY**

- **COMPLIANT PRESS-FIT TERMINATION**

➢ Does not damage the plated through hole
➢ Creates a gas-tight connection between contact and plated through hole
➢ Repeatable insertions

✓ Process without any heat or cleaning
✓ Avoid of high reflow heat, minimizing thermal stress on the PCB and damage plastic connector body.
✓ Control reduce avoiding X-rays i.e.
✓ Easily repaired or replaced contacts or connectors



Performances

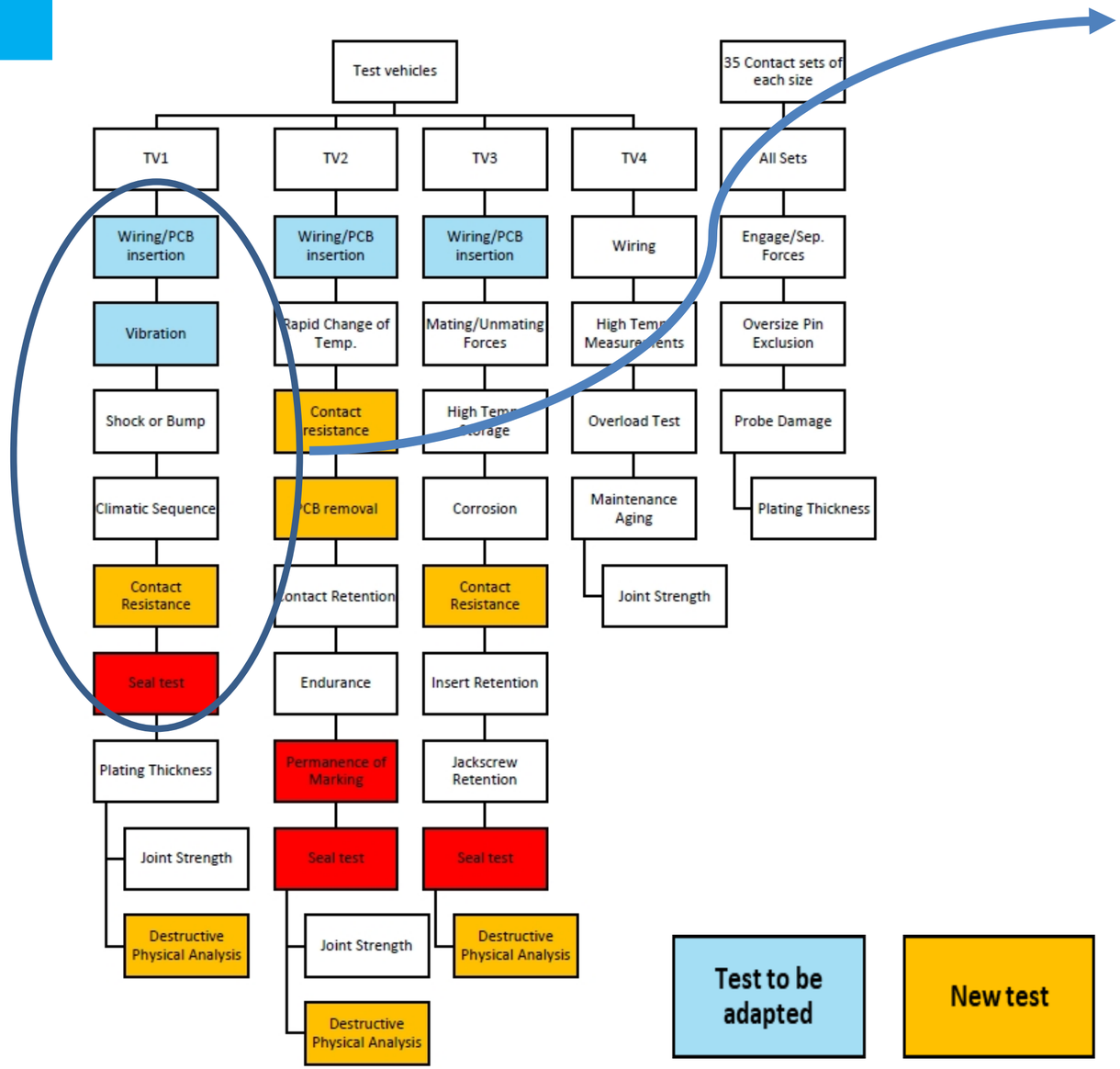
- After a strong evaluation and a huge background on the space market, an official **Certification** & **Qualification** became possible

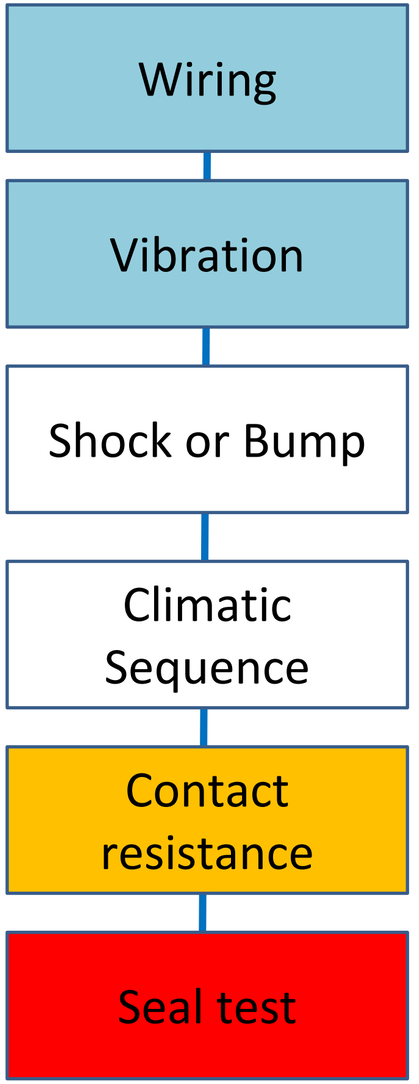
- Based on the ESCC 3401 test sequence

  - Are all the tests required ?

  - Do we have to add some tests to check the specificity of the pressfit ?

Performances





Detail the pressfit installation to monitor the values

Adapt the vibrations test to the next level required by CNES

Monitor the contact resistance between the PCB and the pressfit tail

There is no need to test the sealing

Test to be adapted

New test

Not relevant

New tests

- **Vibrations & Shocks**

- Conditions for this test shall be more severe than described in the ESCC3401: 38.5 Grms vs 20.71 Grms.
- Namely, conditions from ESCC3408, §8.31 shall be used as written here:

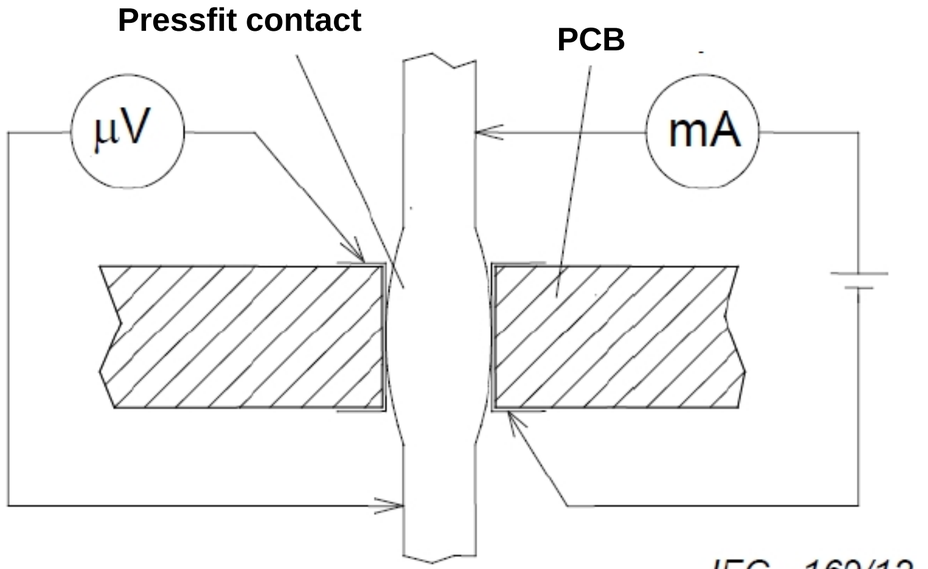
Random Vibration Test Curve:

Envelope: Grms = 38.5	
20 to 60 Hz	+6dB/Octave
60 to 400 Hz	$2g^2/Hz$
400 to 800 Hz	-6dB/Octave
800 to 1000 Hz	$0.5g^2/Hz$
1000 to 2000 Hz	-6dB/Octave

Duration: 180s in each of the 3 mutually perpendicular axes.

- **Contact resistance**

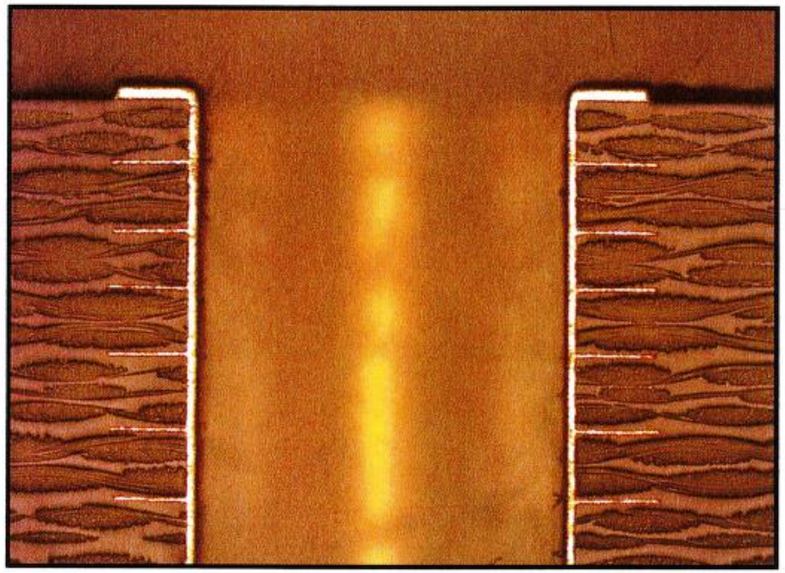
For paths 1, 2 and 3, after conditioning, test vehicles' contact resistance between the contact and PCB shall be measured as per NF EN 60352-5, §5.2.3.1.



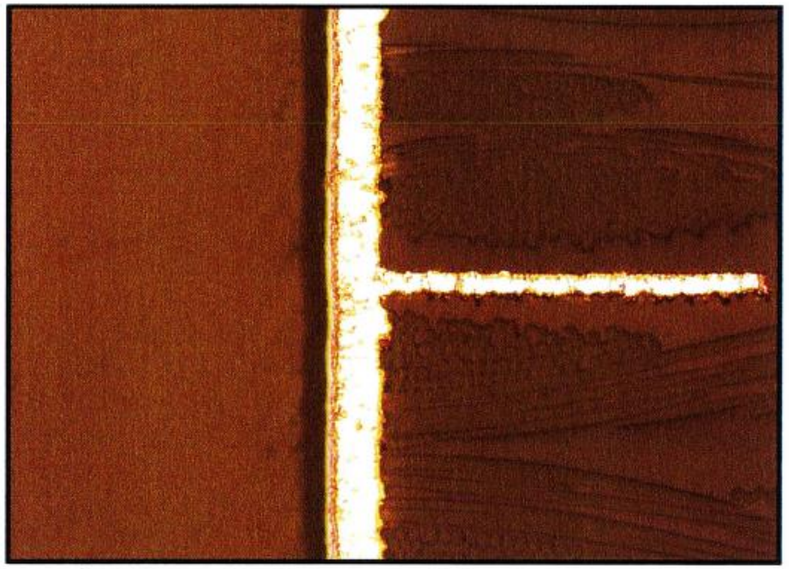
Performances

- All the tests have been done with ESA qualified PCBs (delivered by INVOTEC)
- The final inspection step is a destructive physical analysis:

Photograph of Through Hole



Through Hole



Inner Layer connection

Report on PCB
How to use it ?

- Just push !
- Parameters
  - PCB
  - Pressfit tool
  - Press Machine
  - Inspection

According to our design of contact tails, it was mandatory to validate:

- ✓PCB Dimensions, Thickness
- ✓PCB Materials
- ✓Holes diameters, min, max

Define Tools for:

- ✓Male connector
- ✓Female connector
- ✓Straight contacts
- ✓90° contacts

- ✓Force to apply
- ✓Speed

- ✓Acceptable criteria
- ✓Rejected criteria

Report on PCB

- **PRESS-FIT TERMINATION CAPABILITY**

For each contact termination size being qualified (8, 12, 16, 18, 20/22), insertion and removal forces have been measured all through the range of acceptable PCB hole sizes.

Tool for female contacts

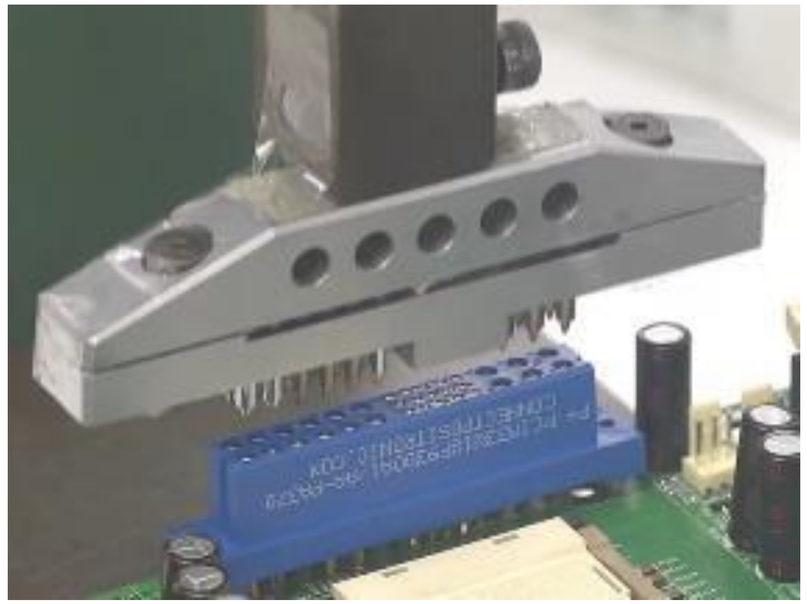
The test report provided the average, standard deviation and min/max values recorded for each contact size.

This qualification phasis validated the insertion tool, the process and the PCB definition.

Tool for male contacts

Report on PCB
Tools & inspection

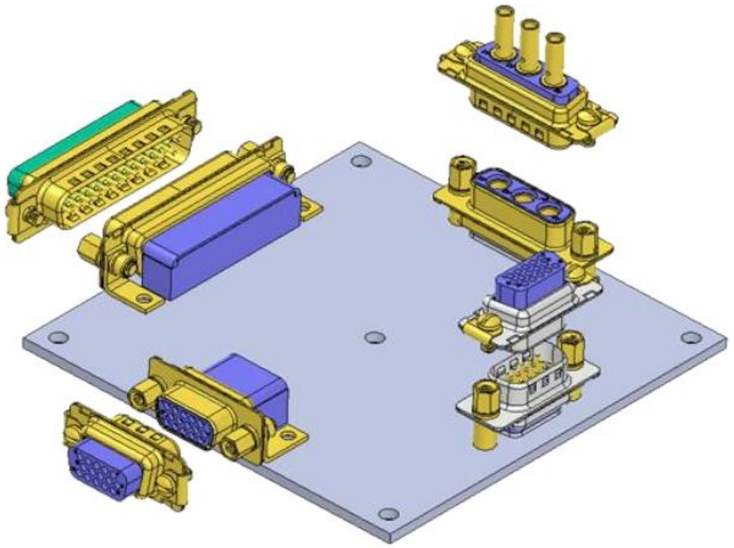
Create documentation including values, setup and recommendations for the end-users



- SETUP:
  Press-fit connectors shall be inserted into the PCB. The insertion speed shall be between 25mm/min and 50mm/min

- VISUAL INSPECTION:
  The proper insertion of the terminations shall be examined in accordance with EIA364-18, magnification shall be 5 times, no damage to the termination or PCB is acceptable.

- ELECTRICAL INSPECTION:
  Contact resistance between the termination and PCB shall be measured



Report on PCB
Tools & inspection

The qualification and the data base cerated with the CNES and the ESA allow to Positronic to

- Design your system **with you**
- Report the connector on the PCB **with you**
- Build a process of inspection **with you**

➢ **to create an reliable, effective & profitable system**

Positronic Press-fit connectors

Insertion, removal, and inspection instructions

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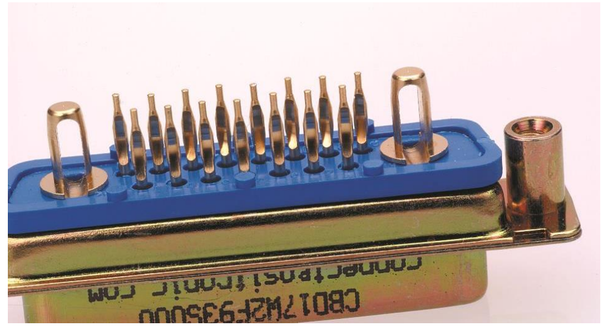
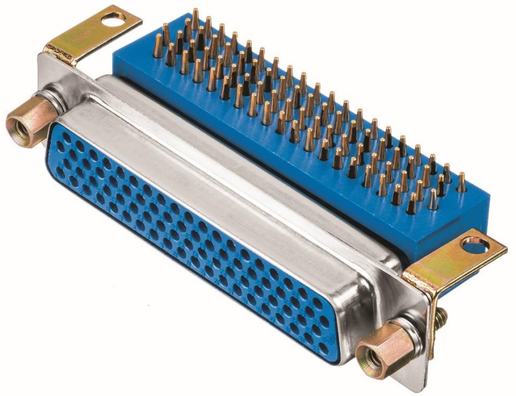
THE PRESS-FIT TECHNOLOGY

- Remember:
  - Solderless **=> no component warm-up**
  - Low force compliant: Does not damage the plated through hole => **no PCB crack**
  - Creates a gas-tight connection between contact and plated through hole, no oxygen => **avoid fretting corrosion**
  - Repeatable insertions => **possibility of maintenance**
  - Accurate installation process => Reduce dramatically the time to report the component on the PCB and the time of inspection **Industrialization & guarantee the life of the system**





- **THE PRESSFIT MAKES IT POSSIBLE !**

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THANK YOU

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