

# Presentation of ESA studies for HDi evaluation and Thermount Replacement

ESA PCB Workshop – 22<sup>nd</sup> October 2009  
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# Contents

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- 1 - Introduction
- 2 - Presentation and Objectives
- 3 - Work schedule
- 4 - Next steps and Conclusion

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# 1 - Introduction

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# 1 – Introduction

- To answer to PCB End Users requirements for space applications ESA launched two studies: One concerning HDi evaluation (High Density Interconnection) and the other concerning the evaluation of new materials for Thermount replacement.
- The consortium composed by EADS Astrium (as Prime), Thales Alenia Space and RUAG aerospace Sweden was selected to fulfil these studies with the support of Tyndall Institute for HDi evaluation and Austrian Research Centres for Thermount replacement evaluation.
- The two studies are in progress and the conclusions of this PCB workshop will be used as a starting point for them.

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## 2 - Presentation and Objectives

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## HDi Evaluation - Presentation

- Project Name: Assessment of the Reliability of High Density Interconnected Boards (HDi) for Future Space Use
- ESTEC AO/1-5670/08/NL/CP
- Working group:
  - Astrium Satellites SAS (Prime)
  - Thalès Alenia Space
  - RUAG Aerospace Sweden
  - Tyndall National Institute, Ireland
- Project started: June 2009
- Project duration: 24 months (end June 2011)

# HDi Evaluation - Objectives

## ■ Background:

- Need of finer design rules with higher interconnection density for assembly of high performance components like CCGA on boards.
- Microvias is a mature technology but for space applications, experience in the field is low and End Users lack of ESA qualified HDi PCB manufacturers.
- HDi technology is in constant evolution pushed by the needs of ever finer design rules and by new materials constraints.

## ■ Major challenges of the project:

- Identify and harmonize Space End Users needs for HDi PCB
- Analyse HDi PCB manufacturers capabilities
- Select several PCB manufacturers to realize evaluation boards
- Evaluate HDi boards following ESA quality standards
- Write recommendations for HDi design, qualification and use for space applications.

# Thermount replacement evaluation - Presentation

- Project Name: Replacement of the Thermount® 85 NT
- ESTEC AO/1-5777/08/NL/CP
- Working group:
  - Astrium Satellites SAS (Prime)
  - Thalès Alenia Space
  - RUAG Aerospace Sweden
  - Austrian Research Centers (ARC)
- Project started: June 2009
- Project duration: 24 months (end June 2011)

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# Thermount replacement evaluation - Objectives

## ■ Background:

- Obsolescence of Thermount (Dupont stopped the production of non woven aramid fibers)
- Need to find low CTE in plane materials for large ceramic package to overcome reliability failures from thermo-mechanical stresses

## ■ Major challenges of the project:

- Identify and merge Space end users needs for low CTE PCB
- Identify and select the more relevant replacement materials and PCB manufacturers able to process them
- Manufacture and evaluate tests coupons following ESA quality standards
- Write recommendations for use of selected new materials in space applications

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## 3 - Workplan and schedule

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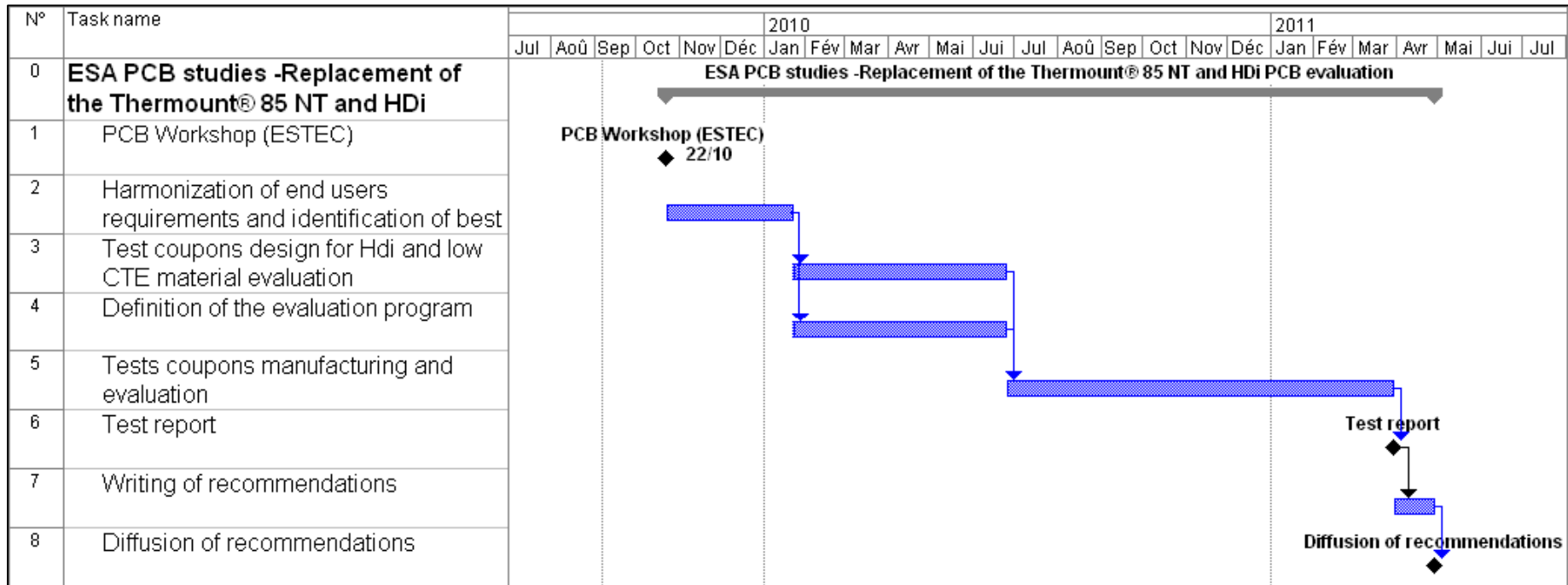


# Workplan

- As the two studies are complementary, they will be made in parallel
- Workplan
  - Identify and merge Space End Users requirements both for low CTE PCB material and HDi
  - Identify and select the more relevant PCB manufacturers able to answer to the previous requirements
  - Design, manufacture and evaluate tests coupons following ESA quality standards
  - Write recommendations for use of selected new materials in space applications

# Schedule

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## 4 – Next steps and Conclusion

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## Next steps

- Harmonization of Space End Users requirements for HDi and Thermount replacement
- Trade off between HDi PCB manufacturers capabilities and End Users requirements
- Trade off between available low CTE materials and End Users requirements

## Conclusions

- The objective is to cover as much as possible the needs of the whole space community and to be compatible with PCB manufacturers capabilities.



Your participation as End User or PCB manufacturer is needed to achieve this objective.

- The white book issued from the second workshop day will be used as reference. For those who won't be able to participate you can contact me directly to complete it with your own information.

# Thank you for your attention

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