

Wrap Up and Concluding Remarks

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**EuCARD-2 Workshop on Applications of
Thermal Management Materials
CERN – 06th Nov 2015**

- Participants
- Topics reviewed

- Since the foundation in 1954, CERN has been pushing forward the technology frontiers



Flags park at CERN,
Nov 1960

- EuCARD-2 Workshop on Applications of Thermal Management Materials has been a great example of what industry and scientific research can do to develop solutions for society.
- We have welcomed today more than 80 participants

15 Companies:

- AT&S - Austria Technologie und Systemtechnik AG.
- BASF New Business GmbH
- BREVETTI BIZZ
- CALYOS S.A.
- Fraser-Nash Consultancy
- HEAD
- Herakles
- INTELLION S.a.r.l.
- Kurt J. Lesker Company Lt
- Materia Nova
- MERSEN Schweiz AG
- Morgan Advanced Materials
- NTET SPA
- Planmeca
- RHP-Technology GmbH



9 Research Institutes:

- Cristal innov
- EUROfusion
- GSI Helmholtzzentrum for Heavy Ions Research
- INFN – LNS (Istituto Nazionale di Fisica Nucleare)
- Max-Planck-Institut für Plasmaphysik
- Nikhef National institute for subatomic physics (NL)
- STFC (Science & Technology Facilities Council)
- Tecnia Research and Innovation
- TERA FOUNDATION AT CERN



4 Universities:

- Politecnico di Milano
- Politecnico di Torino
- SUPSI (Scuola Universitaria Professionale della Svizzera Italiana)
- UNIGE (Université de Genève)



CERN:

- **LHC** complex overview.
- **Beam energy deposition** on accelerator components.
- **Prevention of catastrophic consequences** in superconducting magnets.
- **Impedance**, beam instability problems due to charged nature of the beam.
- Numerical **simulations** of component behaviour.
- Need of very complex and specific **properties** for materials for Beam Intercepting Devices at CERN.

External:

- Materials for **turbojet engines, brake discs** and **re-entry protections**.
- **Self-healing materials**: blocking crack propagation.
- High strain, high temperature and irradiation **material testing facilities**.
- Development of **piezoelectric crystals** for high-temperature sensors.
- **Thermal insulation** materials and **fire protection** materials.
- **Thermal dissipation** in electronic components. Need of **electrical insulators with high thermal conductivity**. **Sandwich-like structures**.
- **Metal/Ceramic-Diamond** composites for thermal management applications.
- Novel Thermal Management Technologies for **Aerospace and Electronics Applications**.
- Thermal management components and materials for **fusion applications**. Ductility, creep resistance, swelling.
- **Machinability, assembling, cost!!!**

Thank you for your participation!