

Recent safety focused overall analysis, testing and accident reviews towards safer e-mobility and energy storage

C. Di Bari¹, A. Lecocq², G. Marlair², M. Mazzaro³, M. L. Mele⁴, P. Russo⁴

¹ENEA, Italy; ²INERIS, France; ³CNVVF, Italy; ⁴Department of Chemical Engineering Materials Environment, Sapienza University of Rome, Italy

FIVE 2020, December 15-16, 2020

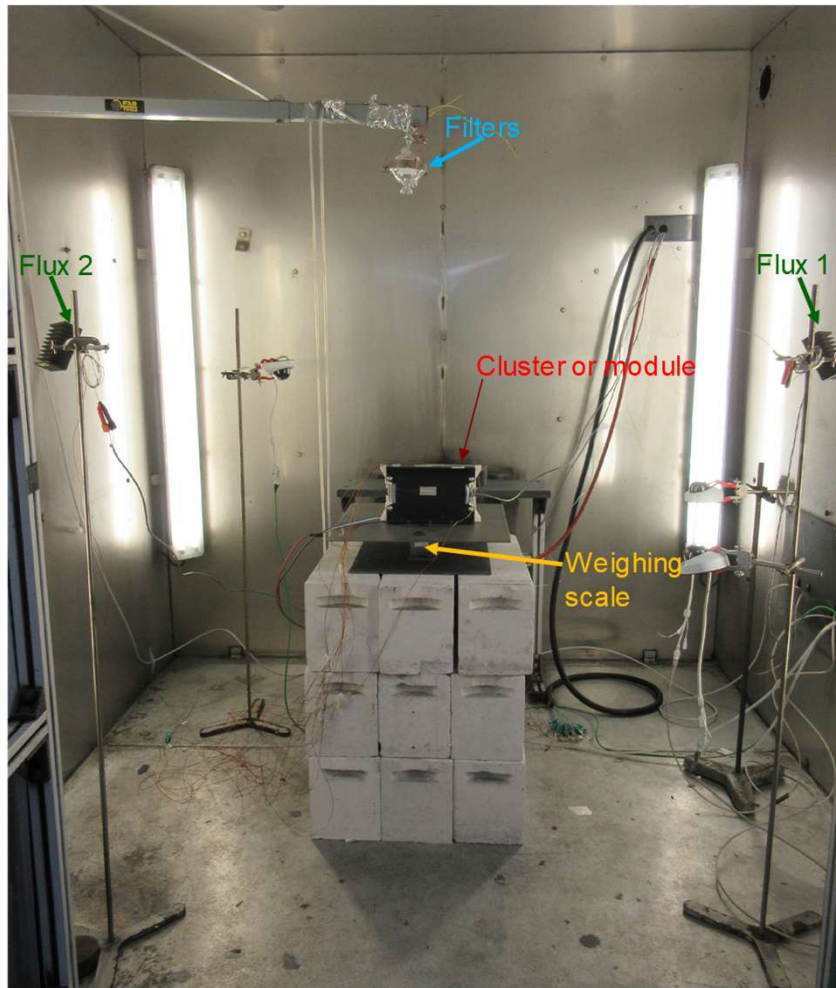


SAPIENZA
UNIVERSITÀ DI ROMA



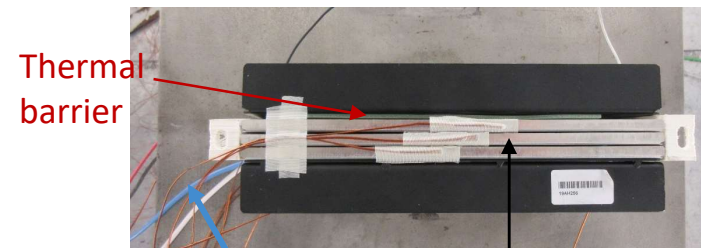
Non propagation test – multilayer protection system

Test set up



Thermal runaway initiated in the central cell of cluster/module by internal heater

Cluster of 3 Pouch cells

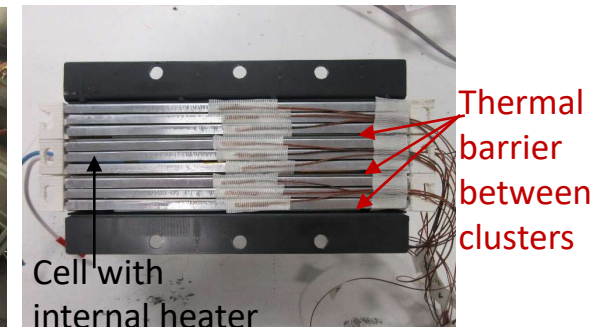
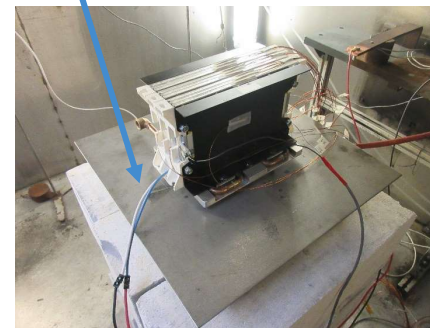


Cell with internal heater



Wires connected to the internal heater

Module of 3 clusters (3 x 3 cells)



DEMOBASE



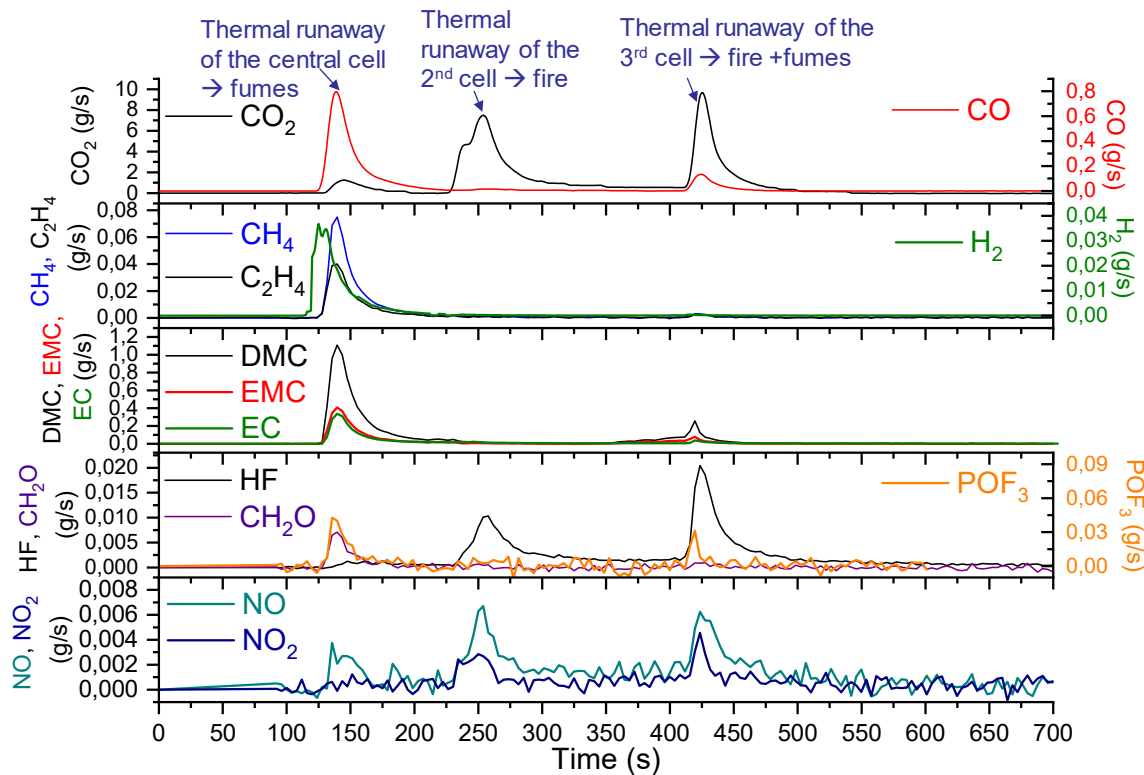
This project is receiving funding from the EU Commission under the H2020 grant agreement # 769900 under the name DEMOBASE



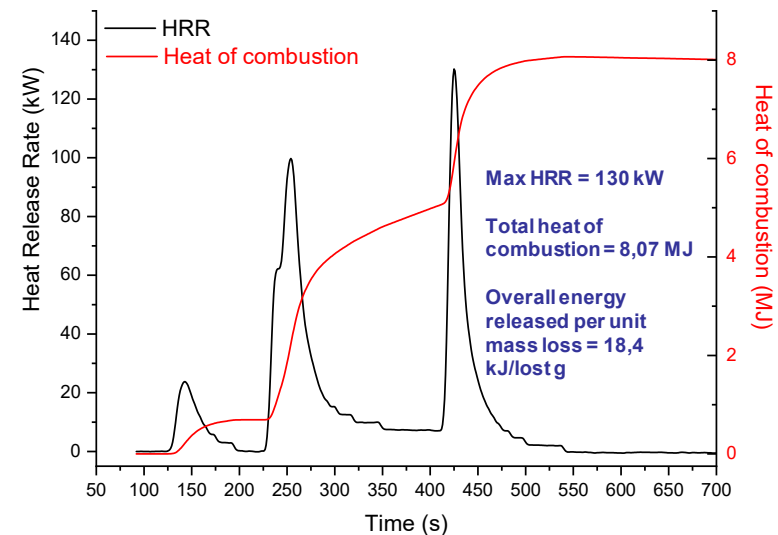
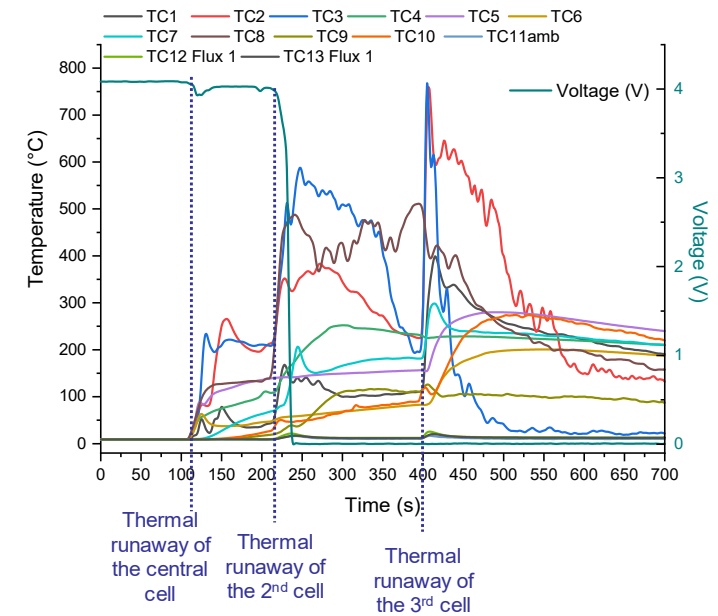
Non propagation test – multilayer protection system

Results on cluster

- Cluster test → propagation to the neighboring cells
- Nature and amount of emitted gases depend on the presence of combustion or not; for ex. formation of HF is favoured by the combustion whereas POF_3 is favoured by pyrolysis conditions



DEMOBASE

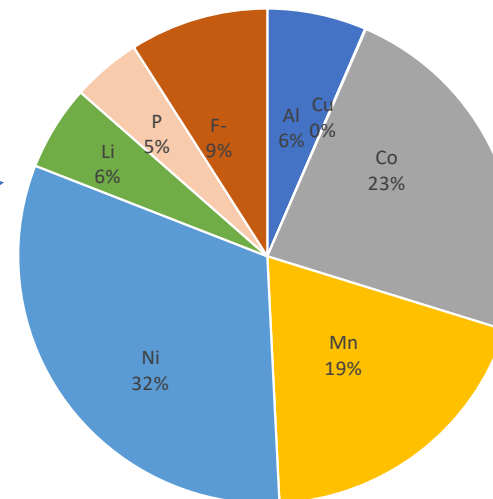
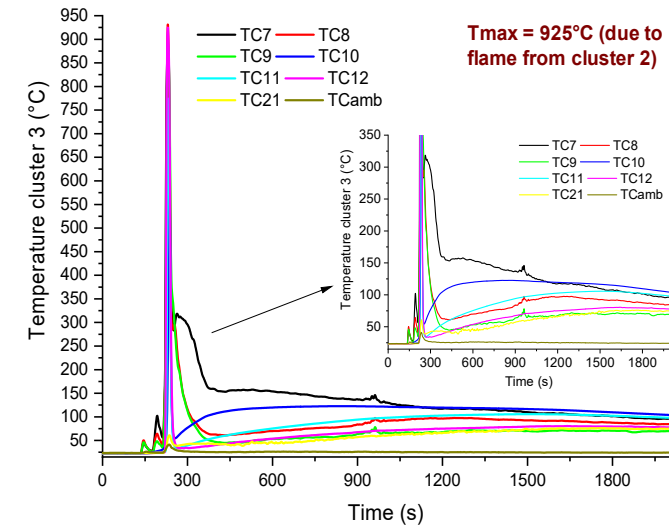
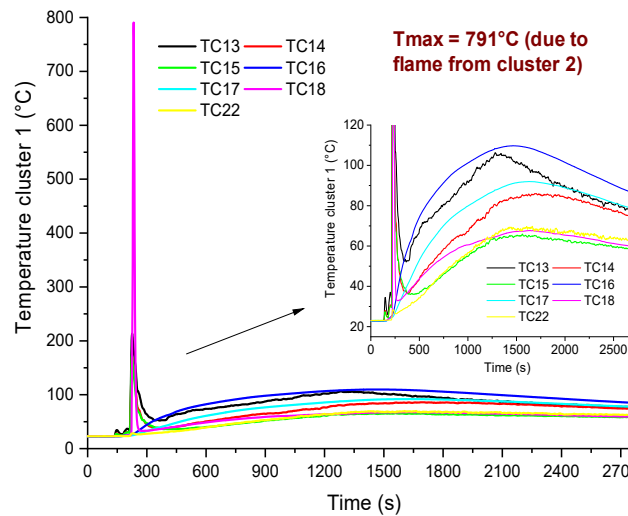
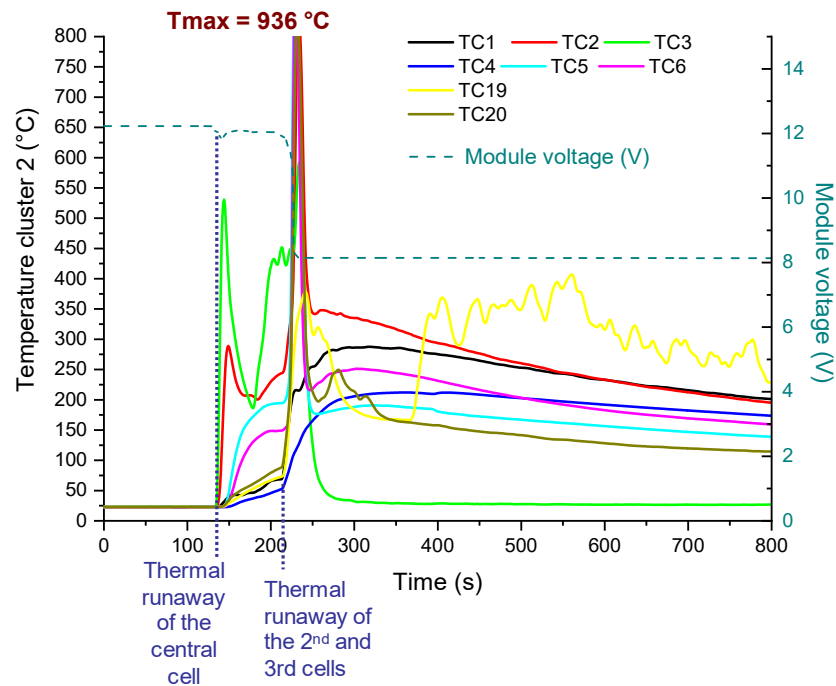


Non propagation test – multilayer protection system

Results on module

- Module test → propagation to the cells of the same cluster but not to neighboring clusters → proven role of thermal barrier between clusters

DEMOBASE



Acknowledgments

This project is receiving funding from the EU Commission under the H2020 grant agreement # 769900 under the name DEMOBASE

Coordinated by: SAFT

Project name : Design and Modelling for improved Battery Safety and Efficiency

- Project partners :

- SAFT SAS
- ACCUREC-RECYCLING GMBH
- FRAUNHOFER GESELLSCHAFT ZUR FOERDERUNG DER ANGEWANDTEN FORSCHUNG E.V.
- INSTITUT NATIONAL DE L'ENVIRONNEMENT ET DES RISQUES INERIS
- INFINEON TECHNOLOGIES AG
- MODELON AB
- IFP Energies nouvelles
- FORSCHUNGSZENTRUM JULICH GMBH
- INTERACTIVE FULLY ELECTRICAL VEHICLES SRL
- K&S GMBH PROJEKTMANAGEMENT
- MA SPA

DEMOBASE

