Fire Suppression and Management for Lithium-Ion Batteries

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Session Sponsor:

LiFeline®
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Fire Suppression and Management for Lithium Ion Batteries

PreLIBS

(PRELIMINARY FEASIBILITY STUDY OF LITHIUM ION BATTERY SAFETY)

Faraday Battery Challenge Round 2

WP1 Project Management

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WP2 Review of Literature and Current Technologies

JAGUAR LAND ROVER HEALTH & SAFETY LABORATORY

WP3 Testing and Test Methods

HEALTH & SAFETY LABORATORY WMG THE UNIVERSITY OF WARWICK JAGUAR LAND ROVER

PreLIBS Main Objectives:

1. Conduct a thorough literature review – focusing on thermal runaway (TR) propagation
2. Investigate cell TR triggered by different initiation methods
3. Analysis of TR sensing and early detection methods
4. Develop test methods and guidelines
5. Develop CFD models for TR and its propagation

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Total Value: £0.5 million
Timeline: Sept 2018 – May 2019

WP4 Sensing Methods for Early Thermal Runaway Detection

POTENZA WMG THE UNIVERSITY OF WARWICK

WP5 Thermal Propagation Mitigation Solutions

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WP6 CFD Modelling

Warwick FIRE THE UNIVERSITY OF WARWICK

Why are we here?

Standard Tray Fire

PreLIBRIS Work Package Objectives

- Standard Battery Fire
- Test Methodology
- Comparative Testing of Samples
- Understanding what is a Result

Geometry


Yu-Power™
YPC33-12
12V,33Ah C20
Valve regulated
lead-acid type
rechargeable battery
CAUTION
• AVOID SHORTING TERMINALS
• DO NOT CHARGE
IN A GAS TIGHT CONTAINER
Pb
For Cyclic Application
www.yuasaeurope.com
Energizer
9V
Energizer

Chemistry


freee
FREE FROM GLUTEN
plain white flour
HOME BAKING
co op
Plain White Flour
1.5kg

Mitigation Methods

- BMS
- Passive Methods
- Active Methods


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Test Methods Trialled:

Active Mitigation of Cylindrical Cells

Test Methods Trialled

Active Mitigation of Pouches Cells

Test Methods Trialled

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Multi Cell Mock-up

Test Methods Trialled

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Contained Battery in a Carbon Fibre Box

Comparison of Passive Mitigation Methods/ Materials in Open and Closed Trails

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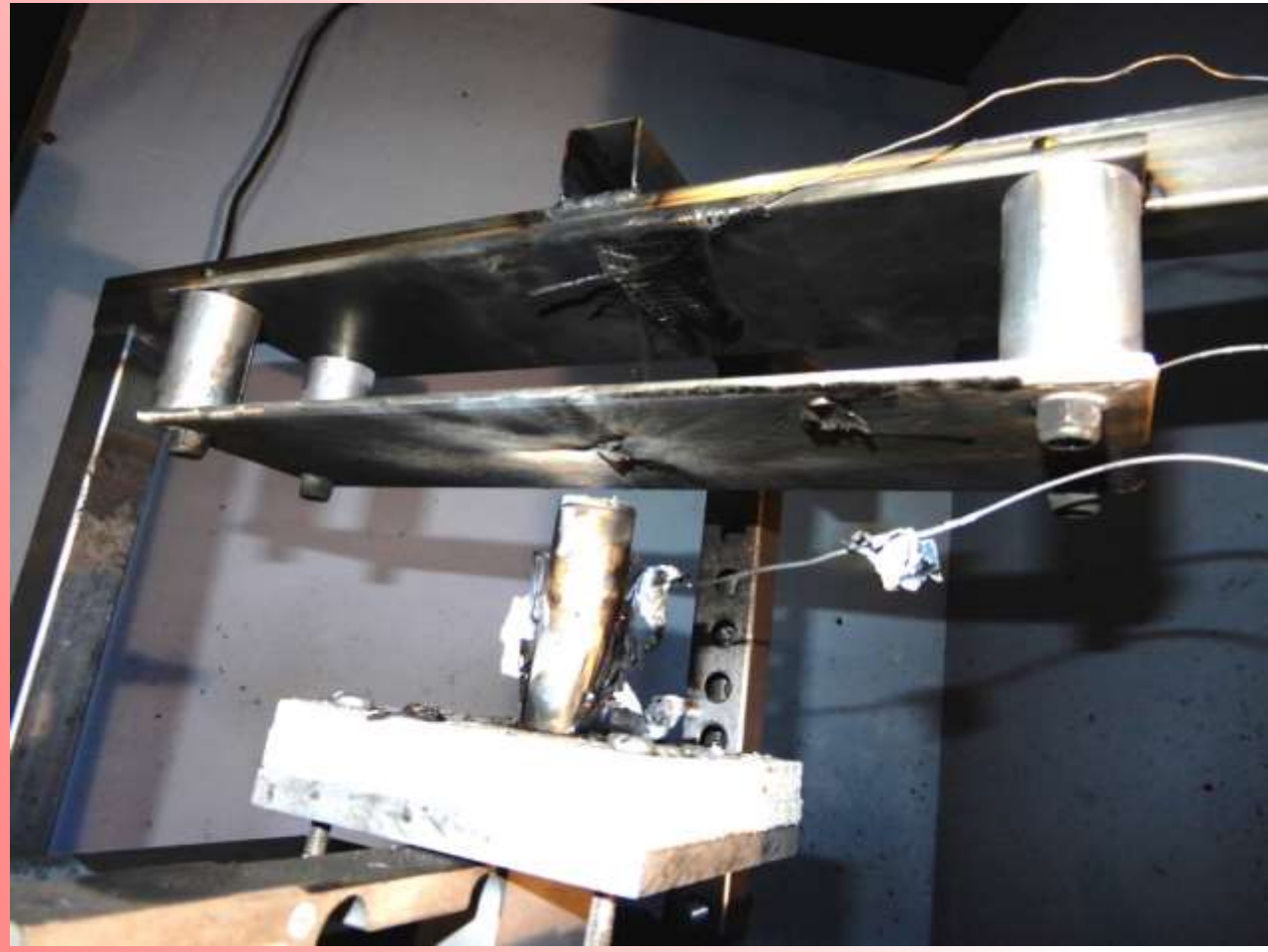
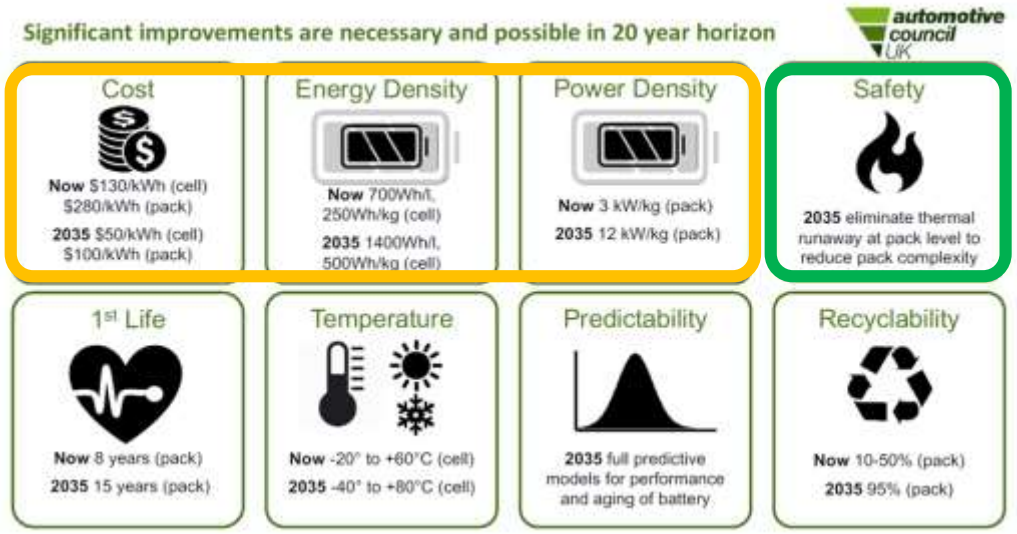


Results of PreLIBRIS Trials

- Initiation Methods
  - External Heating is consistent on Cylindrical Cells
  - Overcharging is difficult to do consistently
- Pouches blow up like balloons and cause containment and mechanical issues.
- Heat up rate influences the thermal event
- Pressure venting is an issue in contained testing



LIBRIS - Lithium Ion Battery Research In Safety

Faraday Challenge

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Our Consortium Members

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