ESS Annual Review 2012

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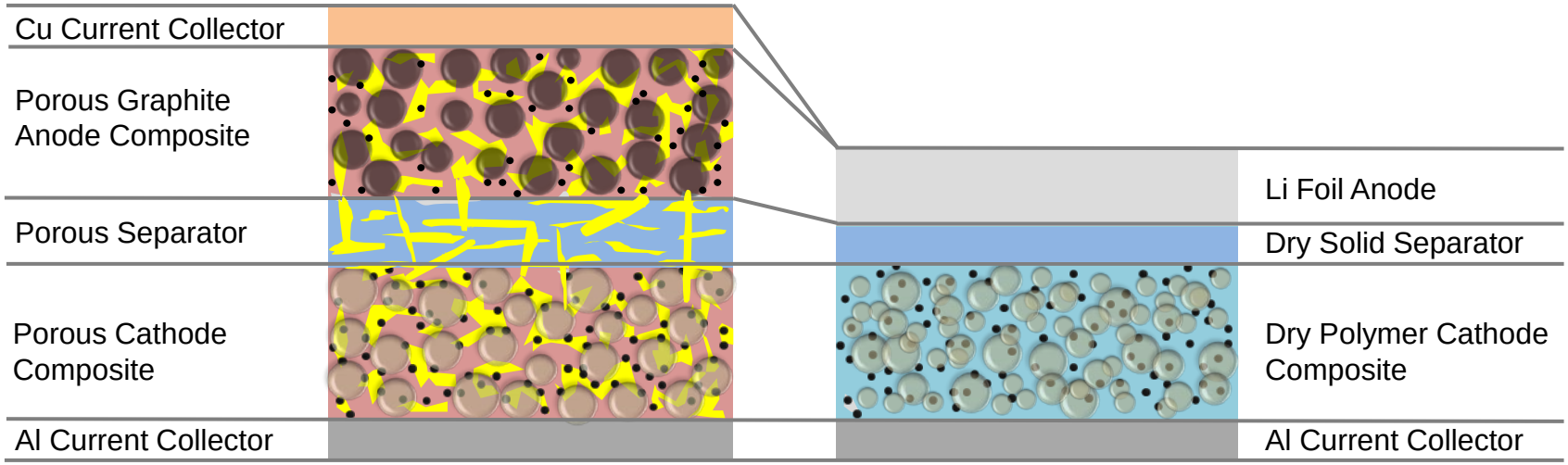
Funded in part by the Energy Storage Systems Program from the Department of Energy through the *National Energy Technology Laboratory*

Seeo's solid polymer battery

Conventional Li Ion

Seeo Battery



Element	Li Ion	Seeo	Seeo Benefits
Electrolyte	Liquid	Solid	**Safety: Non-reactive and non-flammable**
Anode	Porous	Solid	**Energy: Superior specific energy (Wh/kg)**
Cathode	Porous	Solid	**Reliability: High temp stability, minimal fade**

Objective: Build and evaluate battery pack

Seeo Cells

Seeo Module

Polymer optimization and scale-up

Polymer development

Polymer collection & centrifuge

Polymer vacuum drying

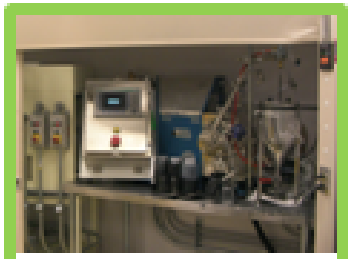
Final polymer bagged

Pilot production process flow: Cells

Standard Equipment & Process

Standard Equipment, Distinct Process

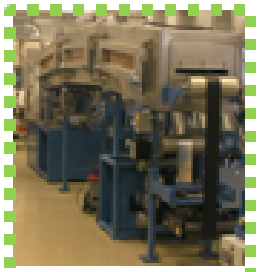
Electrode Fabrication



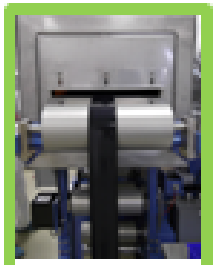
Cathode Mix

Cathode Coating

Cathode Calendar



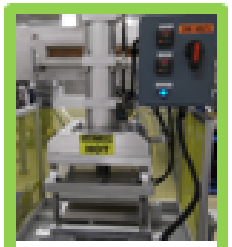
Polymer Coating



Drying

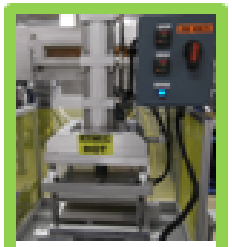
Cell Assembly

Winding



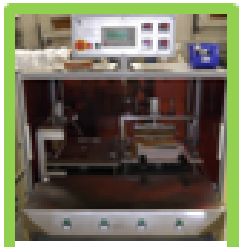
Laminate

Stack Bundles



Press Stack

Tab Weld



Pouch Seal

Commercially available cell manufacturing equipment

Conventional process flow with electrolyte coating vs. fill

Safety testing example: Crush tests

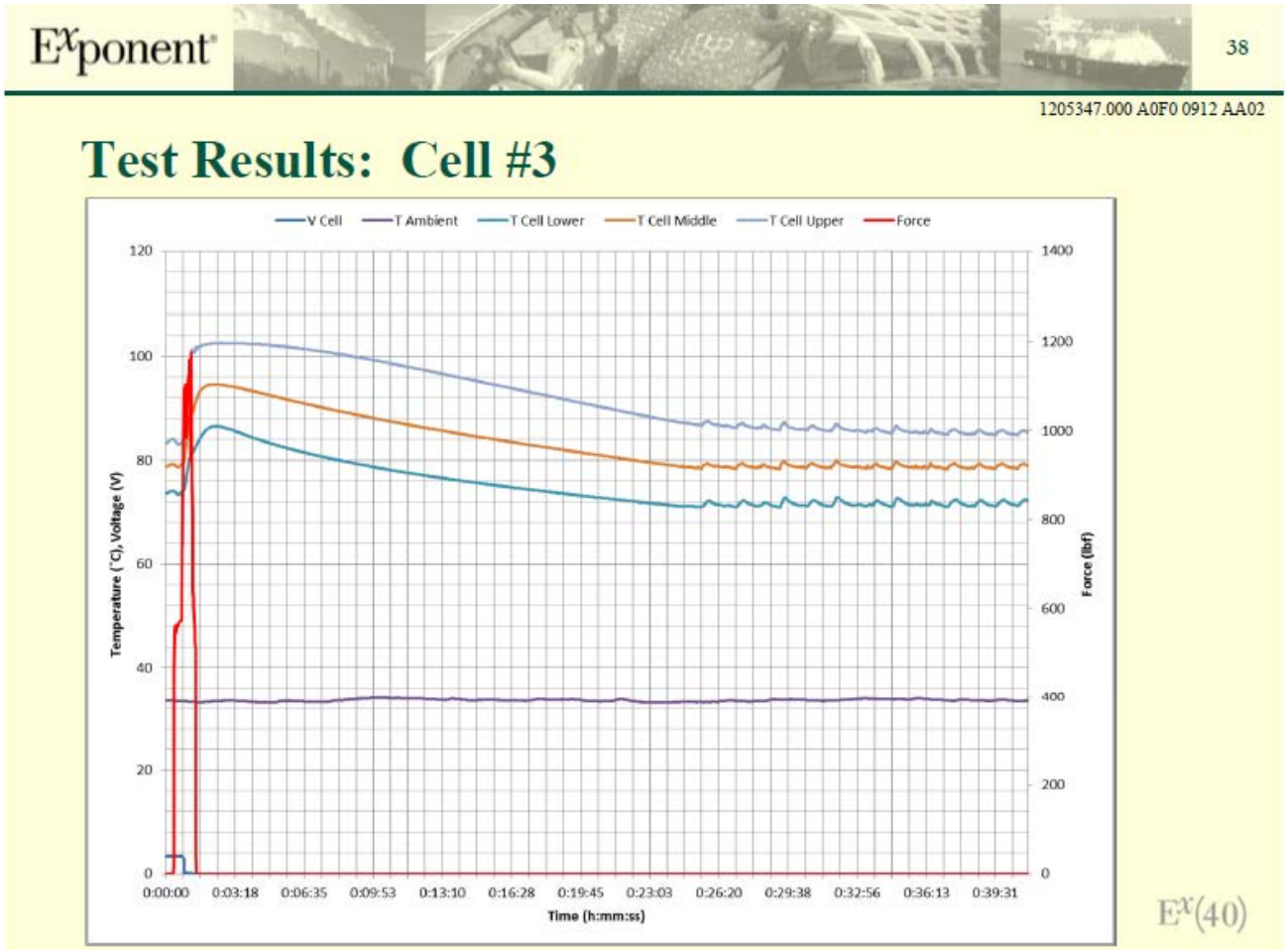
X-Axis

Y-Axis

Z-Axis

Crush test example: Y-axis

Most aggressive crust test: along axis with terminals



Li-ion: ΔT = 60 to 100˚C or enter thermal runaway

Seeo:
Max ΔT = 23˚

No venting, smoke or flames observed for any nail & crush

Battery pack development

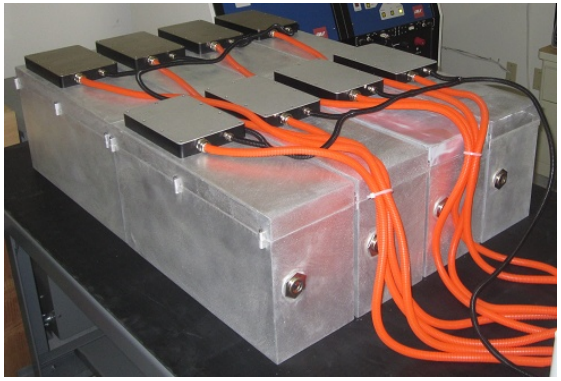
Scalable Module

Capable of meeting various voltage and current requirements

Integrated BMS for solid polymer cells

Fully sealed

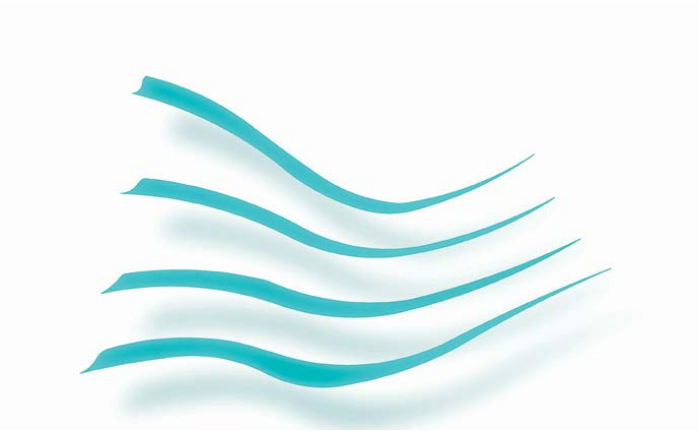
Battery Pack



Flexible orientation to fit in required space

System-level BMS functions

Efficient thermal management



Q&A