



## NETWORK OF RESEARCH PILOT LINES FOR LITHIUM BATTERY CELLS

**Round-robin test:  
Towards standardization of EU research pilot lines**

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# Our mission – Support market access of European battery cell production

- How to strengthen the European position?

Sustainability

Quality

- How to ensure and retain high quality in terms of cell production?
- Well-defined production processes & **standardisation** of individual production processes!

# Definition of the round-robin test & what it means for cell manufacturing

- „Basic method for the determination of repeatability and reproducibility of a standard measurement method”  
**ISO 5725-2:1994**
- What does that mean in terms of battery cell manufacturing?
- Which **process parameters** are considered **critical** and which tolerances are acceptable?
- Last but not least:  
How can we use and share the generated data on a non-competitive basis?
- What is your opinion?  
Go to [menti.com](https://www.menti.com) and use code **93895060**



# Defining process and target parameters

Examples of critical process parameters and evaluated tolerances:

<b>Production step</b>	<b>Critical parameters</b>
Material inspection	Purity, synthesis method, humidity
Slurry mixing	Composition, viscosity, solid content, rpm
Coating	Thickness, speed, drying parameters, temperature
Compacting/calendering	Porosity, degree of densification, temperature
Stacking	Thickness, separator, alignment
Elektrolytfüllung	Composition, type, amount, cycles, pressure
Formation	C-Rate, duration, rest, pressure, temperature

Some of the above steps are more critical than others, depending on the final cell and format.

# Materials, Supplier & Compositions

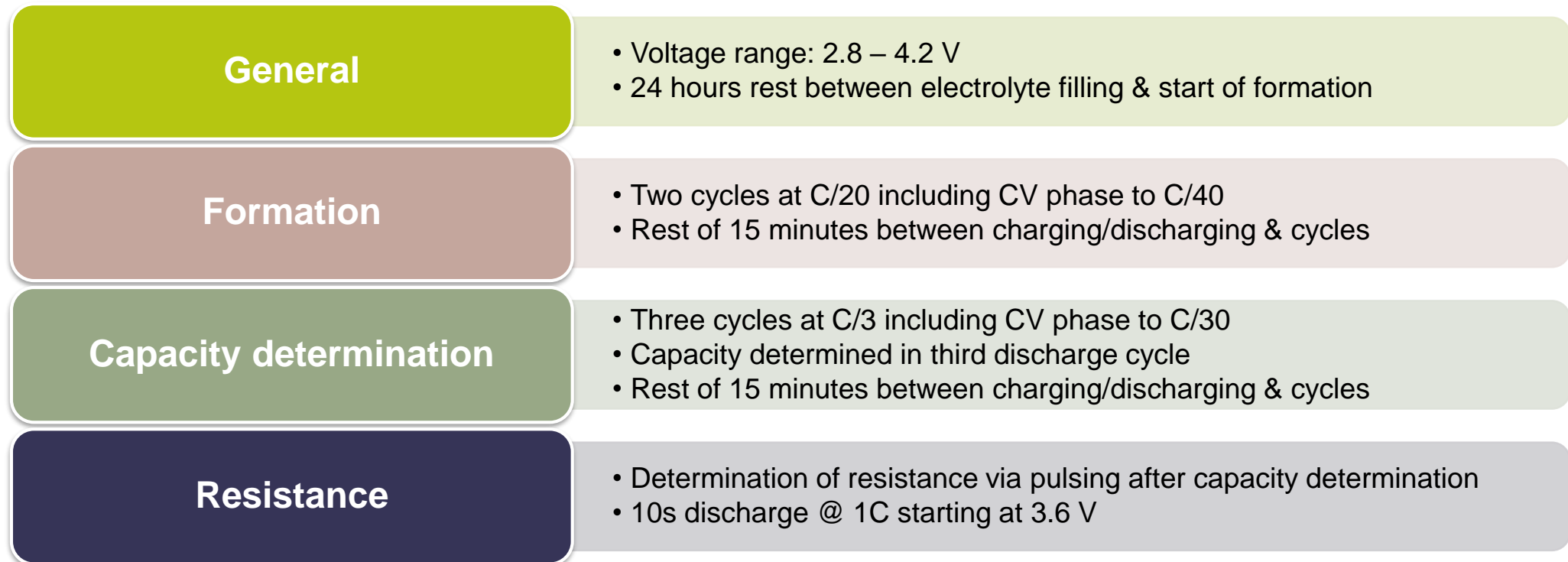
- Which main active materials should be used?
- High quality and best composition?
- Which materials should definitely be from the same batch?
- How do the other components influence the overall prototype cell performance?

	Material	Formulation (wt%)	Product	Supplier
<b>Cathode</b>	Active material	95	NMC622	BASF
	Conducting agent	2.5 (1.5 + 1)	C65 + SFG6L	Imerys
	Binder	2.5	PVDF (Solef5130)	Solvay
<b>Anode</b>	Active material	94,5	Artificial graphite	Targray
	Conducting agent	1,5	Super C45	Imerys
	Binder	4 (2+2)	CMC/SBR	Walocel CRT 2000 PA Zeon BM 451-B
<b>Electrolyte</b>	EC:EMC 3:7 + 2wt% VC	Range à ml/Ah	EC:EMC 3:7 + 2wt% VC	Solvionic
<b>Separator</b>	Separator	Trilayer PP/PE/PP (possibly need for lamination)	2325	Celgard

## ...and finally matching the formation and cycling protocol...

Suggested protocols for formation and capacity determination, measured at 25 °C

Total number of 10 cathodes and 10 pouch and/or cylindrical cells per batch



## So... what's next?

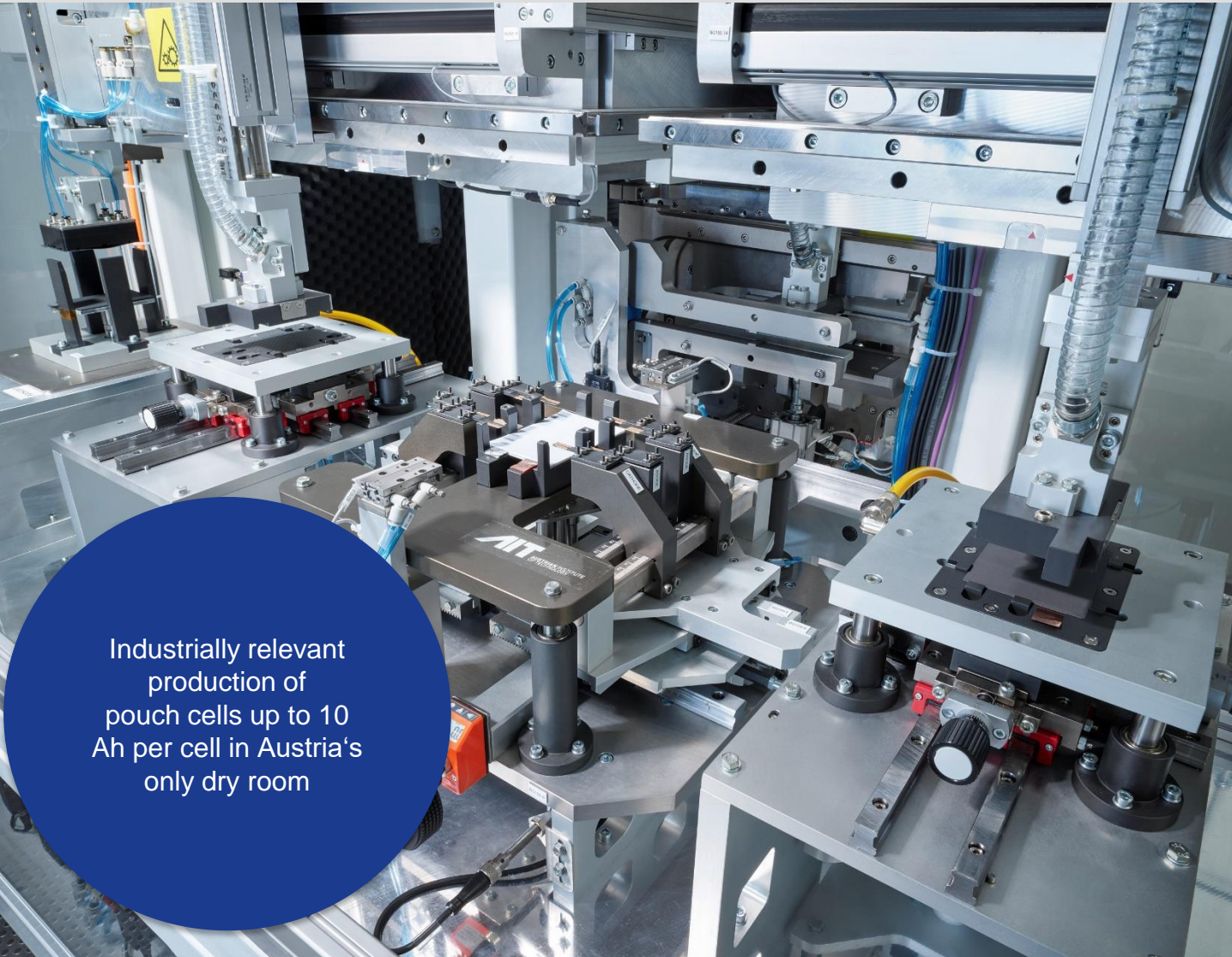
- Tests are conducted at all attending pilot line facilities by end of July
- Masked results will be shared and presented within the network and cell manufacturing community:



- How does the prototype cell format influence the results?
- Reproducibility check follows when new members join to include time variant – get involved!



# Research pilot line facilities @ AIT in Vienna



Industrially relevant  
production of  
pouch cells up to 10  
Ah per cell in Austria's  
only dry room

Ready for the round-robin test?

Join the LiPLANET network!



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