

**INN**



**PRESSME**

Open Innovation Test Bed

**WP5- Test case 7:**

**Bio-based ultra-capacitors**

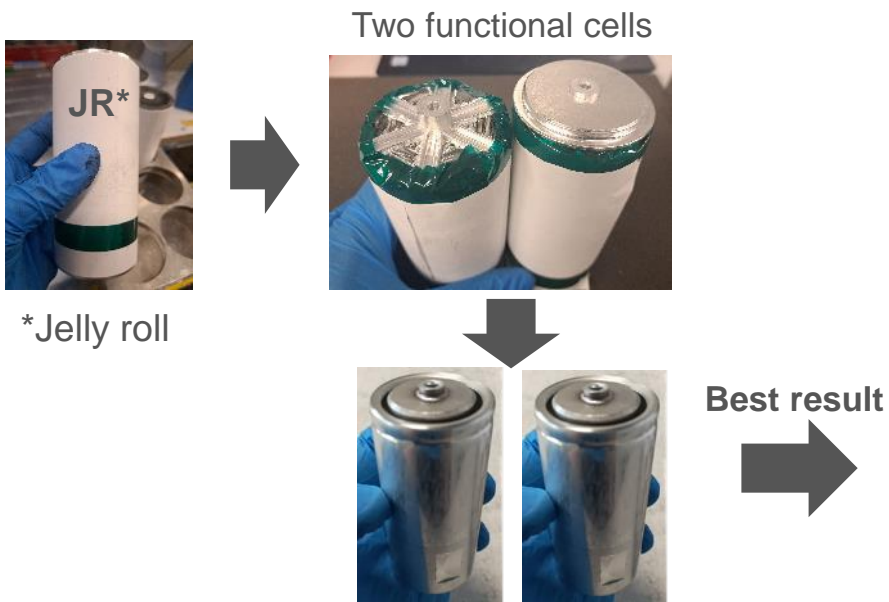
**Involved partners: CID, VTT, RISE,  
GNA, SKE**

December 2024

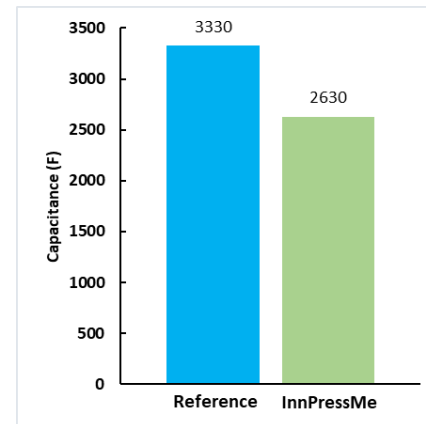


# Bio-based Ultracapacitors

- **Slitted/calendered electrode from Cidetec:**
  - ✓ Quite low electrode density and small particle size
  - ✓ Electrode handling was possible (with extra care)
  - ✓ Winding of electrodes to jelly rolls (JRs) was achieved
- **Assembly of InnPressMe demonstrator cells**

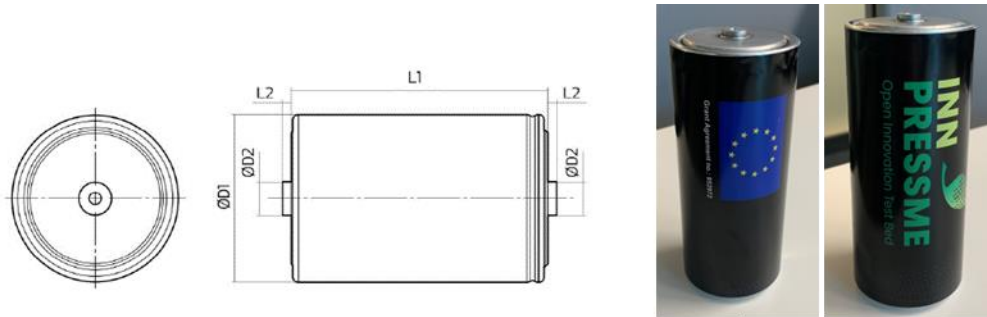


<b>skeleton<sup>+</sup></b>	
InnPressMe	Reference



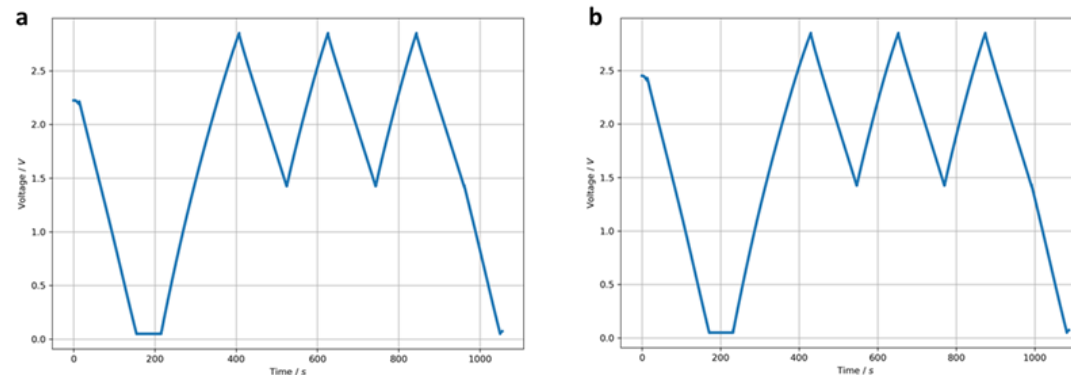
**InnPressMe reaches 79% of the targeted value**

- Finished bio-based demonstrator cells



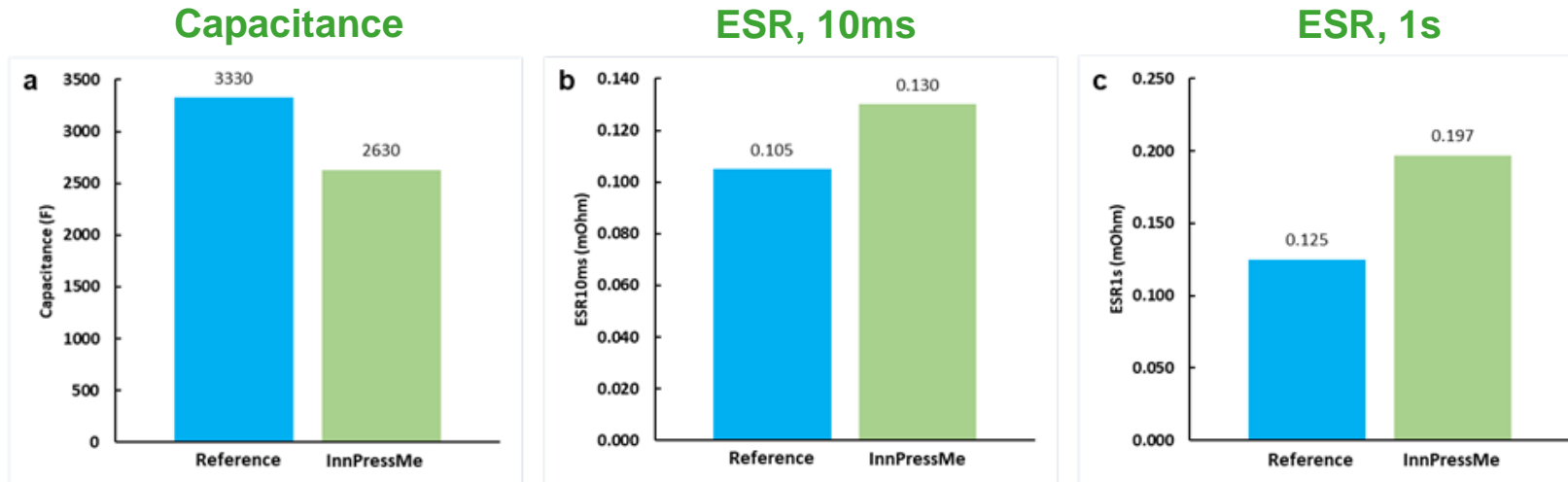
- Electrochemical Characterization by Skeleton Technologies

Skeleton Technologies has characterized the two demonstrator cells with the inhouse test facility under the same conditions as its series products and according to the IEC62391 standard applicable to industrial ultracapacitors.



The constant current charge-discharge cycles of demonstrator cell 1 and 2 in a and b, respectively.

- Overview of the results of the best cell in comparison to Skeletons standard cell



- Cell capacitance: the final values are approx. 79% of the industrial reference values.
- ESR values: are elevated compared to the reference values. The 10ms and the 1s ESR values are elevated by 23.8% and 57.6%, respectively, leading to a lower maximum power of these cells compared to the industrial standard.
- By increasing the electrode's density via higher coating weights and different calendaring parameters, these values can be improved further in the future.