# Future Battery Technologies: Il contributo di Manz alla value chain delle batterie al litio

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## BATTERY MANUFACTURING SUSTAINABILITY IN EUROPE

Cell design and manufacturing research and innovation outcome

#### **Cost reduction**

- » Smart digital technology
- Digital customer service
- **Process optimization**
- Efficiency improvement
- Traceability and battery data
- Production data for machine learning and predictive maintenance
- Maintenance adjustment
- Digital twin
- Big data analytic reduce CO2



### **Carbon footprint**

Green battery passport Limited utilization of hazard material/dry processes More efficient resource and energy use Second use Design to recycling LCA modelling studies



#### **Education**

Job reskilling and training Communication to prosumer to accept the new technologies Generate a local supply chain Interconnect academia and industry to drive innovation





## **OPEN FAB**

Consistent process monitoring Industry 4.0

Continuously automated process optimization (AI)

Fast product and format change



Optimized power requirements for each process module

> Reduced dry room space requirement

Total cost of ownership reduction increasing OEE

For a sustainable battery production in Europe