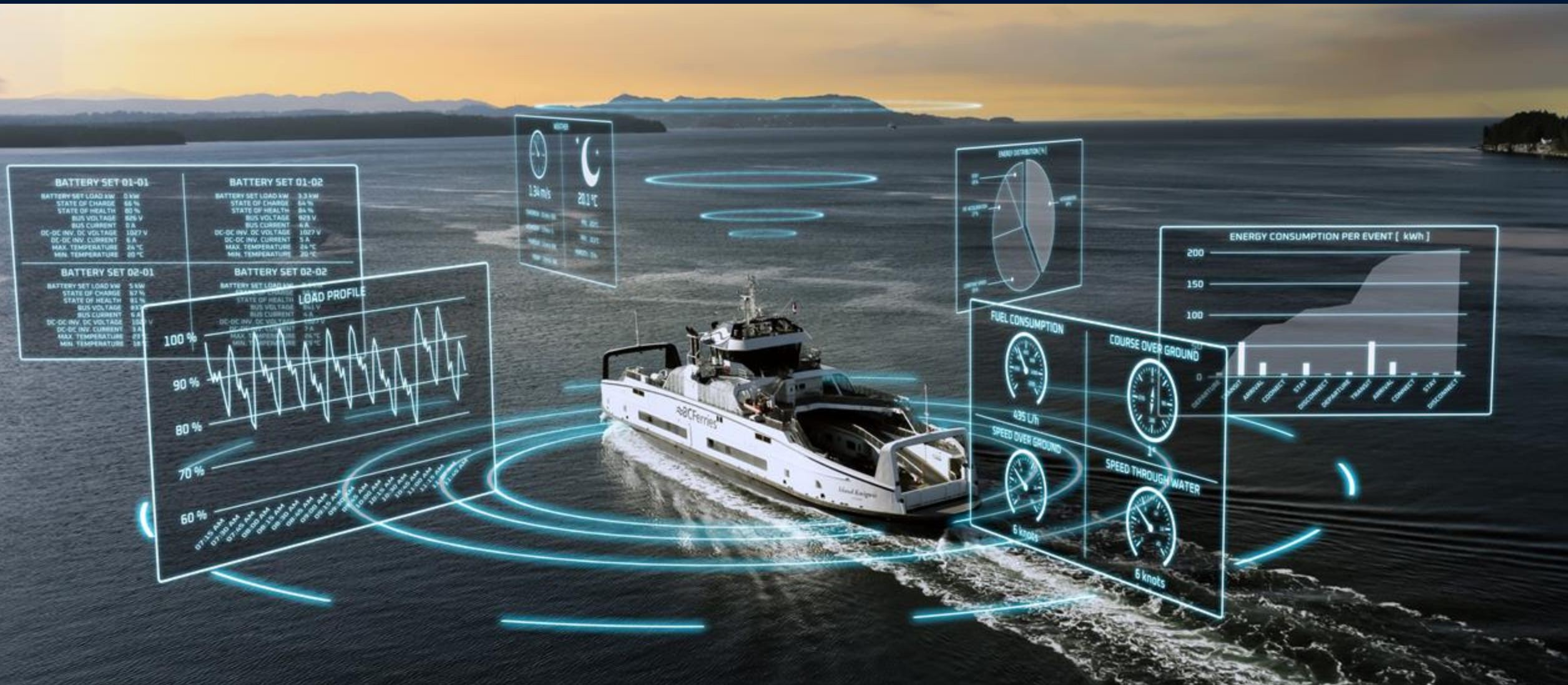
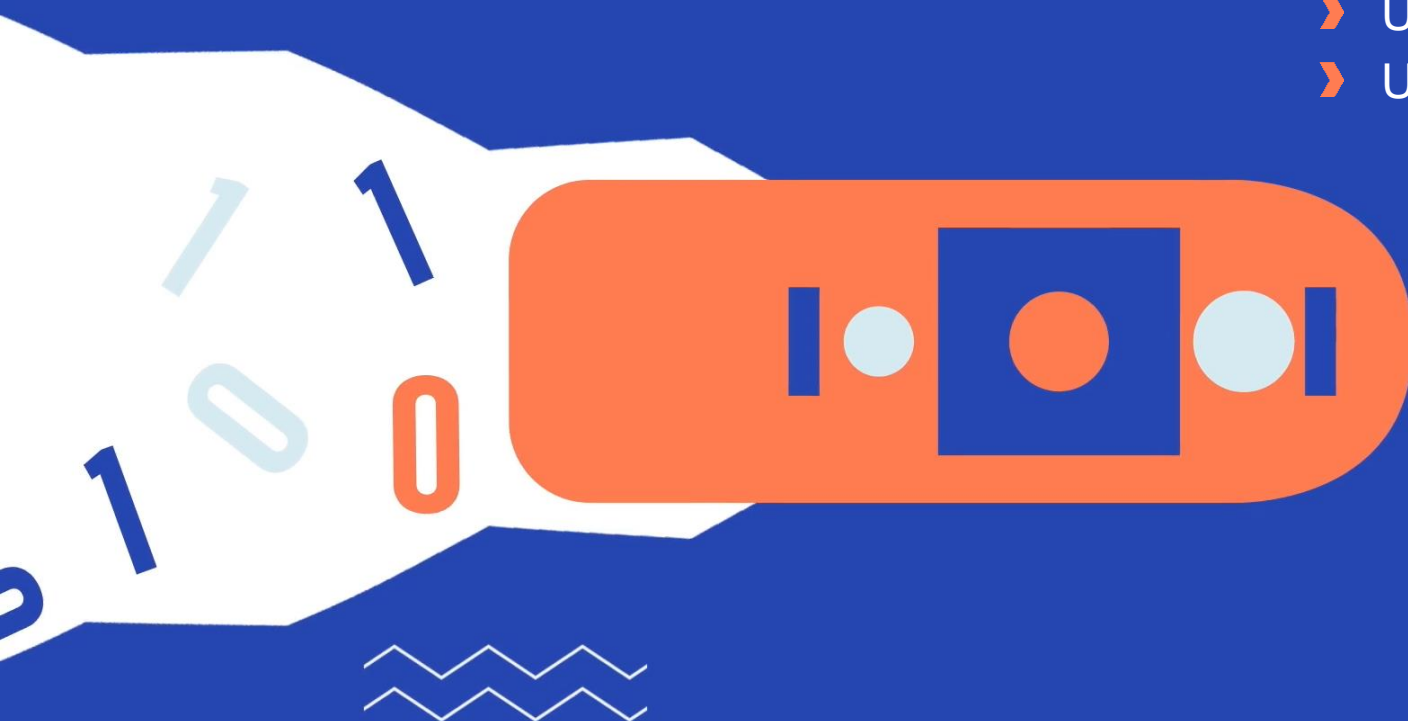


Unlocking the potential of connected vessels



Data acquisition at Damen

- › Damen Triton started 7 years ago
- › Approximately 15.000 sensors installed per vessel
- › More than 600 vessels connected
- › Under which 40 ferries
- › Under which 25 hybrid and electric ferries



EXPLORING THE USE CASES



Operability



Emissions



Sailing within time



Electrification



Energy consumption



Battery system design

Functional requirements

Battery lifetime

Operational profile



System specifications

Battery capacity

Operational limits

Power Management System

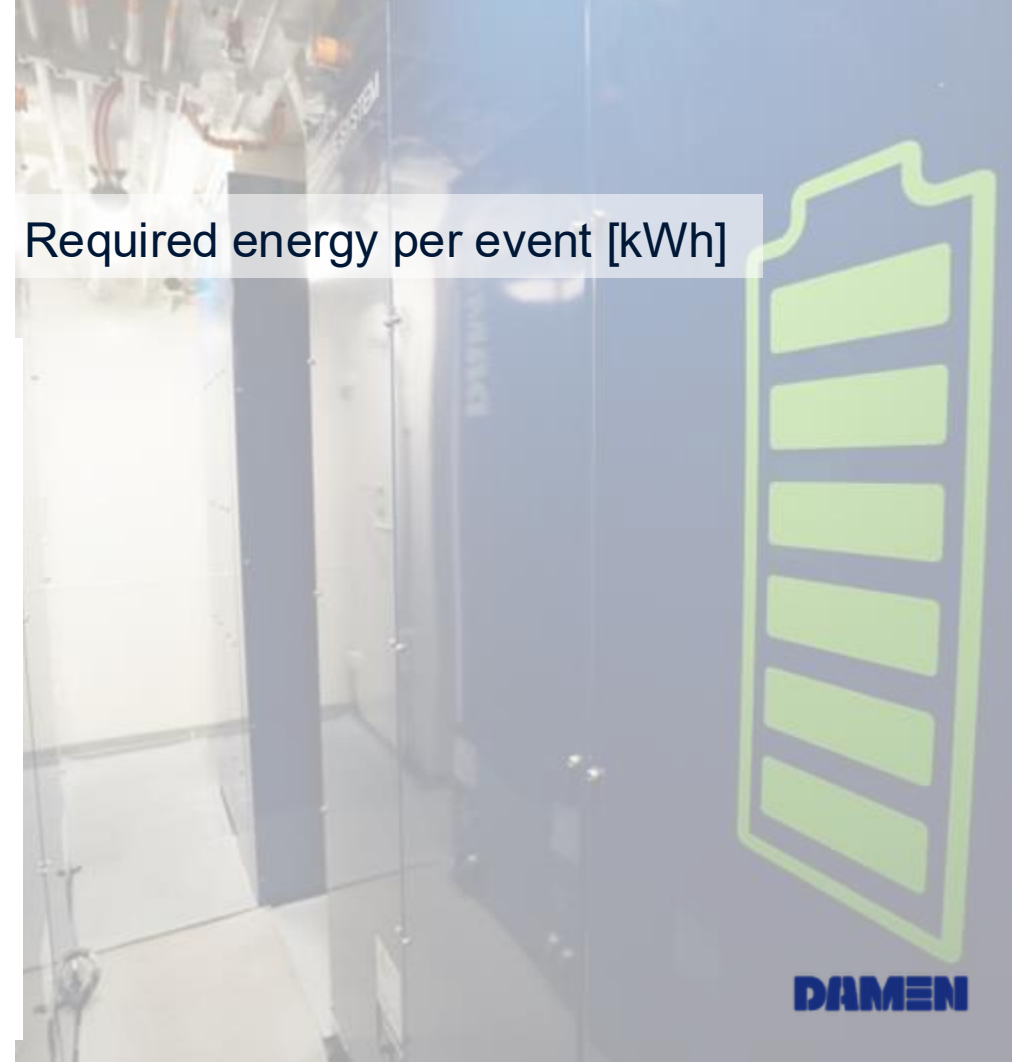
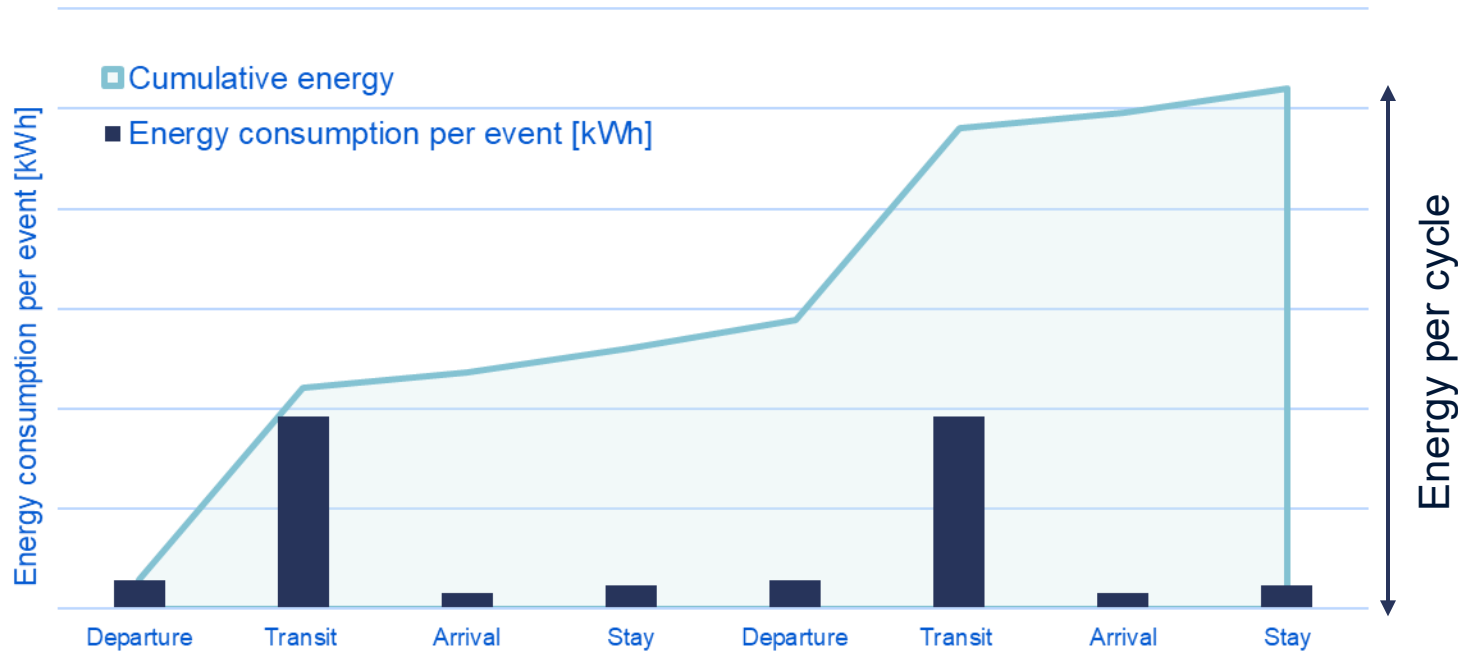
Cooling system

.....

Battery system design

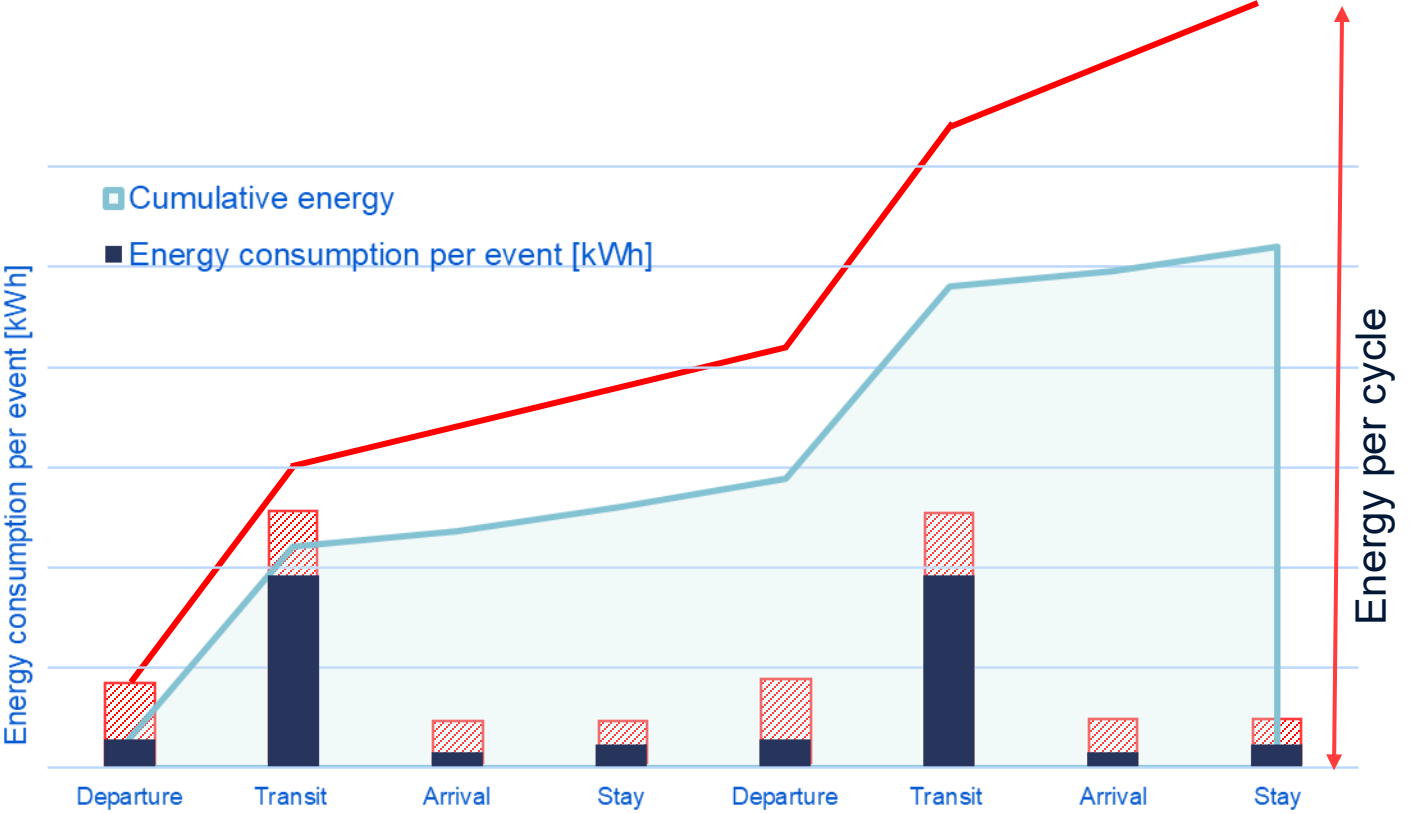
Operational profile

Required time per event \times Required power per event [kW] = Required energy per event [kWh]



Battery system design

Battery lifetime



Indicators of battery use:
Temperature
Energy per cycle
C-rate



DAMEN TRITON



Use cases





USE CASES

Advise on vessel operation

Sailing according
schedule

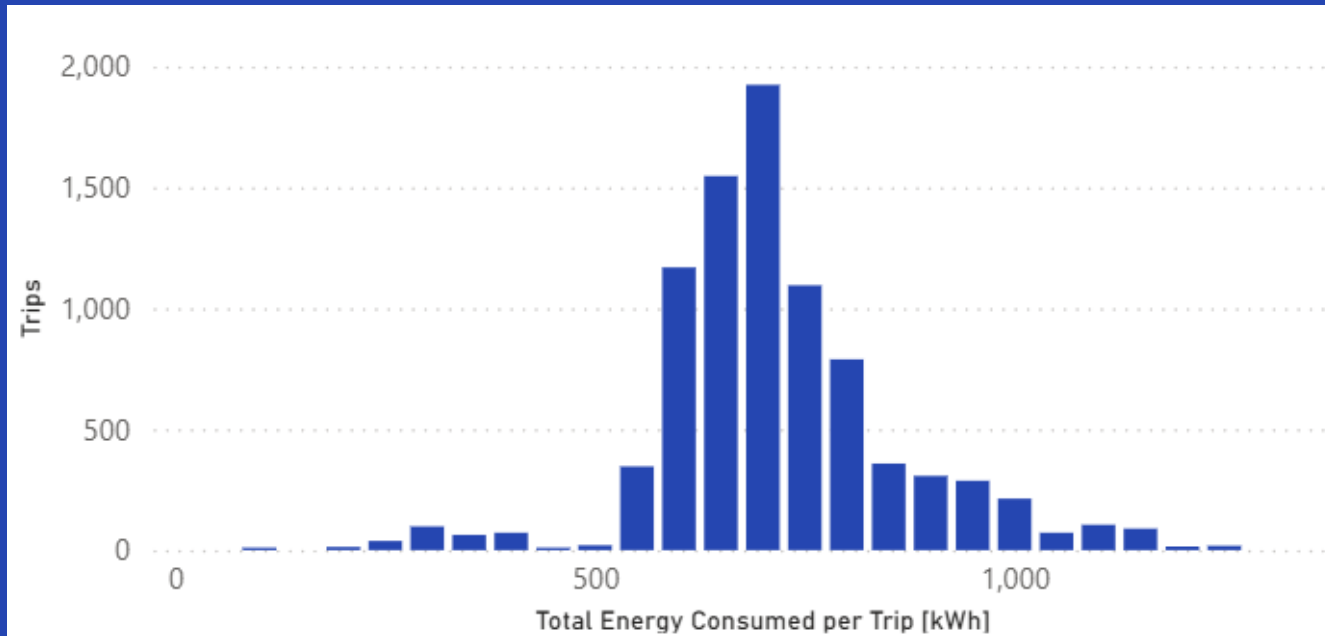


Energy
consumption



USE CASES

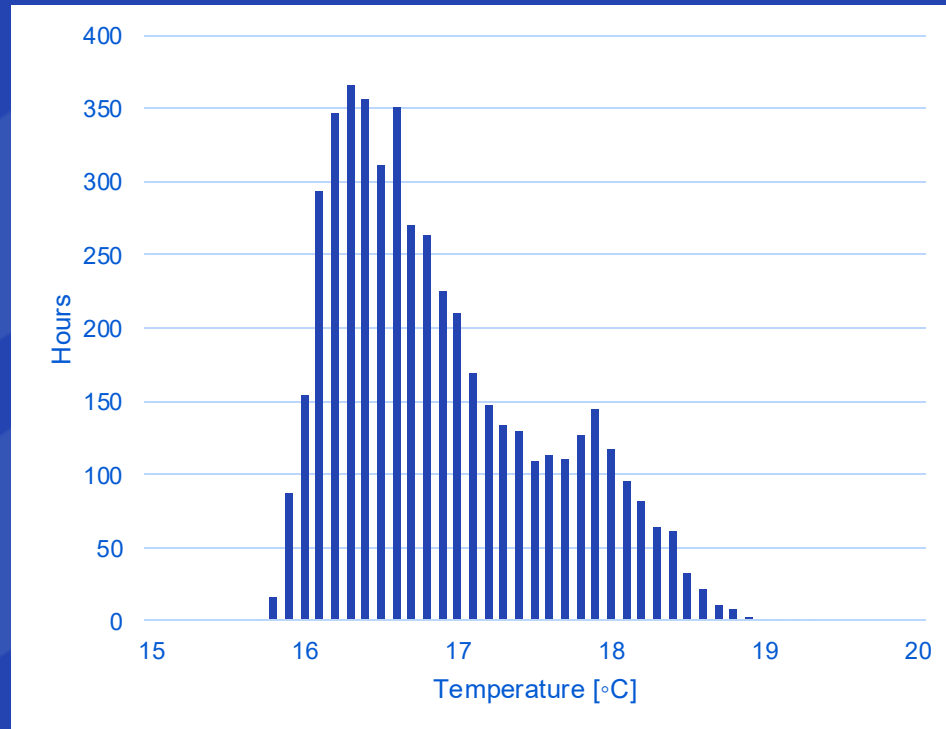
Feasibility of electrification



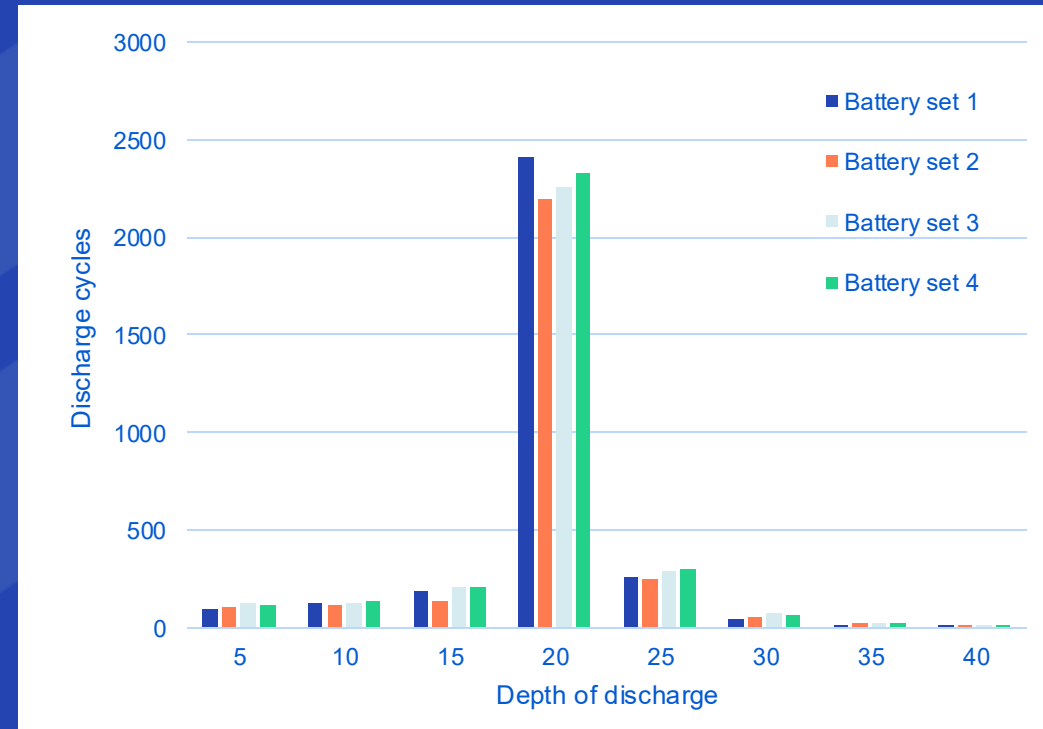
USE CASES

Battery monitoring

Battery room temperature



Depth of discharge





DAMEN

OCEANS OF POSSIBILITIES

Thank you for listening!