

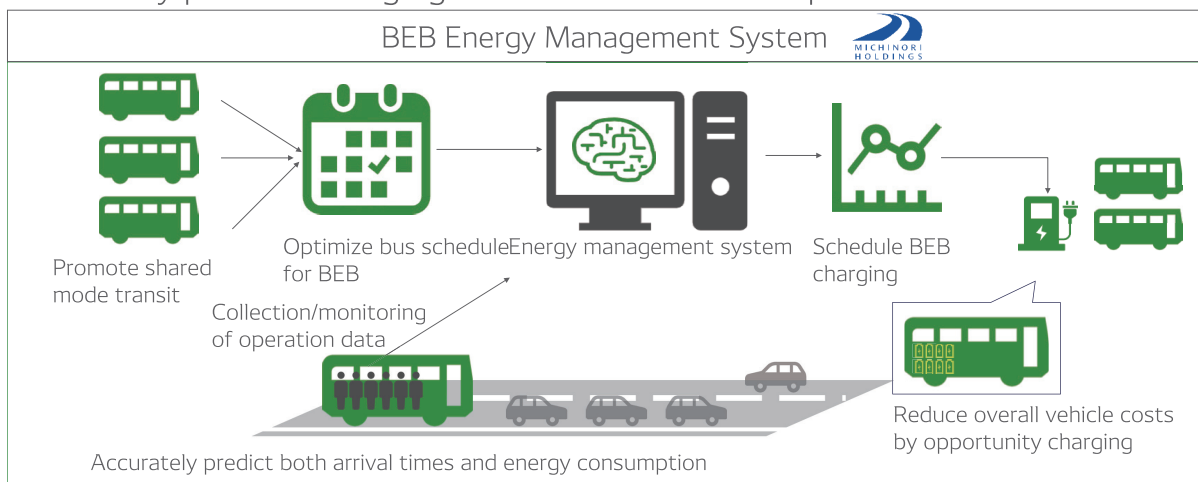
Energy Management System for Battery Electric Bus Service

Operation Maximization for Battery Electric Vehicles

BEB: battery electric bus

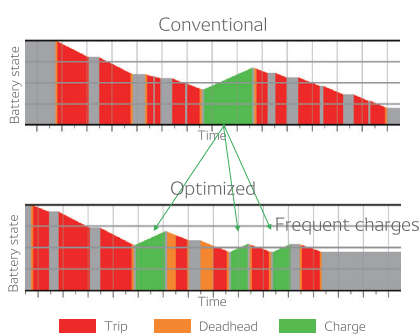
Highlights

- Leverage planned daily bus operation to optimally determine vehicle battery capacity
- Scheduling optimization as additional tool to reduce battery capacity requirements
- Automatically planned charging schedule to minimize operator workload



BEB optimized bus schedule **DENSO**

Charge schedule of BEBs **DENSO**



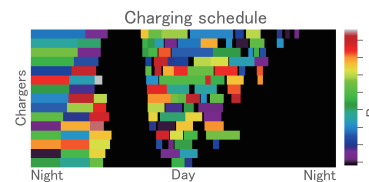
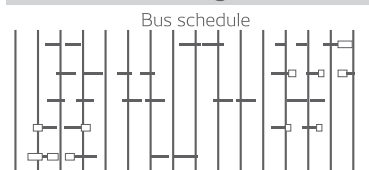
Battery capacity



Reduce 46% in total



Battery capacity



Automatically generate charging schedule for the bus fleet.

Result

- Optimized operation has potential to reduce battery capacities by over 40%
- Calculation time of charge scheduling: 0.77s for 40 buses via automatic scheduler
- BEBs decreased operating cost by 14% compared to diesel buses

Acknowledgement

- This work was completed in collaboration with Michinori Holdings, Inc.