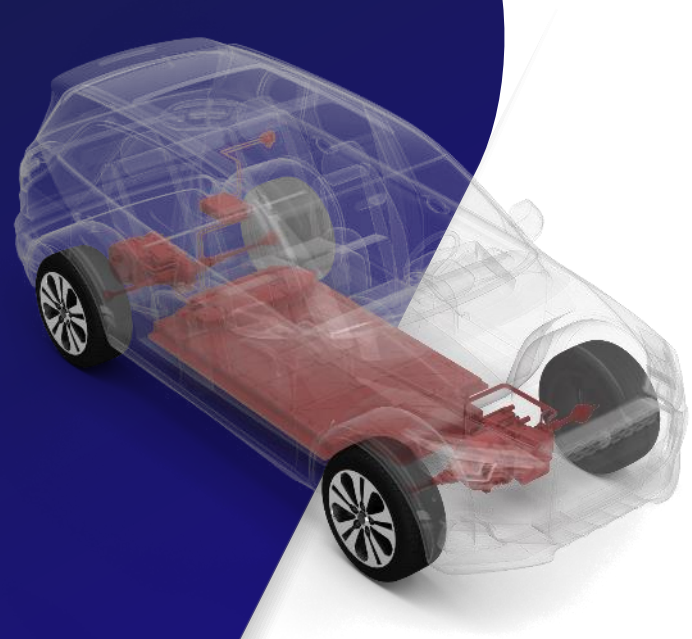
FEV Signature Solutions

Accelerated discharger for battery electric vehicles

Our solutions enable new players, OEMs, tier 2 and 3, and test agencies to expedite development for battery electric passenger and commercial vehicles

FEV offers

- Service provision, discharger rental, and engineering services
- Turnkey product sales
- Discharger licensing
- User defined discharging options:
  - Vehicle to heat
  - Vehicle to vehicle
  - Vehicle to grid
  - Transient drive cycle for durability testing



Why FEV

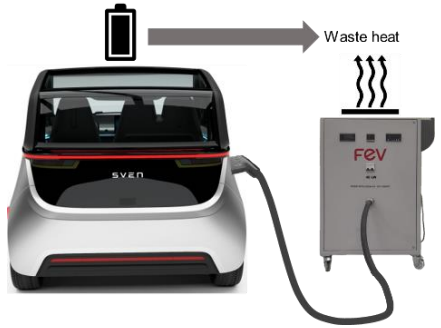
- Proven solution for HV battery discharging without disassembly or need to remove any screws from the vehicle
- User defined options to enable you to discharge the HV battery with desired power
- Customization by FEV to exactly address your needs
- Economical and time efficient solution

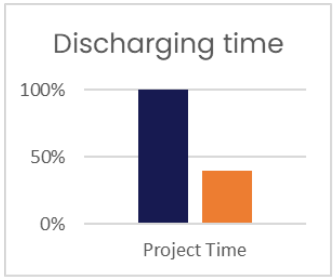
Reference projects

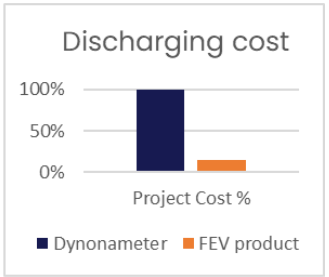
ACCELERATED DISCHARGER FOR BATTERY ELECTRIC VEHICLES

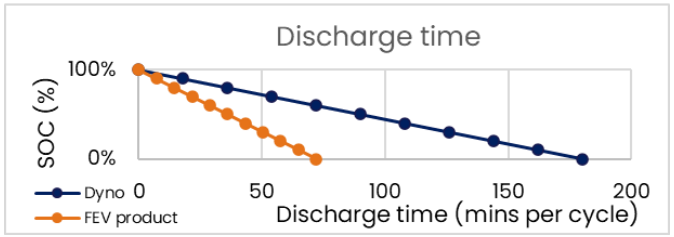
Validation testing for Asian OEM

- Validation tests that require the battery of the electric vehicle to be discharged before the validation test is performed
- Performed tests:
  - Cooling performance at Low SOC (40C, 45C)
  - Heating performance at Low SOC (0C, -20C)
  - SFC charging (0C, -20C, 45C, 25C)
  - AC charging 11kW (0C, -20C, 45C, 25C)
  - AC charging 7kW (0C, -20C, 45C, 25C)
  - AC charging 3.3kW (0C, -20C, 45C, 25C)
  - Coasting regeneration at Low SOC
  - Braking biased regeneration at Low SOC
  - Performance operation at Low SOC
  - Gradeability at Low SOC









Prototype implementation

(Vehicle to heat)

Pending patent application

(Battery control system; IN 2023 110 656 37)

Pending patent application

(Battery control system; DE 10 2024 120 525.3)

Functions overview

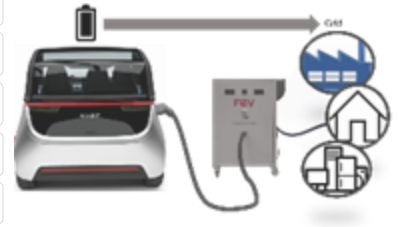
ACCELERATED DISCHARGER FOR BATTERY ELECTRIC VEHICLES

Vehicle to heat

- Low cost
- Validation testing
- Portable-less weight
- Fast discharge

Vehicle to grid/load

- Validation testing
- High cost
- Heavy weight
- Faster discharge
- Energy saving



Accelerated battery electric vehicle discharger

Vehicle to vehicle

- Validation testing
- Moderate cost
- Moderate weight
- Portable
- Slow discharge

Transient drive cycle for battery durability

- Durability testing
- Charge and discharge
- Heavy weight
- High cost

Use cases

ACCELERATED DISCHARGER FOR BATTERY ELECTRIC VEHICLES

Vehicle to heat

The energy is dissipated in the form of heat using resistive load bank.

Designed for **48V to 1000V systems up to 300kW**; It is user defined to set desired discharge current or SOC%.

Vehicle to vehicle

The energy is transferred from vehicle with High SOC to vehicle with low SOC until equilibrium is achieved. This is achieved using DC-DC power converters

Designed for **48V to 1000V systems**; It is user defined to set desired discharge current or SOC%.

Vehicle to grid / load

The energy from HV is converted to AC and fed into the grid using DC to AC inverter.

Designed for **48V to 1000V systems up to 40-60kW**; It is user defined to set desired discharge current or SOC%.

Vehicle drive cycle – durability testing

Perform charging and discharging in accordance to drive cycles.

Designed for **performing accelerated drive cycles**; Drive cycle data points can be fed as per user defined drive cycle.

Get in touch with us for further information

www.fev.com/en/signature-solutions