REMOTE DIAGNOSIS FOR BATTERY SYSTEMS

Fraunhofer Institute for Transportation and Infrastructure Systems IVI

Richard Kratzing
Group Manager »Energy Storage Systems«
Phone +49 351 4640-639
richard.kratzing@ivi.fraunhofer.de

Zeunerstrasse 38 | 01069 Dresden

Public Relations
Elke Sähn
Phone +49 351 4640-612 | presse@ivi.fraunhofer.de

www.ivi.fraunhofer.de
MOTIVATION

In the future, electromobility will play an increasingly important part in transportation. Efficient battery systems are a fundamental success factor in this regard. Currently, however, it is still difficult for operators to assess the remaining life span and state of a battery.

The aging process of battery storage systems

- is invisible from the outside,
- depends heavily on the kind of utilization and requires electrochemical expertise and a complex diagnosis process with regard to chemistry, type, manufacturer and design.

Battery aging has an immense impact on

- the residual value,
- amortization,
- availability and applications planning,
- maintenance intervals and safety (fire hazard).

TECHNOLOGY

The IVImon system developed at the Fraunhofer IVI determines relevant information about the state of the battery storage system, processes them and provides them in a user-friendly way by means of a cloud:

- server-based diagnosis system (SOH, life span prognosis),
- no additional vehicle sensors required, only data already available is used,
- analysis based on self-learning and constantly updated algorithms.

The institute has many years of expertise in fields of

- electro-chemical modeling,
- aging diagnosis,
- machine learning as well as
- big data analysis.

IMPLEMENTATION

Cloud-based applications are user-friendly, low-maintenance, cost-efficient and available everywhere. The use of up-to-date data is guaranteed at all times.

The following data can be included in the analysis:

- live data of the vehicle and battery system transmitted by an on-board unit (COTS system provided by the Fraunhofer IVI or provided by the client) or
- data available from the clients’ own data collection / telemetry (e.g. own cloud via cloud-to-cloud API).

The results are either displayed via the IVImon web interface (multi-client capable, dashboard-based), or sent to the client’s cloud via an API interface.

Payment is carried out via the pay-per-use system, which means that the clients will only pay for the services they used within the respective accounting period.

USERS

- Providers of vehicle and battery systems
  - Predictive maintenance and inspection services
  - »Guaranteed availability«
  - Warranty monitoring
- Vehicle operators (public transport providers, municipalities, logistics operators)
  - Aging monitoring, operation optimization, estimation and prognosis of performance
  - Consumption analysis
  - Monitoring of residual value
- Providers of telemetry and diagnosis systems
  - Improved service by inclusion of battery diagnosis
  - Display of optimization potential
- Insurance companies and lessors
  - Legally secure, application-appropriate and technology-adapted design of contracts and insurance policies
  - Monitoring of residual values and amortization