Presentation of the BOB (battery-overhead-bus) project – innovations for smart trolleybus networks

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Trolley 2.0 Partner Meeting and 1st User Forum
Structure

Status Quo & Project “BOB Solingen”

Goal Realization
Status Quo

- Solingen owns a trolleybus system with 50 electrically powered trolleybuses containing auxiliary diesel engines.
- Lines with partly uncovered power supply have to be driven by diesel buses or by the installed diesel auxiliary engine.
- Unidirectional power supply from the medium voltage network.

The aim of the project "BOB Solingen" is to electrify public transport.
Project „BOB Solingen“

Goals

- Efficient use of the existing network
- Increasing bus efficiency
- Reducing peak loads
- Intelligent coupling (AC / DC)
- Increasing system stability
- Monitoring network state
- In-Motion-Charging
- Smart Trolleybus System
- BOB
- PV
- EV charging stations (EV-CS)
- etc.
Project „BOB Solingen“

Battery-Trolleybuses (BOB)
Project „BOB Solingen“

Photovoltaic Systems
Project „BOB Solingen“

Charging Stations for Electric Vehicles
Project „BOB Solingen“

Stationary Storage
Project „BOB Solingen“

Bidirectional Substations
Project „BOB Solingen“

Intelligent Grid Control
Project „BOB Solingen“

Future State
Structure

Status Quo & Project “BOB Solingen”

Goal Realization
Goal Realization

Step 1: Simulation
- Realistic modeling of the individual components and the overall system
- Optimal locations for new components (PV, charging stations for electric vehicles, stat. storage and bidirectional substations)

Step 2: Monitoring
- Estimate / determine network state
- Recognize critical network states

Step 3: Controlling
- Controlling the actuators in the network to eliminate or prevent critical network states
Simulation

Bus-Timetable

GIS-Information

Input Parameter

- Bus-Power-Profiles
- PV-Power-Profiles
- EV-CS-Power-Profiles

Grid State
Simulation
Monitoring & Controlling

Monitoring

- Check the availability of measured values
- Estimate missing values
- Detection of limit violations

Controlling

- Controlling the actuators to eliminate the limit violations
Thank you for your Attention! Questions?