CBEP / JIVE User Group seminar
Bus maintenance at ESWE Verkehr

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ESWE VERKEHR

Gefördert durch: Bundesministerium für Verkehr und digitale Infrastruktur

Koordiniert durch: NOW GMBH

Projektträger: ptj Projektträger Jülich Forschungszentrum Jülich

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ESWE Verkehr approach

Technology-open approach of ESWE Verkehr

BEB

FCB

- Local emission free
- BEV & FC complementary technologies
- Synergy potential
- Grid supportive operation of the infrastructure
- Contribution to the achievement of the Paris targets

Gefördert durch:
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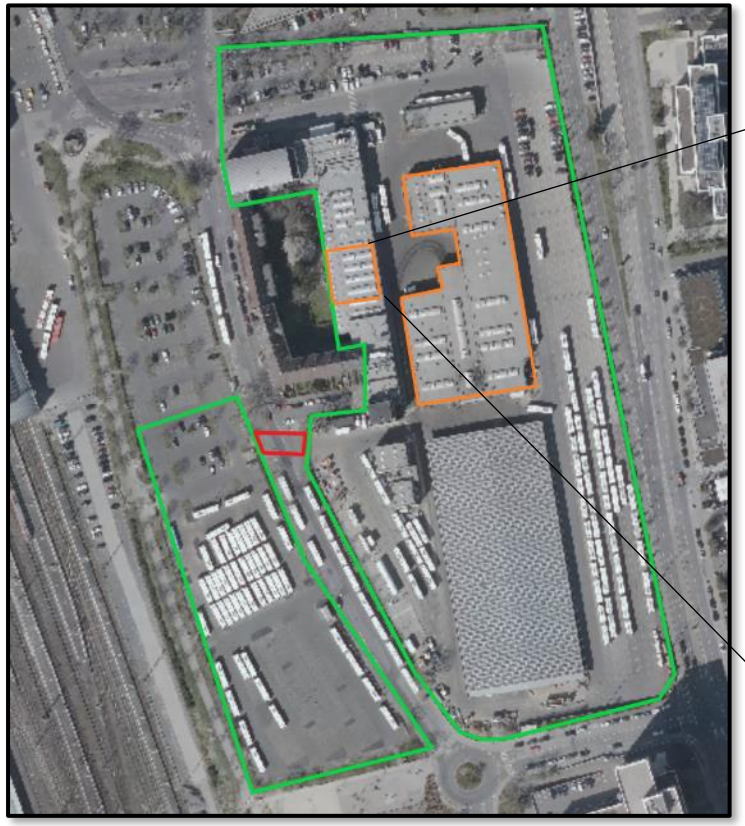
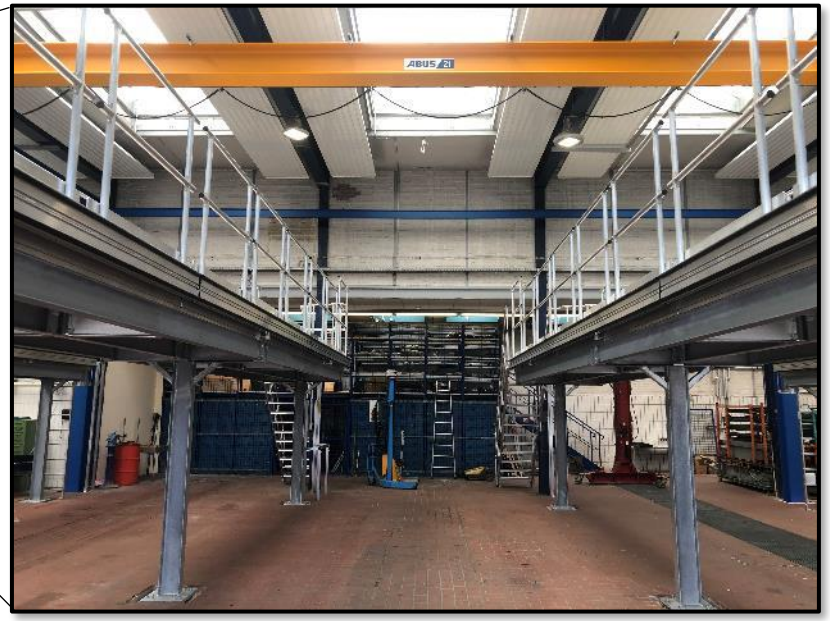
Bus maintenance at ESWE Verkehr

Difference in bus maintenance with the rest of the non-FCB fleet

- Challenges
  - Conversion in existing buildings
  - 3 different propulsion technologies
- 3 stationary and 1 mobile elevated work stands with overhead crane
- Awareness and training of
  - > 1,000 drivers and
  - HV training of the entire workshop staff



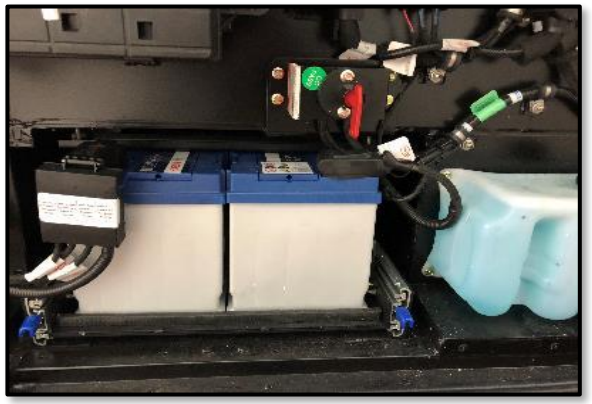


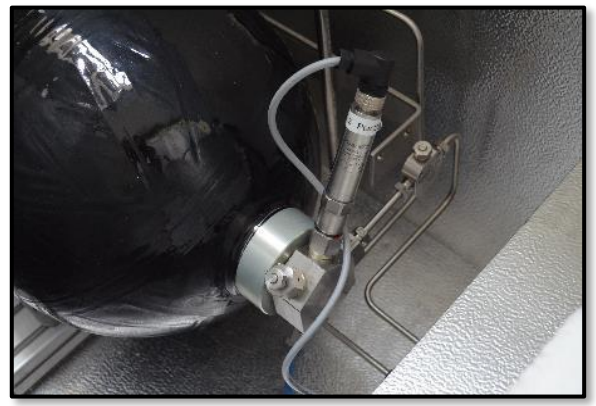
Bus maintenance at ESWE Verkehr

Technical issues that have required specific/quick maintenance or that are recurring

- Conventional parts
  - Connectors
  - Fuses (low voltage)
  - Compressors (air)
- High voltage
  - Traction battery
  - Inverter
  - Charging
- Hydrogen
  - Fuel cell control

Signal transmission





Bus maintenance at ESWE Verkehr

Solutions that have been put into place/ Lessons learned and recommendations

- Solutions:
  - Workshop adaption for conducting maintenance in house
  - Training of the entire workshop staff
  - Improvement of communication between workshop and flying doctors
  - Product improvement on the fly
  - Continuous process development
- Other current Challenges:
  - Development of a sound hydrogen supply chain
  - Increasing hydrogen costs
  - Space on the depot and a lack of drivers
- Lessons learned:
  - Increasing operational time
  - Initiation phase with small driver pool to increase acceptance among drivers and quality of feed back
- Recommendations:
  - Improving international codes and standards for signal transmission between new technology components and fleet management system (ITCS)
  - Adoption of German standards (VDV i.e. driver workplace, charging protocol interoperability)
  - Provision of a central diagnostic interface with plain text error code

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HYDROGEN AND NEW ENERGY SOLUTIONS

Thank you for your attention

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