ASSURED
faSt and Ssmart charging solutions for full size Urban hEavy Duty applications
769850-ASSURED-H2020-GV-2017

Project will develop innovative heavy-duty and medium-duty vehicle solutions with interoperable charging infrastructure concepts, enhancing performances, comfort and safety while reducing the TCO and contributing to a competitive and sustainable mobility.
Projectmanager  Stefan Fries / EZRPA
Call  H2020, GV-08-2017 | boosting the electrification of urban commercial vehicles and their integration with high power fast charging infrastructure
Titel  ASSURED- fÄSt and Smart charging solutions for full size Urban Heavy Duty applications
Partner  IAV (development of REX) ABB distributor of charging station
End  Sept 2021
Objectives

What is our focus?

- Development of e-drivetrain (combination of BEV + REX)
- Optimization of energy-management and cooling-system
- Integration of REX-System (package and energy-management)
- Adoption of HVAC system
- Demo at AWM in Munich
- Development of HMI
- Adoption of simulation tools
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1. Motivation and goals
   - Packaging and design of a Truck optimized for refuse collection
   - Design of ideal battery- and REX-size in means of power distribution
   - Development and integration of a NG-REX-modul at the truck frame.
   - Integration of REX-system to the energy management of the Truck
   - Demo use by Abfallwirtschaft (AWM) in Munich.

2. Functionality and features
   - Drivetrain and energy storage system optimized for refuse collection by combination of Battery and REX
   - Increasing of driving range by usage of REX (transport of garbage to dumping ground) combined with refuse collection at zero emission in downtown areas
   - Development of a compact and optimized drivetrain (wheelbase and energystorage) to meet customer demands
## Packageing

### Overall view

<table>
<thead>
<tr>
<th>Technical features</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>battery capacity</td>
<td>ca. 150 kWh</td>
</tr>
<tr>
<td>REX-power</td>
<td>85 / 50 kW (Peak- / continuous)</td>
</tr>
<tr>
<td>gas storage capacity</td>
<td>22 kg</td>
</tr>
<tr>
<td>propulsion power</td>
<td>240 kW Peak</td>
</tr>
<tr>
<td>gross veh. weight</td>
<td>26 t</td>
</tr>
<tr>
<td>payload</td>
<td>ca. 10 t</td>
</tr>
<tr>
<td>wheelbase</td>
<td>4125 mm</td>
</tr>
<tr>
<td>vehicle type</td>
<td>TGM 6x2/4 26t</td>
</tr>
</tbody>
</table>

- **GAS storage**
- **CNG-REX VW 1,4l**
- **batteries**
Current Status

... an overview.

HV components mounted at truck
- Wiring almost finished

Air system packaged and mounted
- Set up finalized

CO₂ cooling system integrated
- Set up finalized

LV-wiring started + functional development close to 100%
- Setup of drive functions finished - ready for application
- LV-wiring will be started within next days

E-Axle
- Delivery planned in KW48
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IAV workpackage

Development of CNG-REX- und CNG-storage-modul

- Components delivered to workshop
  - → VW Motor EA211 1,4l + HEM 80 generator
- Storage module mounted at truck
- First functional tests at test rig passed
- Finalizing of functional development

Next steps (IAV):

- Delivery of REX-module until end of October
- Integration / application to truck’s energy management
Project – Milestones

- **Start of vehicle assembly**
  - **10.04.19**
  - Integration of components
    - REX
    - JBP batteries
    - CO₂ HVAC
    - Compactor
- **Purchasing of components**
  - Axle
  - HV-Components
  - etc.
- **Start of REX production (IAV)**
  - Concept finalized
  - Components available
- **All components mounted**
  - Mounting of hardware finalized
  - Integration of ZF e-Axle
  - CO₂ System integrated
  - Development of software finalized
- **Package finalized**
  - Energy demand (for transport and collection) defined
  - e-components defined
- **Definition of REX components (MAN/IAV)**
  - components defined
    - IC-engine (VW)
    - generator (VW)
    - ECU (VW/IAV)
- **Deliverable 01.06.20**
  - Demonstration of vehicle to EU-commission
- **End of demo**
  - Start of evaluation
  - Charging station available
  - Vehicle licensed
- **01.10.2017**
  - Start
- **30.09.21**
  - End

**2018**
**2019**
**2020**
**2021**