Further Electrification of Urban Public Transport

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Initiatives on Electrification of (Public) Transport at EU level

- EU Transport Whitepaper, targets: no conventionally fuelled “cars” in urban areas by 2050, 50 % by 2030
- Various strategic documents and initiatives on alternative fuels
  - Expected initiative on “clean transport systems”
  - Initiatives on hydrogen used in transport
- UITP: decarbonisation conference February 2012, EBSF activities
- ERTRAC roadmap on EBSF: includes recommendations on further development of electrification of bus systems
- Current EU-funded project on hybrid buses (HCV)
- Coming FP7 call on electrification of bus systems
Various National Initiatives on Electrification of (Public) Transport

- **Germany**: Electromobility programme of German government with regional showcases („Schaufenster Elektromobilität“
  - various public transport showcases have been funded in first funding period and are now included in new proposals
  - VDV is closely involved and has organised the third annual conference on electric buses in February 2012, fourth conference is planned already for February 2013
  - E-Bus Award 2012 organised by VDV, supported by German Transport Minister Dr. Ramsauer [http://87.230.1.165/index.html](http://87.230.1.165/index.html)

- **Netherlands**: Zero Emissie Busvervoer initiative

- Various projects in other countries/European cities
HYBRID BUSES: PARTIALLY ELECTRIC OPERATION - With increasingly available experiences

Different fuel savings depending on technology, operational conditions etc.

### Independent institutes and Real traffic data

*Customer field test and traffic data Reported by Customers and Public Authorities*

<table>
<thead>
<tr>
<th></th>
<th>7700 Hybrid</th>
<th>7700 Diesel</th>
<th>Saving</th>
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<tbody>
<tr>
<td></td>
<td>litre / 100 km</td>
<td>litre / 100 km</td>
<td>%</td>
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<tr>
<td>Göteborg - Daily operation</td>
<td>25</td>
<td>40</td>
<td>31%</td>
</tr>
<tr>
<td>London - Route 159**</td>
<td>35</td>
<td>54</td>
<td>35.5%</td>
</tr>
<tr>
<td>London - Route 141 fleet</td>
<td>38</td>
<td>68</td>
<td>36.5%</td>
</tr>
<tr>
<td>Switzerland (hilly)</td>
<td>54</td>
<td>76</td>
<td>29%</td>
</tr>
<tr>
<td>STIB Brussels 17 km/h</td>
<td>33</td>
<td>61</td>
<td>45%</td>
</tr>
<tr>
<td>Switzerland (flat)</td>
<td>23</td>
<td>35*</td>
<td>34%</td>
</tr>
<tr>
<td>Fraunhofer- Avg. 7 routes</td>
<td>32</td>
<td>47*</td>
<td>31%</td>
</tr>
<tr>
<td>La Rochelle - Commuter</td>
<td>26</td>
<td>43*</td>
<td>38%</td>
</tr>
<tr>
<td>La Rochelle - City</td>
<td>30</td>
<td>54*</td>
<td>43%</td>
</tr>
<tr>
<td>Luxemburg 31 km/h</td>
<td>22</td>
<td>37*</td>
<td>40%</td>
</tr>
</tbody>
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* Competitor bus used as reference
** Chassis dynamometer test at Millbrook, UK

Next steps: plugin hybrid bus

Conclusion La Rochelle testing: Announced energy and environmental gains are confirmed: the vehicle consumes 38 to 44% less fuel than standard
Operation towards fully electrified public transport buses

→ EBSF bus electrification study: complete cycles
Further Development of Urban Rail Systems
- EXAMPLE OF A TRAM WITHOUT CATENARY

...as in Nice and several other cities...

Project in Aachen
LIGHT RAIL POWER SUPPLY PROVIDES HIGH-PERFORMANCE CHARGING INFRASTRUCTURE FOR OTHER MODES OF TRANSPORT

Source: Müller-Hellmann, VDV
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