Opportunities for improving the cross-border connections DE - PL
As of 2020 the section between Zgorzelec and Wrocław will be completely electrified; new electric railcars have been purchased.

Benefits of an electrification as a long-term opportunity

The electrification of the Görlitz - Zgorzelec section could be implemented in the medium term.

Short-term solutions are necessary.
INTRODUCTION AND CURRENT FRAMEWORK

BENEFITS OF AN ELECTRIFICATION DRESDEN-ZGORZELEC

The electrification is very important with a large operational, economical and environmental impact.

- Travel time benefits: 5,035,370 €
- Reduction of accident costs: 37,837 €
- Reduction of CO\textsubscript{2} emissions on roads: 292,080 €
- Reduction of CO\textsubscript{2} emissions by using electric railcars: 1,011,176 €
- Savings in energy consumption: 536,583 €
- Savings in maintenance costs of rolling stock: 661,363 €

Annual CO\textsubscript{2}-emissions in tonnes:
- Diesel: 7,800 tonnes
- Electro: 4,500 tonnes

Diesel

Electro

TAKING COOPERATION FORWARD
LARGE POTENTIAL FOR USING DUAL-MODE VEHICLE CONCEPTS IN THE CROSS-BORDER REGION

- Strategic Polish investment program for enhancing the rail infrastructure
- Large potential for using multi-system vehicles after electrification of specific railway lines in Germany
OVERVIEW OF DUAL-MODE COMMUTER RAILCARS AND EXAMPLES IN PRACTICAL USE

Practical examples

<table>
<thead>
<tr>
<th>currently used dual-mode railcars</th>
<th>transport company</th>
<th>side notes/parameters</th>
</tr>
</thead>
</table>
| Stadler Flirt 3-MS | Abellio Rail NRW is operating on the Niederrhein-Netz between Düsseldorf main station and Arnhem Central | • approx. 260 seats (5 parts)  
• Maximum speed: 160 km/h  
• Automatic clutch |
| Stadler Flirt 3-MS | Keolis Germany is operating the RB 61 between Bielefeld and Hengelo | • Signaling system ETCS L 2 and ATB  
• 266 seats (5 parts)  
• Maximum speed: 160 km/h  
• Rented by Alpha Trains |
| Stadler Kiss-MS | • Ordered by CFL in 2010  
• Railcars are particularly designed for traffic between Luxemburg and Koblenz | • 284 seats (3 parts)  
• Maximum speed: 160 km/h  
• Equipped with two different signaling systems |
## Dual-mode railcars in commuter traffic

<table>
<thead>
<tr>
<th>Model</th>
<th>Side Notes/Parameters</th>
</tr>
</thead>
</table>
| Alstom Polyvalent            | • 220 seats (for 4 parts)  
• Maximum speed: 160 km/h (diesel)  
• No trains have been delivered to Germany yet |
| Coradia iLint                | • 180 seats - 600 seats  
• Maximum speed: 160 km/h  
• Pilot testing of different line section in Germany |
| Train in project “Eco Train” by DB | • Scheduled admission by EBA at the end of 2018  
• Operation on the Erzgebirgsbahn is planned for 2022 |
| Stadler Flirt-Akku           | • 310 seats  
• Maximum speed: 140 km/h  
• Max. Range: 80 km |
POSSIBILITIES FOR UPGRADING THE ELECTRIC RAILCARS

- Koleje Dolnośląskie has ordered 11 NEWAG IMPULS 5-car trains (type 45WE) in addition to the current fleet.
- Due to the electrification on the Polish site, the railway undertaking will use electric railcars exclusively.
- Upgrading of NEWAG IMPULS with a small diesel engine or battery is **technically not possible**.
- NEWAG is developing a dual-mode vehicles which will be presented in 2019.

* Railistics contacted the manufacturer
ORGANISATIONAL MEASURES

- Foundation of an European Groupings for Territorial Cooperation DE - PL - CZ

- ÖBB and DB founded a joint-venture in 2007 for the sharing of vehicles in cross-border rail traffic between DE - AT

- Examination of the possibility for procuring joint vehicles in future within the framework of an EGTC*
OPERATIONAL MEASURES

Extension of the rail connection from Görlitz to Węgliniec (only for 1-2 years depending on the electrification progress to Zgorzelec)

- Travelling time on the relation Dresden - Wrocław would not be extended
- One additional direct connection between Dresden and Węgliniec with the existing rolling stock

Requirements

- Węgliniec as a junction station with good connections
- Clarification of the financial issues

The improvements can be achieved in the short term.

* European Groupings for Territorial Cooperation (EGTC)
Possible measures

<table>
<thead>
<tr>
<th>Measures</th>
<th>Short-term</th>
<th>Medium-term</th>
<th>Long-term</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Extension of the railway connection from Dresden to Węgliniec for bridging the gap</td>
<td>Joint-Venture for the procurement for sharing the vehicles in cross-border transport</td>
<td>Electrification of the railway line between Dresden and Görlitz</td>
</tr>
<tr>
<td></td>
<td>Extension of the railway connection to Zgorzelec</td>
<td>Electrification of the railway line section Görlitz - Zgorzelec (800 m)</td>
<td>Procurement of innovative multi-system railcars</td>
</tr>
<tr>
<td></td>
<td>Using of dual-mode vehicle concepts</td>
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</tbody>
</table>
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