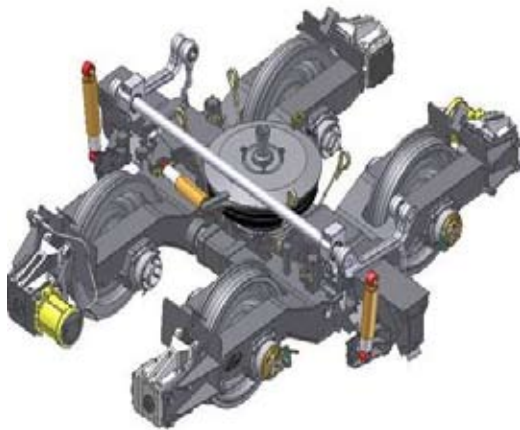
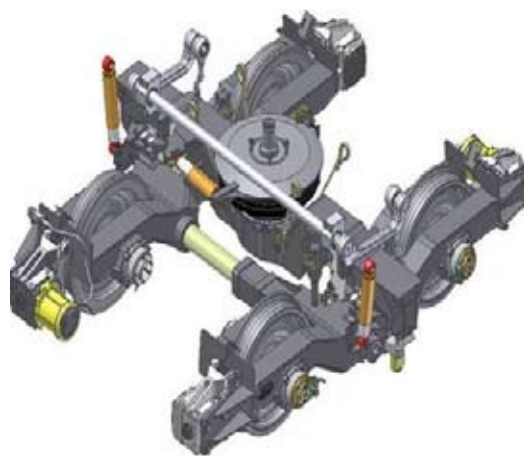


## Gauge-Changing Bogie – EV 09



Track Gauge 1'000 mm



Track Gauge 1'435 mm

### Customer Requirement

The Montreux – Berner Oberland-Bahn (MOB) commissioned PROSE with the design of gauge-changing bogies. The engineers used the MOB-developed design and functional principles, which enable the change of the bogie's track gauge while running over a fixed track gauge changeover facility at low speed as a basis for the design of the bogies. The change from meter gauge to standard gauge and vice versa is facilitated by two half frames that can be slid 435 mm sideways relative to each other and which are featuring independent wheels fitted to them. Further challenges PROSE had to meet were the compensation of the different platform heights for standard gauge and meter gauge by the means of supports with two different heights in the bogie traverse as well as the customer's requirement to develop bogies that could be fitted under the existing as well as under the new coaches.

### Realisation

Stress analysis and calculations of the running dynamics were performed during the design phase of the bogies and, in order to optimise the components and the bogies, various alternatives were analysed. Railway-tested components such as air spring and vehicle roll stabiliser bar were used wherever possible in order to minimise the risks that are generally inherent to new developments. If this wasn't feasible, as for instance with the changeover facilities, positively driven mechanisms such as trunnions and positive interlocking devices were used. Opting for simple

mechanisms and standard components reduces the spare part storage and therefore lowers the maintenance costs. The development of the bogies was realised in close collaboration with MOB. MOB was in charge of the design for the track gauge changeover facility; PROSE scope of work included the definition of the design requirements which were based on calculations and computer simulations.

### Customer Advantage

The innovative gauge-changing bogies will enable a ride on the GoldenPass line between Montreux and Interlaken without need to change trains due to the varying gauge tracks in the future. This improvement enhances the attractiveness of the travel and has a positive impact on the tourism of the Berner Oberland and the Vaud Riviera. The passengers benefit from the new services and enjoy a higher comfort.



Gauge-Changing Bogie – EV 09

### Factsheet 4.00049

#### Detail information

##### Project information

- Customer: Montreux – Berner Oberland-Bahn (MOB)
- Development: 10.2008 - 08.2009
- Prototypes, design: 08.2009 - 04.2010
- Prototypes, tests: 05.2010 - 12.2010

##### Technical data of the bogie

- Wheel placement: Independent wheels without wheelset axle
- Track gauges: 1'000 mm and 1'435 mm
- Wheelbase: 1'500 mm
- Wheel diameter (new): 685 mm
- Max. load per axle: 8.0 t
- Max. speed: 100 km/h
- Height of secondary suspension: 710 mm und 860 mm
- Bogie mass: 2'850 kg

##### Further properties

- Only one active element to change track gauge (pneumatically operated extension arm) all other elements passive and positively driven
- Two half frames constitute a twistable frame
- Bogie suitable for trains subjected to the harsh winter conditions of the Alps

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