

## Vehicle Refitting From local traffic commuter train (NPZ) to the Domino train



Domino motor coach for the SBB subsidiary Region Alps. Prominent eye catchers are the air conditioning units on the roof. While they enhance the comfort, their integration also presents a technical challenge.

### Customer Requirements

Due to the growing demands of the passengers, the law (disability law, etc.) and the increasing operational requirements, SBB has decided to completely refit their NPZ driving and motor coaches. Supplemented by newly acquired low-floor vehicles they form the new Domino unit.

As the refit results in a change of the weight distribution, PROSE is commissioned to assess the bogies regarding their stability, running and braking behavior and to adjust them accordingly. PROSE is also in charge of ensuring the mechanical integration of the new systems (train and vehicle bus system and modernized driver's-cab control panel), compliance with the fire protection requirements according to DIN 5510 and conception and management of the homologation after the refit.

### Realisation

The entire vehicle engineering is carried out by the consortium EHP (ENOTRAC, Helbling Technik and PROSE). The refit of the vehicles takes place at the SBB workshops in Olten and Yverdon.

In a first stage, several concepts are developed in order to define – in cooperation with the customer – the best solution for each case. Based on these decisions, the necessary documentations for supply and production and assembly drawings are

prepared and the engineering is executed.

During the refitting PROSE engineers support the workshops in situ.



NPZ unit before modernization

### Customer Advantages

Due to the modernization of the NPZ driving and motor coaches, SBB disposes of rolling stock material that fulfills the latest requirements regarding comfort.

The vehicle modernization makes sense from an economic point of view as it sustains earlier investments and is a cost-effective alternative to new acquisitions. The operating company saves time and money, while at the same time enhancing the attractiveness of the vehicles for the passengers in way that is comparable to new ones.

### Factsheet 4.00038

#### Detailed Information

##### Information on the Project

- Customer: SBB Ltd., Passenger Traffic, P-OP Strategy, Major Project, Customer
- Consortium: EHP, consisting of: ENOTRAC, Helbling Technik, PROSE

##### Project schedule

- Development: 2007-2008
- Production: 2008-2009
- Service: Starting 2009

##### Equipment of the Vehicles

- Vehicle application platform (FZPF) with video supervision, automatic passenger counting system (AFZ) and passenger information system (KIS)
- Emergency brake request (NBA)
- Air-conditioning system in passenger and driver compartments
- Fire protection level 2 according DIN 5510

##### Technical Data of the Vehicles

###### Driving coach (121 pieces Bt NPZ)

- Air spring

###### Motor coach

(120 pieces RBDe560/561)

- Axle arrangement Bo'Bo'
- Maximum speed 140 km/h
- Power 1650 kW

##### Project Responsibility

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