

On 4 June 2004 Windhoff Bahn- und Anlagentechnik celebrated its 115th anniversary. Around 130 guests from France, Britain, Switzerland, the Netherlands, and even from as far away as Singapore were present to witness the roll-out of the first self-propelled fire-fighting and rescue train for Switzerland.

The LRZ-NT SBB & BLS (Lösch- und Rettungszug Neue Technologie - New Technology Fire-Fighting and Rescue Train) is to be **used** primarily for rescue and support operations inside railway tunnels, though it is equally at home dealing with such emergencies on open track. The SBB's Gotthard base tunnel (completion in 2015) and the BLS's Lötschberg base tunnel (completion in 2007) will require sophisticated rescue equipment. At the presentation, spectators were treated to a display of the train's powerful fire-fighting capabilities and shown its role within the broader framework of rail safety.

In 2003 Windhoff discussed the technical specifications of the new train with SBB and BLS and negotiated and signed the **contract**, a significant step for all involved. The project was then developed by a consortium of Windhoff Bahn- und Anlagentechnik, Dräger Safety Schweiz and Josef Meyer Waggon in collaboration with SBB and BLS Lötschbergbahn. Windhoff was appointed consortium leader and supplied the self-propelled rail vehicles, which are based on the company's own MPV, a multi-purpose vehicle with a long and successful history behind it.

A 3-car LRZ-NT trainset was ordered by SBB and is to be based at Brig, while a 4-car LRZ-NT trainset ordered by BLS will operate from Frutigen.



The LRZ NT carries 50 m³ of water on-board and can transport up to 60 rescued persons.

First Swiss Self Propelled Fire-Fighting/Rescue Train

Initially, both trains are intended for deployment should incidents occur in the Lötschberg Base Tunnel.

The LRZ-NT features three different fire-fighting systems. Water and foam can be sprayed both via the monitors or water cannons and via the fittings below the cabin. The pump output is 6,000 ltrs./min., and the water cannon has an effective reach of up to 70 m at an output of 2,400 ltrs./min. A modern CAFS system (Compressed Air Foam System) is also installed. Employing a special foaming agent plus a water/air mixture, the resultant wet foam is highly effective as a fire extinguisher.

The SBB train comprises:
- one powered **equipment vehicle**, 21,060 mm long, with fire-fighting and support equipment. Power is supplied by two 315 kW MTU engines (EURO III). The complete power

assembly - diesel engine, transmission, radiator, etc. - is installed within a compact PowerPack. The support equipment comprises a cabin with fire fighting tackle, equipment compartment, generator set, breathing gas compressor, workshop, storage room, connection points for breathing masks, a Signum Integra train control system, and radios. The vehicle is prepared for ETCS Level 2

installation.

- one non-powered **tank wagon**, 17,440 mm long, with a 50 m³ tank. This vehicle features a water tank and tanks for foam fluid, a power generator with pumps, CAFS (Compressed Air Foam System), connecting points for breathing masks, and a breathing gas system for the cabin. The wagon is equipped with a train crew cabin. From

Main Technical Data

Track Gauge	1,435 mm
Axle Arrangement	1A0' 1A0' + 2'2' + 1A0' 1A0' (SBB) 1A0' 1A0' + 2'2' + 1A0' 1A0' + 1A0' 1A0' (BLS)
Maximum Speed	100 km/h
Power Transmission	ZF ECOMAT
Engine Type	MTU 6H1800 R80 EURO III
Nominal Engine Output	4 x 315 kW (SBB) 6 x 315 kW (BLS)
Loading Gauge	UIC 505/EBV
Length Over Buffers	59,560 mm (SBB) 80,620 mm (BLS)
Distance Between Bogie Centres	14,500 mm equipment/rescue veh. 12,400 mm tank wagon
Bodysell Width	2,950 mm equipment/rescue veh. 3,110 mm tank wagon
Height Over TOR	4,430 mm
Wheel Diameter (New/Worn)	890/840 mm equipment/rescue veh. 920/870 mm tank wagon
Total Weight Of Train	approx. 230 t (SBB) approx. 300 t (BLS)
Fuel Capacity	800 l for each powered vehicle
Minimum Curve Radius	90 m
Max. Tank Capacity	50,000 l water
Max. Pump Output	6,000 l/min.
Max. Water Gun Output	2,400 l/min. each
Transport Capacity	
One Rescue Comp.	60 persons



The LRZ NT at the roll-out on 4 June 2004 in Rheine. At many such events manufacturers provide a veil of smoke or foam, through which the new product emerges. Here, the train provided its own veil!



Driver's desk. Driving controls are on the left; fire-fighting functions are on the right.



The rescue compartment. On the left are storage racks for helmets, breathing apparatus and other equipment. In rescue operations the boxes can be used as benches. On the right are special supports for stretchers together with folding benches.

there the driver operates the whole train or only the equipment vehicle. - one powered **rescue vehicle**, 21,060 mm in length and powered by two 315 kW MTU engines (EURO III). This comprises a train crew cabin, a rescue compartment for up to 60 people, an access stair module, breathing gas system for cabin and rescue compartment, connecting points for breathing masks, Signum Integra signalling system, and radios. The vehicle is prepared for ETCS Level 2 installation.

The 4-car BLS train has a second rescue vehicle. All the work spaces

and cabins are insulated against the ingress of smoke and fumes, a first on this type of rescue train.

Construction of the first LRZ-NT started in December 2003, and proceeded rapidly from the preparation of the first welded structures through the acceptance tests of the diesels at MTU and the production of the wheelsets at BVW to the final assembly and commissioning by Windhoff. The trains are scheduled for delivery in July and September 2004.

Windhoff

Photos: Windhoff

A Brief History Of Windhoff

The company was founded in 1899 by Rudolf Windhoff in Rheine. Since March 2002 it has been a member of the Georgsmarienhütte Group. With a workforce of 212, Windhoff designs and manufactures a variety rail vehicles, workshop installations, and equipment for railway depots. Plant engineering, custom machinery, and transport systems for clients in industry and transport undertakings complement the scope of activities. Thirty branch establishments of Windhoff provide professional services in all major industrial regions worldwide. In 2003 Windhoff had a turnover of 28 million EUR, while the order books indicate that for the current trading year a target of around 42 million EUR should be achieved.