



## FLIRT BIMODAL LOW-FLOOR MULTIPLE-UNIT

Valle D'Aosta Region, Italy

In May 2015 the Valle d'Aosta Region of north-west Italy has awarded Stadler a contract for the delivery of 5 bi-modal trains (BMU) of the FLIRT type able to operate both in Diesel mode or under 3kV DC catenary, for the interregional passenger service between Aosta and Torino. The new FLIRT BMU is compliant to the newest TSI norms and standards and will cover a range of possible train configurations – thanks to its modular design – allowing each customer to personalize the vehicle with the needed functionalities and operational features. As typical of all FLIRT trains, the new BMUs will feature a spacious interior, large multi-purpose spaces in the vestibules and vehicle bodies made of lightweight aluminum, leading to significantly lower energy consumption and related LCC costs. Considerable attention has been given to all aspects of maintainability: All the traction system components are ergonomically arranged in an orientation and manner which allows an easy access through hatches or doors. Furthermore, special attention has been given to the aerodynamic optimization of the shape of the FLIRT BMU resulting in efficient power usage and reduced noise generation at all speeds. The chosen interior design provides an optimal balance of light-filled spaciousness, a sense of roominess, as well as a pleasant and inviting appearance, with comfortable seating.

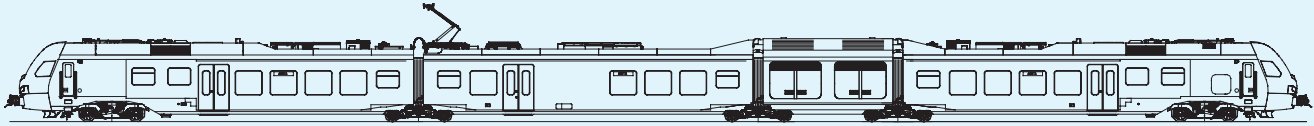
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## Technical features

### Technology

- Bimodal (Diesel-electric and 3kV DC) low-floor multiple unit with a modern, transparent, open interior design built with lightweight aluminum carbody
- Possibility to add up to two intermediate cars to increase the BMU's capacity as well as possibility to increase the Diesel power by installing two additional Diesel engines
- Multiple-unit operation embedded
- The Diesel power-pack module, located in the central part of the train, is an independent unit which can be removed to allow 3kV operation only

### Comfort

- Spacious, multi-functional low-floor access which also provides PRM passengers and older people with an easier access on board of the train
- Three wide low-floor access doors per side
- Air conditioning in the passenger compartments as well as an additional independent unit in the driver's cab
- Efficient bogies air suspensions for maximum passengers' travel comfort and ride quality
- The position of the LED light sources ensures a vivid illumination of the individual compartments as well as an excellent vision through the complete train
- Visual and acoustic passenger information system with real-time CCTV video-surveillance

### Personnel

- Ergonomically designed driver's cab with independent access doors for the train drivers

### Reliability / Availability / Maintainability / Safety

- Low emission (Euro Stage-IIIB), high-performance, common-rail 8-cylinder Diesel engines
- Two Diesel-electric and 3kV drive units equipped with modern, high efficiency, water cooled IGBT power converters with asynchronous generators and motors
- Vehicle control by means of CAN bus technology
- EN-45545 and UNI 11565 compliant fire-detecting and firefighting system

## Vehicle data

<b>Customer</b>	Regione Valle D'Aosta (Italy)
<b>Area of use</b>	Aosta-Torino line
<b>Track gauge</b>	1435 mm
<b>Propulsion</b>	Bimodal 3kV DC and Diesel-Electric
<b>Axle arrangement</b>	Bo' 2'2'2' Bo'
<b>Number of vehicles</b>	5 (+ option for further 5 vehicles)
<b>Commissioning</b>	2018
<b>Seats (single class arrangement)</b>	159
<b>Tip-up seats</b>	16
<b>Standing capacity (4 pers./m<sup>2</sup>)</b>	154
<b>Floor height</b>	
Low floor in entrance area	600 mm
High floor	1120 mm
<b>Entrance width</b>	1300 mm
<b>Longitudinal force</b>	1500 kN
<b>Length with couplings</b>	66800 mm
<b>Vehicle width</b>	2820 mm
<b>Vehicle height</b>	4120 mm
<b>Bogie wheelbase</b>	
Motor bogie	2500 mm
Trailer bogie	2700 mm
<b>Drive wheel diameter, new</b>	920 mm
<b>Running wheel diameter, new</b>	760 mm
<b>Maximum rating at wheel</b>	2600 kW (Electric Mode)
<b>Number of Diesel engines</b>	2, common rail, 8-cylinder, Euro stage IIIB
<b>Maximum rating at wheel</b>	700 kW (Diesel-electric Mode)
<b>Starting tractive effort</b>	200 kN
<b>Starting acceleration</b>	1 m/s <sup>2</sup>
<b>Maximum speed</b>	160 km/h (Electric Mode)
<b>Maximum speed</b>	140 km/h (Diesel-electric Mode)