



Efficient over mountain and valley: all-electric MAN Lion's City 10 E masters field test in the Dolomites

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With a record-breaking turning circle and compact dimensions, the all-electric MAN Lion's City 10 E is the ideal solution for demanding routes. This was proven in a field test through alpine terrain in the South Tyrolean Dolomites. On the 531-kilometre trip, the e-bus covered more than 10,000 metres in altitude and consumed an average of 0.77 kWh per kilometre. The Lion's City E achieved these top efficiency figures thanks to innovative technology and a remarkable recuperation rate of over 50 per cent.

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MAN is pushing ahead with its electrification strategy. Across Europe, the company's e-buses are on the line, with well over 1,000 vehicles already ordered in total. "Our customers are enthusiastic about the reliability and comfort of our Lion's City E family. We want to put even more electric buses on the road and in turn promote sustainable mobility," explains Robert Katzer, Head of Sales & Product Bus at MAN Truck & Bus. The new MAN Lion's City 10 E "midibus" now joins the family of electric buses. And for the first time, international journalists were allowed to drive the highly manoeuvrable e-bus on a winding uphill and downhill journey through the Dolomites. "With the field test in South Tyrol, our electric bus shows once again that it is already possible to travel emission-free, reliably and efficiently. And it can do so in topographically challenging terrain just as well as on the classic, often flat public transport routes," says Katzer.

Short wheelbase and small turning circle

With a length of 10.5 metres, a wheelbase of 4.4 metres and a record-breaking turning circle of 17.2 metres, the "midibus" is made for the narrow and winding roads in the South Tyrolean mountains. Uphill, the electric bus, equipped with five battery packs on the roof, pulls relentlessly and whisper-quietly, thanks to the immediate full torque. When going downhill, plenty of energy flows back into the bus thanks to recuperation. The MAN Lion's City

MAN Truck & Bus is one of Europe's leading commercial vehicle manufacturers and transport solution providers, with an annual revenue of about 11 billion euros (2022). The company's product portfolio includes vans, trucks, buses/coaches and diesel and gas engines along with services related to passenger and cargo transport. MAN Truck & Bus is a company of TRATON GROUP and employs approximately 35,000 people worldwide.



10 E is fitted with the company's tried-and-tested lithium-ion batteries. There is room for four or five battery packs on the roof of the bus. When fully loaded, 400 kilowatt-hours of energy are available. The bus then has a range of up to 300 kilometres, delivers a peak output of 240 kW and a maximum torque of 2,100 Newton-metres. A maximum of 33 people can be seated in the e-bus, up to a total of 80 passengers. The new "midibus" is powered by the same MAN electric central engine as the other Lion's City E models.

"Good chassis set-up, direct steering behaviour"

During the field test, the vehicle travels over countless hairpin bends into the Gardena Valley, up to the Gardena Pass, on to the Valparola Pass, picturesque Meransen and, after a short detour over the Brenner Pass, back to the starting point in Klausen. The manoeuvrability of the MAN Lion's City 10 E is due not only to its short wheelbase and small turning circle, but also to its sophisticated chassis with independent suspension and 56-degree steering angle. "The excellent chassis set-up, direct steering behaviour as well as shortened distance between the axles bring great advantages on this route. The bus is very manoeuvrable, and the three tonnes of batteries is hardly noticeable in cornering situations," explains driving expert Heinrich Degenhart from MAN ProfiDrive. And when things get particularly tight and twisty, the small electric bus is helped by modern safety systems such as ESP, active warning turn assist, daylight-bright LED headlights or the optional camera-based MAN OptiView mirror replacement system.

Downhill recuperation brings back large amounts of energy

The drive up the Gardena Pass (2,121 metres) is particularly twisty, and here, the "midibus" shows all its skills, taking on every hairpin, no matter how tight, with effortless ease. On the following nine-kilometre descent to Corvara, the bus recuperates large amounts of energy, such that its battery is almost fully charged again – with peak charging values of over 200 kW. After three days of testing and a total of 531 kilometres of driving with countless bends – with the lowest point is at 523 metres (Klausen), the highest at 2,168 metres (Passo Valparola) – there is almost no difference in energy consumption on this uphill and downhill journey compared to a classic public transport round trip on level ground: it averages 0.77 kilowatt per kilometre at the finish. "Outstanding value and the combination of compactness and performance totally convinced me. Our MAN Lion's City 10 E is the perfect solution for narrow and challenging routes, whilst providing



comfort for the passengers,” says Stephan Rudnitzky, Launch Manager MAN Lion’s City 10 E.

Efficient and reliable

The MAN Lion’s City 10 E masters this demanding route, past rugged mountain ranges and lush green alpine meadows, efficiently and reliably. And proves to be a fully-fledged member of the family – after all, its big brother the MAN Lion’s City 12 E completed the roughly 2,500-kilometre route from Munich to Limerick in Ireland like it was on rails during the “Electrifying Europe Tour 2022”. “After this demanding tour of the Dolomites, I am completely satisfied with our new MAN Lion’s City 10 E. The bus meets all the criteria we envisaged when we developed it. It is efficient, comfortable, extremely manoeuvrable and therefore the perfect companion on demanding routes,” sums up Heinz Kiess, Head of Product Marketing Bus at MAN Truck & Bus.

Overall figures from the three-day e-bus field test in the Dolomites:

- Total distance: 531.0 km
- Total ascent: 10,642 metres altitude
- Total descent: 10,483 metres altitude
- Total energy consumption: 410.7 kWh
- Average energy consumption: 0.773 kWh/km
- Average speed overall: 26.7 km/h
- Total recuperation rate: over 50 % (around 50.4 %)

Daily figures of the individual trips:

- Day 1: Tuesday 20 June 2023
- Distance: 165.6 km
- Ascent: 3,248 metres altitude
- Descent: 3,248 metres altitude
- Energy consumption: 127.9 kWh
- Average energy consumption: 0.772 kWh/km
- Average speed: 26.7 km/h
- Recuperation rate: 50.0%

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Day 2: Wednesday 21 June 2023

Distance: 167.2 km

Ascent: 3,211 metres altitude

Descent: 3,192 metres altitude

Energy consumption: 127.6 kWh

Average energy consumption: 0.763 kWh/km

Average speed: 24.3 km/h

Recuperation rate: 50.7%

Day 3: Thursday 22 June 2023

Distance: 198.2 km

Ascent: 4,183 metres altitude

Descent: 4,043 metres altitude

Energy consumption: 155.2 kWh

Average energy consumption: 0.783 kWh/km

Average speed: 29.2 km/h

Recuperation rate: 50.4%