



Mission accomplished: MAN demonstrates the practicality of electric buses on the 2,500-kilometer European tour

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Ten electrifying days are behind it: The MAN Lion's City 12 E - pioneer of MAN's zero emission strategy - has reliably completed a journey of around 2,500 kilometers through eight European countries. Its destination was the "green island" of Ireland. There, the all-electric city bus is taking part in the "International Bus Euro Test 2022" in Limerick.

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- **Field test: MAN Lion's City 12 E travels around 2,500 kilometers through Europe reliably and suitable for everyday use - from Munich to Limerick**
- **Stopovers in Innsbruck, St. Moritz, Zurich, Strasbourg, Luxembourg, Brussels, Rouen, Cherbourg and Wexford**
- **Up to 418 kilometers a day fully electric; 1,433 meters of altitude covered on the Swiss Julier Pass; excellent recuperation values**

Emission-free and successful: The MAN Lion's City 12 E has demonstrated the performance of all-electric city buses with an impressive journey across Europe to Limerick in Ireland. After its start at MAN headquarters, the electric bus, developed in Munich and manufactured in Starachowice, Poland, reached the Emerald Isle of Ireland on May 8.

During the "Electrifying Europe Tour," the twelve-meter city bus crossed eight countries in ten days. It covered a total distance of 2,448.8 kilometers and consumed a total of 1,763.7 kWh of energy - or around 0.72 kWh per kilometer. These peak values were achieved thanks to the Lion's City E's efficient technology and a remarkable recuperation rate of 20.8 percent. The energy for the demanding journey under a wide range of conditions was provided by six lithium-ion battery packs (capacity 480 kWh) on the roof of the eBus. Recharging was carried out after each daily stage; no intermediate charging was necessary.

MAN Truck & Bus is one of Europe's leading commercial vehicle manufacturers and transport solution providers, with an annual revenue of just under 11 billion euros (2021). 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 more than 34,000 people worldwide.



With blue and yellow design elements based on the colors of the Ukraine flag, the Lion's City E also set a sign for a peaceful Europe during the tour and on its arrival in Limerick, Ireland - fittingly on the 77th anniversary of the end of the second world war on May 8.

Reliable technology, need to catch up on charging infrastructure

"With the tour, our electric bus impressively demonstrates that it is already possible to travel throughout Europe without emissions, reliably and in a manner suitable for everyday use. To this end, our team visited urban metropolises, undertook many overland journeys with a wide variety of topographical conditions, and even crossed an Alpine pass," says Rudi Kuchta, Head of Business Unit Bus at MAN Truck & Bus, adding, "Our Lion's City E was always reliable and efficient on the road over the approximately 2,500 kilometers. However, the long-distance trip, which is atypical for a city bus, also presented a number of challenges, especially when it came to the topic of charging infrastructure."

The development of a charging infrastructure remains an essential factor for the transformation of the transportation industry. Political support is essential here. The TRATON Group, the parent company of MAN Truck & Bus, will also be making a contribution. The internationally active commercial vehicle company wants to help establish a high-performance charging network in Europe as part of a joint venture ([Joint Venture Agreement High-Performance Charging Network | TRATON](#)).

Travelogue: New territory for an electric bus

On silent soles through the Alpine foothills: That was the motto of the first stage on April 28, covering 166 kilometers from Munich to Innsbruck. A route that many winter sports enthusiasts know well, but which was completely new territory for an electric bus. The route took the bus past lakes Kochelsee and Walchensee (800 meters above sea level), past Mittenwald surrounded by mountain peaks, through the charming Inn Valley and picturesque Tyrolean villages to the winter sports metropolis with the famous Bergisel ski jump, traditional stop of the Four Hills Tournament. On the very first day, the MAN Lion's City 12 E repeatedly demonstrated its outstanding ability to recharge the battery through brake energy recuperation. The maximum recuperation capacity of the bus is around 50 percent.



The second day of the tour involved climbing a whopping 1,248 meters in altitude. The destination of the 208-kilometer stage was the noble Swiss winter sports resort of St. Moritz, which hosted the Winter Olympics in 1928 and 1948 and attracts a quarter of a million vacationers every year. Large parts of the route ran along the mighty 517-kilometer-long Inn River, whose hydroelectric power plants generate several billion kilowatt hours of energy every year.

On the pass over the Alps

The highlight of the 3rd stage from St. Moritz to Zurich was the Julier Pass with its crest 2,284 meters above sea level. The MAN Lion's City E also mastered the demanding pass road with an altitude difference of 1,433 meters, serpentines, hairpin curves and rapid climbs with ease at minus 1 degree Celsius and gusty winds. No wonder, since during its development it was subjected to various endurance tests at extreme temperatures in the Arctic Circle and in the Spanish Sierra Nevada. At the end of the stage, which also led through the Principality of Liechtenstein, which is only 161 square kilometers in size, 56.4 percent battery capacity was still left after 274.6 kilometers.

The day's schedule for the fourth stage from Zurich to Strasbourg through picturesque Alsace included a visit to the European Parliament. And for good reason: This is where the climate targets in Europe are intensively discussed and decided. Sustainability is also an important pillar of MAN's corporate strategy: by 2030, the fleet emissions of the trucks, buses, and vans sold are to be reduced by 28 percent. This is why MAN joined the Science Based Targets initiative (SBTi) in 2021, a partnership between the CDP (Carbon Disclosure Project), the United Nations Global Compact, the World Resources Institute (WRI), and the World Wide Fund for Nature (WWF).

From Strasbourg to Luxembourg it went on day five. Serpentine driving through the Vosges mountains, a cultural detour to beautiful Metz and past the gigantic Rosières solar park near the French town of Rosières-en-Haye - these were the highlights during the journey of the all-electric city bus. The open-space photovoltaic plant covers 367 hectares and has a rated output of 115 megawatts. Formerly a military airfield, the site is now home to more than 1.4 million solar modules. By then, the MAN Lion's City 12 E had already covered 1,264.7 kilometers and consumed exactly 949.6 kilowatt hours at an average speed of 35.1 km/h.



Brussels: A foretaste of the next "Busworld"

The sixth day of the "Electrifying Europe Tour" led to Brussels and provided a glimpse into the future. After a two-year break from Corona, Belgium's metropolis will once again host "Busworld," the world's most important bus trade show, in the fall of 2023. In 2019, the MAN Lion's City E celebrated its trade show premiere in Brussels. Next year, electromobility will again be a focus. The 267.9-kilometer route to the Belgian capital took the bus past the impressive Esch-sur-Sûre dam (Luxembourg), a huge wind farm near Sainte-Ode (on the Belgian side in the border triangle with Luxembourg and France), and the town of Dinant in Belgium with its imposing citadel, among other places. The town is the birthplace of Adolphe Sax, the inventor of the saxophone.

Perhaps the greatest challenge awaited them on day seven of the great European tour: more than 400 kilometers had to be covered on the way from Brussels to Rouen in France, where the freedom fighter Joan of Arc was burned at the stake in 1431. A bizarre feature: at one point on the 20.9-kilometer-long Canal du Centre in Belgium, the water flows over the road! The beam canal bridge was built between 1998 and 2002 at a cost of 248 million euros, is 498 meters long and can carry 80,000 tons of water. On this day, too, the MAN Lion's City E mastered all the hurdles: After 417.9 kilometers, 24 percent battery capacity was still left.

**A strong team is needed:
Ferry defective, charging infrastructure on strike**

Anyone can do it the easy way, but finding solutions spontaneously is not everyone's cup of tea. Instead of traveling on a car ferry, which was cancelled at short notice, the two-axle, 12-meter-long electric bus from MAN sailed on a freight ferry from Cherbourg to Rosslare in Ireland on the eighth day. The rest of the team took a detour of around 500 kilometers via Brittany and a replacement ferry to Cork to pick up the eBus again the following day. Even the striking charging infrastructure in Rouen did not upset the crew: there was a replacement at a public charging station in front of a discount grocery store. Conclusion after more than 2,200 kilometers: The vehicle technology works reliably, the bus still runs like clockwork. Despite many topographical challenges, or longer stretches of full throttle at a sealed 84 km/h on the highway and an official stated range of 350 kilometers, no intermediate charging was required on any day trip. The main reasons: the high battery capacity on the vehicle roof, the efficient technology and excellent recuperation values of the MAN Lion's City 12 E.



Then the Emerald Isle was reached. After the big reunion of team and bus including driver at the ferry port of Rosslare, the 9th stage was a short stretch with some photo and film stops to Wexford. And finally it was time for the MAN Lion's City E: Limerick, here we come! Across the breathtaking natural beauty of Ireland, a true road trip paradise. Almost 2,500 kilometers and numerous adventures lay behind the electric bus when its successful tour came to an end in Limerick.

All daily reports, technical articles and interviews on the subject of electromobility, as well as numerous picture galleries and videos on the "Electrifying Europe Tour" can be found at: <https://go.man/roadtrip>

Total values of the MAN eBus Tour:

Total distance 2448.8 km

Total energy consumption 1763.7 kWh

Total average speed 41.0 km/h

Total recuperation rate 20.8%

Daily values of the individual tour stages:

Day 1: Munich - Innsbruck

Distance 166.0 km

Energy consumption 125.7 kWh

Average speed 31.4 km/h

Recuperation rate 26.3

Day 2: Innsbruck - St. Moritz

Distance 207.9 km

Energy consumption 236.0 kWh

Average speed 30.2 km/h

Recuperation rate 13.5

Day 3: St. Moritz - Zurich

Distance 274.6 km

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Energy consumption 162.5 kWh

Average speed 31.9 km/h

Recuperation rate 38.5

Day 4: Zurich - Strasbourg

Distance 273.2 km

Energy consumption 175.8 kWh

Average speed 26.4 km/h

Recuperation rate 14.0

Day 5: Strasbourg - Luxembourg

Distance 343.0 km

Energy consumption 249.6 kWh

Average speed 49.4 km/h

Recuperation rate 16.8

Day 6: Luxembourg - Brussels

Distance 267.9 km

Energy consumption 183.6 kWh

Average speed 43.5 km/h

Recuperation rate 30.7

Day 7: Brussels - Rouen

Distance 417.9 km

Energy consumption 281.7 kWh

Average speed 42.7 km/h

Recuperation rate 15.2

Day 8: Rouen - Cherbourg

Distance 258.1 km

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Energy consumption 189.7 kWh

Average speed 67.8 km/h

Recuperation rate 14.0

Day 9: Cherbourg - Wexford / New Ross

Distance 83.1 km

Energy consumption 64.8 kWh

Average speed 27.2 km/h

Recuperation rate 21.4

Day 10: Wexford / New Ross - Limerick

Distance 157.1 km

Energy consumption 94.3 kWh

Average speed 37.5 km/h

Recuperation rate 35.7