Press release
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Electric power replaces diesel: Solingen public transport company invests in buses with IMC® technology from Kiepe Electric

- **Stadtwerke Solingen (SWS) places first order for 16 emission-free 12-meter trolleybuses with IMC® technology from the Kiepe Electric and Solaris consortium**
- **New battery trolleybuses will replace diesel vehicles and also operate on sections without overhead wires**
- **Deal sends market signal for the electrification of 12-meter diesel buses serving routes under overhead wires**
- **Project to equip 16 new 12-meter trolleybuses has an order value in the high single-digit millions for Kiepe Electric**

Munich/Düsseldorf, October 22, 2020 – In the city of Solingen, they are playing a key role in the electrification of the entire bus fleet: battery trolleybuses with In Motion Charging (IMC®) technology from Kiepe Electric, a subsidiary of Knorr-Bremse, the global market leader for braking and other systems for rail and commercial vehicles. A consortium between Kiepe Electric and Solaris, one of Europe's leading manufacturers of buses and trolleybuses, will supply 16 emission-free Solaris Trollino 12-metre trolleybuses with IMC® technology to Solingen's public transport authority from the end of 2021. They will replace diesel-powered buses and use battery power to cover extensive route sections without overhead wires.

"Solingen has been a pioneer in eco-friendly public transport for decades. The cooperation with Kiepe Electric stretches back just as far and contributes significantly to these goals. Now, Stadtwerke Solingen will use our IMC technology to replace more diesel buses with electric buses. We are delighted to be able to support the city's sustainability strategy with these new 12-metre IMC® buses and our trusted on-site service," says Alexander Ketterl, Managing Director of Kiepe Electric GmbH, Düsseldorf. Four electric articulated buses with IMC500 equipment have already been in service in Solingen since 2018. Known as BOBs (battery overhead wire buses) in Solingen, they currently operate on 12 km of overhead wire sections, which represents 75% of the total route. Kiepe Electric uses identical assemblies for the existing BOBs and the new ones. This allows the operator to save maintenance and repair costs and to keep its spare parts stock to a minimum.

Petros Spinaris, Deputy CEO of Solaris Bus & Coach, looks forward to the renewed cooperation with Kiepe Electric and says: "Trolleybuses, along with electric and hydrogen buses, occupy a key position in our emission-free portfolio. Once more, SWS has recognized our experience in producing 1,600 units of this type and has placed its trust in our trolleybuses by making this investment, which will improve quality of life for the people of Solingen."

Aside from this new order, Kiepe Electric and Solaris are in the process of supplying 16 IMC500 articulated buses (Solaris Trollino 18 trolleybuses) to Stadtwerke Solingen under a contract option. The In Motion Charging (IMC®) vehicles particularly stand out in terms of versatility, as lines previously operated with diesel buses can be converted to fully electric operation. The BOBs charge while operating on routes with overhead wires. But on sections without overhead wires, they offer the flexibility to continue the journey in battery mode. Depending on the battery capacity and route layout, IMC® buses can cover up to 30 kilometers without charging.

For the Solingen public transport company, IMC® technology is a reliable companion on the road to CO_2-free public transport. The city intends to further expand its share of electric

transportation while making use of its existing overhead wire system. This is why it invited tenders for additional BOBs with powerful energy storage systems and intelligent charging and energy management. Conrad Troullier, Managing Director of the Solingen public transport company, commented on the decision: "We chose Kiepe Electric as the electrical equipment supplier for this highly specific and innovative project – because IMC® allows the buses to be used in regular service both on the existing overhead wire system and on sections without overhead wires."

Alexander Ketterl is looking to the future: "This order could well act as a signal in the market. It shows that 12-meter diesel buses operating on routes with overhead wires can now be electrified thanks to the IMC® concept. Kiepe Electric is a true pioneer in this field." In North America alone, including cities such as San Francisco, Seattle and Vancouver, there are currently 566 12-meter trolleybuses with electrical equipment from Kiepe Electric in operation – most of them using IMC® technology. This path is open to numerous European cities seeking to push sustainable public transport concepts. The city of Solingen is already realizing its vision, boasting the largest trolleybus network in Germany (56 km of routes). Each year, the city's 50 articulated trolleybuses save over 1.8 million liters of diesel and 4,934 tons of CO_2 by making 16.3 million trips on electric power.

Caption:

Image 1: Eco-friendly public transport: Solingen orders 16 new Solaris Trollino 12-meter trolleybuses with IMC® technology from Kiepe Electric. | © Stadtwerke Solingen

Image 2: New battery trolleybuses will replace diesel vehicles and also operate on sections without overhead wires in Solingen. | © Stadtwerke Solingen

Knorr-Bremse (ISIN: DE000KBX1006, Ticker symbol: KBX) is the global market leader for braking systems and a leading supplier of other rail and commercial vehicle systems. Knorr-Bremse's products make a decisive contribution to greater safety and energy efficiency on rail tracks and roads around the world. About 29,000 employees at over 100 sites in more than 30 countries use their competence and motivation to satisfy customers worldwide with products and services. In 2019, Knorr-Bremse's two divisions together generated revenues of EUR 6.9 billion (IFRS). For more than 115 years the company has been the industry innovator, driving innovation in mobility and transportation technologies with an edge in connected system solutions. Knorr-Bremse is one of Germany's most successful industrial companies and profits from the key global megatrends: urbanization, sustainability, digitization and mobility.

Knorr-Bremse subsidiary **Kiepe Electric**, based in Düsseldorf, Germany, is a globally active supplier of electrical systems to the leading rail vehicle and bus manufacturers. The company offers efficient solutions and ecologically sustainable concepts for low-emission public transportation with eco-friendly electrical equipment for light rail vehicles, metros and regional rail networks as well as for battery, trolley and In Motion Charging (IMC) buses.

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