

**Press Release**

Munich, May 5, 2020

**Innovation leadership through raw material research: Knorr-Bremse and John von Neumann University complete joint R&D project**

- **Special research into alternative raw materials and technologies: project included the development of prototypes of a modular electronic air treatment unit for commercial vehicles and a new trailer brake control valve**
- **Research findings will feed into Knorr-Bremse's R&D activities**
- **EU granted EUR 1.1 million for the research project in 2017**

**Munich, May 5, 2020 – A consortium formed by Knorr-Bremse, the global market leader for braking and other rail and commercial vehicle systems, and John von Neumann University in Kecskemét, Hungary, has successfully completed a joint 27-month research project. The focus of the project was on alternative raw materials – particularly polymer and rubber materials – and technologies for use in the commercial vehicle industry. The research findings will feed into Knorr-Bremse's research and development strategy and activities in the long term.**

“The consortium members have clearly demonstrated just how important fundamental research on raw materials is, and their achievements directly contribute to our strategic R&D approach,” comments Andreas Wimmer, Vice President Systems & Vehicle Technologies at Knorr-Bremse Commercial Vehicle Systems. “The project's key components play an essential role in diverse applications at Knorr-Bremse, helping to secure our product portfolio and our technology leadership – today, and even more so in the future.”

The consortium members received a non-repayable EU grant of HUF 350 million (approx. EUR 1.1 million) in 2017 to deepen and expand their cooperation in R&D, researching into alternative product development procedures and raw materials which could help to develop new prototype systems. The project included the development of prototypes of a modular electronic air treatment unit for commercial vehicles and a new trailer brake control valve. In the process, in addition to Knorr-Bremse's functional innovations, a number of nano-composite raw material recipes and testing procedures were developed in cooperation with John von Neumann University and tested at the Knorr-Bremse R&D Center in Kecskemét.

Polymer and rubber raw materials play a major role in Knorr-Bremse's research and development activities. Various parameters of their mechanical properties were also enhanced during the R&D project with the help of nano-scale material components. In addition, it also proved possible to improve existing test procedures for use with polymers, generating faster and more efficient methods that reduce the duration of the tests.

The 27-month project GINOP-2.2.1-15-2017-00077 “Use of newly developed raw materials and nano-composites in the design of pneumatic brake and auxiliary systems”, was concluded on October 31, 2019. Knorr-Bremse has been active in research and development in Budapest and Kecskemét since 1995 and was the first multinational company to open a research and development center in Hungary. The implementation of this research and development project further consolidated the existing R&D&I cooperation, resulting in effective and efficient cooperation and knowledge transfer between the consortium partners.

**Knorr-Bremse (ISIN: DE000KBX1006, Ticker symbol: KBX)** is the global market leader for braking and 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

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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.

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