



“Parcel Rockets”: Powering the Transport Revolution

A sustainable parcel delivery scheme which is the only one of its kind in Europe is currently being introduced in Magdeburg

Germany’s first hub-and-spoke system for last-mile parcel delivery is being developed in Saxony-Anhalt’s state capital Magdeburg. This innovative scheme for sustainable parcel delivery across several distribution stages is based on e-cargo bikes with swap bodies. The research project involves partners from science and business and is so far the only one of its kind in Europe.

Bearing the name Paket-Rakete (“Parcel Rockets”), the e-cargo bike really does bomb along like a rocket. Hartmut Zadek, a Professor of Logistics at the Otto von Guericke University Magdeburg (OVGU), sits behind the handlebars. He says it feels like a cross between a bicycle and a motorbike. The academic enjoys trying out “in real life” the innovative practical solutions that the Institute of Logistics and Material Handling Systems (ILM) designs. He engages reverse gear and points out that this is the first of the e-cargo bikes, which are designed by start-up ONO, to be fitted with a reverse gear. What’s more, the Parcel Rockets are the first e-cargo bikes that are suitable for commercial use thanks to their design. Among the logos featured on the swap body is that of Mediengruppe Magdeburg. One of its brands, biber post, wants to start using the e-cargo bikes to deliver its parcels in Saxony-Anhalt’s state capital. The company philosophy is about bringing the environment and business together.

Conventional last-mile parcel delivery in inner cities relies on diesel vans, which contribute to traffic, noise pollution and frustration over roads and pavements blocked by parked delivery vans – as well as harmful emissions. “Despite this, the revenue of courier, express and parcel services is set to double over the next 15 years,” predicts Zadek. He does not think that levels of consumerism in society are showing any signs of reducing. “This is where we logistics experts come in. We can open up new possibilities for sustainability by rethinking processes,” says Zadek, emphasizing the role of state-of-the-art intelligent technologies.

Attracting attention across Europe

It’s no coincidence that he parks the e-cargo bike next to an old steam engine, an industrial monument on the university campus. “The industrial revolution was the catalyst for the emergence of specialisms,” he says. Logistics brings different forms of specialist knowledge back together. Zadek highlights the effectiveness of interdisciplinary solutions. He believes that they offer companies examples of best practice which prove that sustainability and profit are not mutually exclusive.

The Parcel Rockets are even attracting attention from across Europe. The scheme is a sub-project of the Paket-KV-MD2 joint project, short for “Sustainable Last-Mile Parcel Services Using Combined Transport with Micro-Depots in Magdeburg.” The alliance comprises the Institute of Logistics and Material Handling Systems at the OVGU, Mediengruppe Magdeburg and the Magdeburg engineering company FIAppro. Paket-KV-MD2 is being funded by the European Regional Development Fund (ERDF) – a sign, according to Zadek, that there is also recognition at a European level of the great potential of e-cargo bikes.

E-cargo bikes are pioneering and sustainable

Zadek explains that sustainability has been part of the DNA of the Research Group for Logistics for more than three decades. “At the beginning the focus was on issues surrounding waste and recycling. Now the priority in research and teaching is innovative solutions for resource-efficient and sustainable logistics processes, systems and global production and service networks. The days when these were just abstract objectives are long gone: we are now facing the very real, drastic effects of climate change,” he explains. His research and teaching are motivated by the knowledge that his students will go on to promote new sustainable technologies as managers and decision-makers in a huge range of sectors. “Their theoretical and practical knowledge and skills will help transform logistics into a sustainable force for social good,” says Zadek, citing the transport revolution as one of the greatest challenges of our time.

Gianna Kurtz (25) believes that “we are the generation who can solve these problems.” This outlook inspired her to come to Magdeburg a year ago after studying transport, traffic and logistics management in Salzgitter. She is leading the Paket-KV-MD2 project. Kai Hempel (26) is a research associate. Born in Göttingen, Hempel studied industrial engineering/logistics at the OVGU. This course is a unique selling point for the university as it is the only one of its kind in the German-speaking countries.

Software for loading the swap bodies

Kurtz and Hempel’s team is assisting the Paket-KV-MD2 project and will assess its economic, environmental and social impacts. In addition to considering the various sustainability factors compared with conventional delivery methods such as diesel and gasoline vehicles, they will also consider the reception among delivery drivers. It is nevertheless worth noting that the bike’s specially developed rollable body enables it to carry around 400 kg. An integrated software architecture helps with loading the bodies at the packing stations.

Kurtz and Hempel are currently in charge of setting up a total of three packing stations. Mediengruppe Magdeburg is Paket-KV-MD2’s leading business stakeholder and wants to establish climate protection as a business model. The combination of urban hubs, micro-depots, stationary and mobile packing stations and e-cargo bikes is so far the only one of its kind in Europe.

The pilot project will start its first test phase in late summer, which means Magdeburg city center will be home to Germany’s first hub-and-spoke system. Zadek uses a picture of a wheel to explain this logistics term: “The center of the wheel is the hub and the spokes branch out to the micro-depots in the different city districts.” The e-cargo bikes travel between the stationary packing stations, the micro-depots in the districts and the recipients.

The biber post delivery drivers will be using an app designed especially for this process.

Kurtz and Hempel cannot wait to see how the Parcel Rockets scheme performs in real life. They are convinced that e-cargo bikes have a very promising future. Their professor is also a firm believer in the bikes’ potential. “Logistics experts can make waves when they are really passionate about something,” he says.

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