The different conditions in cities and rural areas require different and at the same time closely netted control systems for trains are being developed here. Flexible and user-friendly operating concepts for public transport in rural areas are being developed in Zwickau, Ore Mountains. Innovative fuel cell technology is being developed at the Fraunhofer Institute in Saxony. Sustainability is environmental protection, but goes far beyond that. It also means economical use of resources for our children and grandchildren, fair globalization, social development, education and culture. Saxony is being a co-designer and pioneer here.

Automatic Train Operation (ATO) is envisioned to significantly increase safety and efficiency of public transport systems. What they all have in common is the challenge of minimizing greenhouse gas emissions, i.e., getting away from fossil fuels. Solutions are being researched across all areas of traffic with the help of digital test fields. The Saxony state government supports many projects in this area.

At the summit, among other things, the Smart Rail Connectivity Campus will be presenting elements of the Amberg-Buchholz-Schwaebenberg railway test track. In order to make rail traffic more effective, SG-supported control systems for trains are being developed here. Significant available knowledge from the prior development and setup of a RTO workstation, called ATO-Cargo, ARTE or R2DATO.

DDR now focuses on further increasing the functionality and usability of the workstation, to the end of enabling optimal operator performance. Using these project experiences, DLR contributes to related projects such as GTS ETCS Level 2 technology, as a 5G mobile network connection during a test run. The Thales-owned, Thales group, is normally used in the field. This testbed had already been employed before as remotely controlled railcar over a physical distance, using 5G mobile communication technology, the technology is being developed at the Fraunhofer Institute in Saxony. Sustainability is environmental protection, but goes far beyond that. It also means economical use of resources for our children and grandchildren, fair globalization, social development, education and culture. Saxony is being a co-designer and pioneer here.

ERZmobil – the innovative gamechanger of public transport in rural areas

Small towns are faced with challenges in citizen mobility. The service level of the public transport system often does not reach the qualitative characteristics of comparable offers in cities. Both the travel time and the accessibility of stops often lead to less acceptance and usage of traditional public transport among the population. Also for the administration of municipalities, the costs for providing these services request a high capacity in the municipal budget. Digital solutions can improve service quality to cost-benefits by providing a reduction of necessary resources like staff and vehicles. However, the technological aspects are not as challenging as the socio-economic aspects.

As one of 73 smart cities in Germany, the city of Zwickau faces these challenges by having implemented a sustainable public mobility service, called ERZmobil, that meets the needs of citizens and municipality in suburban and rural regions. Zwickau is a city with about 32,000 people living there. Since January 2022 the ERZmobil provides a new type of public transport services to all people living in the seven districts of the city. This all-app-based service closes a large gap in suburban public transport. The ERZmobil provides an on-demand service that is fully integrated into the public transport system and is driven by an all-electric mobile.

Driving tomorrow: Fuel Cell Technology as Future of Clean Mobility

Hydrogen is one of the high potentials for the mobility and energy turnaround demanded by society and politics. Particularly, in the transport sector the hydrogen drive based on fuel cell technology is a key element for CO2 reduction. So far, however, there is a lack of technologies for an economic series production of fuel cells. The German National Fuel Cell Production Action Plan aims at:

- accelerating and increasing the structured rollout of research and development in industry and society.
- focusing on improving the technological and economic potential of fuel cells.
- accelerating and increasing the structured rollout in industry and society.

Research at Fraunhofer IWU focuses at the heart of the fuel cell high-end technologies for the production of stack components and their assembling. Low quantities, no supply chains, and immense costs characterizes the currently prevailing manual production of fuel cells. The goal is to produce fuel cells at competitive costs to conventional drives. In this field, scale-up is the biggest driver of cost reduction at the moment.

The research knowhow at Fraunhofer IWU is made available for industry in the so called “ReferenceFactory H2” (Reference Factory H2) which is a production technology toolbox with real and virtual machines and plants that are necessary for the production of hydrogen systems. It allows companies involved in the value chain for hydrogen technologies to progress their products, services and processes in individual test set-ups with the experts from Fraunhofer.

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