



# INFORM

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## MOBILITY IN KARLSRUHE:

### WE'RE HELPING DESIGN THE FUTURE

We present this issue of TTK Inform under a very local motto. Developments in Karlsruhe are certainly worth talking about. But this is not only our home, we have also made a contribution to the many projects that will change the transport system in Karlsruhe drastically and for the long term.

Without a doubt, transport networks in Karlsruhe, and with them the city, have been in a state of emergency since 2010 and construction sites dot the entire city. The heart of the reconstruction, the so-called "combi solution", has just entered the home stretch. The tram-train tunnel in the Kaiserstraße, the southern branch and stops are being equipped. Tunnel construction in the Kriegsstraße, where cars passing through will drive underground in order to provide the transport-related conditions required for construction of an above-ground tram route, has also advanced visibly.

These measures are spectacular and frequently discussed. Project implementation includes not just the "big" planning strategies and the tunnel construction, but also network design, examination of the operating concepts, and detailed planning of the stops. The same applies for planning of the intermediate states, which was and is required in order to ensure that public and private traffic move sufficiently during the construction period.

TTK was and is involved in many projects for the reconstruction of Karlsruhe's transport system, including the examination of the feasibility of running direct tram-train lines (S31/32) into the inner city, which can only be done in the context of the future network. These could be run via the Kriegsstraße or the Kaiserstraße.





In the course of a review of future network constellations, TTK has simulated the entire city tram-train network in order to define sufficiently precise operating concepts and timetables and examine them in terms of feasibility and reliability.

Along the way, TTK has made many suggestions for the design, including quality preservation at the central station, improved organisation of the stop facilities at the Ruppurrer Tor, increased operating stability in the tunnel, and maximisation of demand for the future above-ground train-tram line on the Kriegsstraße.

TTK has also incorporated itself into infrastructure and design planning for implementation of the combi solution. TTK is now working for KASIG (building owner) to plan the future stop Ruppurrer Tor-West (which previously was intended to be to the east of the Mendelssohnplatz). Here, we are responsible for the planning phases 1 to 5 (pre-planning to execution design).

## ➤ BREMEN'S GREEN CITY MASTER PLAN

Against the background of impending diesel driving bans due to the NOx limit value being exceeded, the federal government is financing numerous master plans of the cities affected. As part of the develop-



ment of such a Green City Master Plan for the City of Bremen, TTK and several partners were involved in the „Change through drives and fuels“ work package. TTK held workshops and, together with representatives from the Senate, politics and BSAG experts, developed a range of measures concerning the operation of electric mobility designed to ensure sustainable and emission-free mobility. During the work-

shops, TTK presented various drive technologies and charging strategies as well as numerous best-practice examples from Germany, France and China. Additionally, a model was developed to determine the emission reduction potential (CO<sub>2</sub>/NO<sub>x</sub>), including evaluation of the measure. In autumn, TTK will offer a similar workshop to Karlsruhe's transport company and assist the transport operators in designing the new depot located in the western part of Karlsruhe.

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In addition, we are handling the execution design for the DB E&C for the road transport facilities, both for the final state as well as for transport during construction, including the traffic management plans for these construction measures. Furthermore, we are creating the bid documents for the stops “Karlstor Ost”, “Ettlinger Tor” and “Mendelssohnplatz Ost”.

Last but not least, we are also planning a whole series of stops, for both bus and rail, which must be reconstructed so they are barrier-free, also part of the “new Karlsruhe network”. Here in the time being, we are also supervising construction. This has been new terrain for us, but we think the results that can be visited on site are satisfactory for all.

In this issue, we will also report about other exciting projects; enjoy reading!

## ➤ PILOT ROUTE FOR HYBRID TRUCK USING OVERHEAD CATENARY WIRES

eWayBW is one of three nationwide pilot projects for hybrid trucks using overhead power lines on public roads.

The project objective is to test electric hybrid long-haulage trucks on German public roads with electric power supplied by overhead lines.

For the first time, overhead line technology is being tested on a federal road in Baden-Wuerttemberg.

The pilot route covers a distance of around 18.3 km on the B 462. It runs from the industrial zone of Kuppenheim to the paper mills along the Murg river in Obertsrot and Hilpertsau.

The project encompasses the design, approval, construction and operation of the 5-km catenary system.

Logistics partners responsible for the operation include local transport companies, which transport the raw materials to the paper mills in the lower Murg valley and pick up the finished products.

TTK was commissioned by Baden-Wuerttemberg's Ministry of Transport to take over the building contractor's tasks concerning planning and implementation of the overhead line infrastructure.

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## ➤ SCHÖNBUCHBAHN RAILWAY – LEVEL CROSSING REMOVALS

Now they are almost finished: the two crossroads on Herrenberger Straße in Böblingen and on Böblinger Straße in Holzgerlingen, Germany.

As part of the partial double-track extension of the Schönbuchbahn Railway from Böblingen to Dettenhausen, the traffic flows generated by motorised private transport and public transport could be unbundled due to collision-free crossing.

Böblingen's trough structure of more than 200 m in length and Holzgerlingen's trough structure of more than 400 m in length stand out impressively as important individual projects within the scope of the overall project.

During the construction of the trough structure in Böblingen, heavy rainfall and the resulting soft ground made the necessary shoring work difficult.

In Holzgerlingen, it was challenging to cope with the high groundwater level, the mutually stiffened shoring required due to the very close building development, the rock that was harder than expected and the changing routing of road traffic during the construction period.



After more than a year of construction, the earthworks as well as the concrete and steel construction work have now been completed. Only the modelling of the terrain around the structures and the lanes still need to be finalised. The train route, which is currently closed, is expected to open by December. Until then the Schönbuchbahn project will also be finalised, offering road users a new and collision-free crossing.

Since 2011, TTK has a leading role in the infrastructure project with a contract volume of over € 100 million and is still supporting and counselling the planning consortium. TTK was responsible for the design, planning and supervision of the Schönbuchbahn expansion project – from the initial concept of operation to the extensive support during the construction.

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## ➤ MULTIMODAL STUDY IN LUXEMBOURG : FAST TRAM SYSTEM NOW INTEGRATED INTO THE MINISTRY'S DEVELOPMENT STRATEGY

In June 2018, TTK completed a multimodal study for the Ministry of Transport in Luxembourg. As part of this project, various scenarios for a public transport axis on a specific route and a fast cycle route along the corridor from Luxembourg to Esch-sur-Alzette and Belval were analysed.

Based on the demographic development and the expected traffic volume by 2030, the concept of a subway or monorail was rejected because it would be oversized in

terms of demand. A BRT solution was also discarded due to the low speed and insufficient comfort for passengers who would have to stand during long-distance services.

In terms of passenger capacity, modal shift as well as operating and investment costs, the study led to a new multi-stage strategy, which in the short term would rededicate lanes on the A4 to local public transport and at the same time extend a fast cycle route along the corridor.

However, if you take the required bus service frequency of up to 90 seconds into account as well as the high operating costs and insufficient capacity of the terminal stops in the city centre, it can be expected that express buses, which are mainly suitable for seated passengers, are unlikely to meet the challenges of stabilising road transport in the next 10 to 20 years.

Consequently, it would be necessary to provide a commuter rail line, which offers high passenger capacity, attractive travel speeds (100km/h) and a dense network in urban areas. It should be integrated into the existing Luxtram network so that there is also a direct connection to Kirchberg. The project could initially be implemented up to a transfer point in Foetz and later be extended to Esch/Schifflange (urban development project and new railway station) and Belval.

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## TTK News

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### +++ IDEA COMPETITION: DIGITAL TOURISM +++

TTK and the Institute for Ubiquitous Mobility Systems at the University of Karlsruhe achieved a sensational fourth-place finish among 111 competitors in a country-wide idea competition "Digital Tourism" for their concept "TouriToukan", an app for individualised recreational activities.

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### +++ ESSLINGEN ADMINISTRATIVE DISTRICT +++

TTK, together with the partner office Radverkehr-Konzept from Frankfurt, is currently conducting a feasibility study for a 20 km-long express bike path in the Neckar Valley. The Transport Minister of Baden-Wuerttemberg, Winfried Herrmann, has called the project a "flagship project" and is striving to forge ahead with it in the near future. In addition to determining potential, assessing variants, and providing cost estimates, TTK is checking the technical feasibility.

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### +++ TTK CREATES AN ECONOMIC APPRAISAL FOR THE PROJECT "NEW TRAIN STATION EVREUX NÉTREVILLE" +++

The first results of the cost-benefit analysis of the NBS Paris-Normandie with or without train station in Evreux show a significant increase in traffic from and to the Département Eure in the project case with new station. The benefits of the measure would therefore more than balance out the costs. A realization of the project is to be expected in the best case only for 2040.

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### +++ NEW PLANNING OF THE BRT NETWORK FOR THE COMMUNITY OF MEYLAN +++

Since the local transport concept for public transport on its own line for 2030 was decided by the city of Grenoble, TTK has been focusing on an additional study that provides a BRT line between the train station quarter and Meylan with one variant that involves slight construction changes and another variant that requires the complete redesign and renovation of the area.

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### +++ WHICH PARKING CONCEPT FOR RESIDENTIAL AREAS? +++

TTK has been formulating new scenarios for the organisation of existing park areas in the cities Mantes La Jolie and Limay. In addition to the quantitative estimation of the need, solutions for identifying critical points are also proposed in the study: Dismantling or renovation of buildings, speed limits, restriction of illegal parking.

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### +++ THE PAYS DE LA LOIRE REGION COMMISSION TTK TO DEVELOP THE NEW REGIONAL PUBLIC TRANSPORT PLAN +++

The NoTRE law, which reorganises the responsibilities and competencies of regions and departments in France, enables a joint organisation of the rail and regional bus network, and therefore a better bundling of passenger rail traffic. In addition to the restructuring of the regional bus network, the new regional transport plan should ensure that bus and rail services are better matched to one another.

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### +++ OPERATIONAL STUDY OF THE LYON - WEST RAIL NETWORK FOR THE SNCF +++

The Lyon - West rail network has significant potential. TTK has been commissioned by SNCF to conduct a feasibility study in order to check expansion of the services and capacity, in particular on the route Tassin - Lozanne. Thanks to modelling with the Open-track tool, a cost-benefit analysis for the expansion of a double track on the currently single-track main axis will be conducted.

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