

Operational simulation Karlsruhe tramtrain

Diversion of the tram and tramtrain lines during the construction of the underground line in the city centre - Simulation of the entire network using OpenTrack and VISSIM



Technical assistance & operations

Client: Karlsruher Schieneninfrastruktur-Gesellschaft mbH

End: 2013



The success of the Karlsruhe tramtrain system over the years led to a considerable increase of trains running through the central pedestrian zone. Increasingly 80 m long trains in double traction were used to achieve sufficient capacity.

The city of Karlsruhe therefore decided to put the tramtrains underground along the central pedestrian Kaiserstrasse and at the same time have some lines run outside the pedestrian zone and above-ground on the parallel Kriegsstrasse. That way urban development of the inner city should be possible despite the growing number of PT users.

To allow unhindered construction progress in 2013, it was planned to deviate trains via an existing parallel rail line to keep the eastern end of Kaiserstrasse free of rail traffic. TTK tested the resilience and capacity of the diversion route in a detailed operational simulation. A rail transport model was set up in OpenTrack, a software tool also allowing to model perturbations caused by private traffic, i.e. motor vehicles and pedestrians. At the same time VISSIM was applied to study the impacts of the planned deviation on private traffic at three central road junctions. By integrating the results of the simulations in a further run of the respectively other model resilient conclusions about the impacts of the deviation were possible.

The results (remaining confidential) list run time increases, time table robustness, length of traffic jams in road traffic as well as junction loads.

