



CLIMATIC WIND TUNNEL VIENNA



Under the overall technical and commercial management of MCE, the Vienna climatic wind tunnel was completed in a period of just two years with an overall project volume of 60 million euros.

The project partners in the climatic wind tunnel consortium (ARGE KWK) were Aiolos and VA TECH, while Rail Test & Research GmbH (RTR) was the customer. Apart from the planning and realisation, the project also encompassed all dealings with the respective authorities. A powerful network of competent companies and planning firms provided the high-tech tunnel systems, the complex building, the related track system and the required infrastructure. One of MCE's most important tasks was the coordination of the ARGE KWK project team in close cooperation with the customer and the customer representative, in order to punctually fulfil the prescribed targets set for the individual project phases. The sections and overhead run-back circuits built by MCE, which have a total weight of 1,300 t, form one key element of the new climatic wind tunnel. Despite the oversized dimensions of these components (diameters of up to 8 m, heat exchanger 10 x 10 m), tight production and assembly tolerances were necessary due to the aerodynamic requirements. In addition the simulation of extreme environmental conditions from +60°C to -50°C

places the highest demands on the structure and materials. Against the background of these challenging conditions, MCE was able to demonstrate its extensive experience in steel and large pipe construction. The main components used for the completion of the new climatic wind tunnel were pre-assembled in company production facilities and dis-assembled into units suitable for transport.

As a result of a sophisticated concept with parallel construction and installation activities, an assembly period of just six months was adhered to. The entire technological steel construction, as well as the building shell, rounded off the comprehensive range of supplies and services furnished by MCE. All in all, the new climatic wind tunnel required the processing of over 2,000 t of steel. The total area developed amounts to 120,000 m² which corresponds to 120 family houses, and the 15 MW power input required for the facility is equal to the energy supply needed by 3,000 people.

As an internationally recognised expert in climatic testing, Rail Tec Arsenal operates two state-of-the-art climatic wind tunnels designed to optimise thermal comfort in public transport vehicles and to investigate and improve the availability and safety of systems in sensitive industrial areas.

Facts & Figures:

Large climatic tunnel

Test section l x w x h: 100 x 5 x 6 m
 Temperature range: -50°C to +60°C
 Wind speed: 10 -> 250 km/h
 Snow simulation: constantly adjustable up to -20°C at 160 km/h
 Rain simulation: constantly adjustable up to 350 l / h / m²
 Air humidity: adjustable 10-95 % at +15°C up to +60°C
 Solar panels l x h: up to 1,000 W / m² / 47.5 m
 Roller type dynamometer: a driven axle, a non-driven axle
 Driving power / Brake power: for railway vehicles, 850 kW

Customer: Rail Test & Research

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Small climatic tunnel

Test section l x w x h: 31 x 5 x 6 m
 Temperature range: -50°C to +60°C, gradient 10 k/h
 Wind speed: 10 - 120 km/h
 Snow simulation: adjustable up to -20°C at 120 km/h
 Rain simulation: adjustable up to 350 l / h / m²
 Air humidity: adjustable 10-95 % at +15°C up to +60°C
 Solar panels l x h: up to 1,000 W / m² / 31 m
 Roller type dynamometer: dynamometer for road vehicles
 Driving power / Brake power: 250 kW

Project period: 2000 - 2002

