

CLIMATIC WIND TUNNEL VIENNA



Vienna, Austria - Under the overall technical and commercial management of MCE, the Vienna climatic wind tunnel was completed in just two years with a comprehensive 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 realization, the project also encompassed all dealings with the respective authorities. A robust network of competent companies provided the high-tech tunnel systems, complex building, related track systems, and required infrastructure. One of MCE's most important tasks was coordinating the ARGE KWK project team and the customer's project team to punctually fulfill the prescribed targets set for the individual project phases. The key element of the new climatic wind tunnel is the sections and overhead run-back circuits, and these were built by MCE and have a total weight of 1,300 t. 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 demonstrated its extensive experience in steel and large pipe construction. The main components used to complete the new climatic wind tunnel were pre-assembled in company production facilities and disassembled 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 and the building shell rounded off the comprehensive range of supplies and services furnished by MCE. Overall, 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 recognized expert in climatic testing, Rail Tec Arsenal operates two state-of-the-art climatic wind tunnels designed to optimize thermal comfort in public transport vehicles and investigate and improve systems' availability and safety 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
RainSimulation:	constantly adjustable up 350 l / h / m ²
Air humidity:	adjustable 10-95 % at +15°C up to +60°C
Solar panels:	l x h: up to 1,000 W / m ² / 47.5 m
Roller type dynamometer:	a driven axle, a non-driven axle for railway vehicles, 850 kW
Driving power / Brake power:	

Customer:

Rail Test & Research

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 350 l / h / m ²
Air humidity:	adjustable 10-95 % at +15°C up to +60°C
Solar panels:	l x h: up to 1,000 W / m ² / 31 m
Roller type dynamometer:	dynamometer for road vehicles
Driving power / Brake power:	250 KW

Project period:

2000 - 2002