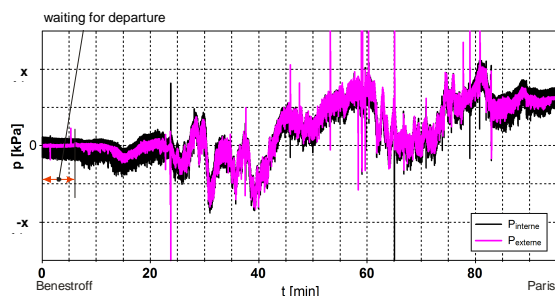




Measurements at TGV-Duplex with test runs at 360 km/h



Assembly of a pressure transducer in a switch box



Pressure history inside and outside of the switch box

Description

High-speed trains are exposed to various aerodynamic phenomena. Essential aerodynamic issues are for example:

- Aerodynamic forces on the vehicle structure
- Aerodynamic forces caused by air flow and resulting traction power demand
- Pressure load on the vehicle structure (for example during passage of tunnels and bridges)
- Crosswind acting on the vehicles
- Pressure difference between inside and outside of the vehicle structure

With the aerodynamic measurements at the TGV-Duplex the following objectives were achieved:

- Planning and commissioning of the measuring system for pressure variations
- Measurement of train-induced pressure variation and pressure difference on the vehicle structure
- Development of an adapted methodology for data analysis
- Determination of the maximum aerodynamic impact on the train structure

Services

HBI Haerter Consulting Engineers provide the following services:

- Planning the measurement concepts, designing of the measuring system, coordination with the client
- Installation of measuring system on board of train
- Testing and calibration of the measurement set-up before the test runs
- Performing of measurements on the high-speed train
- Data analysis and allocation to the specific test conditions
- Elaboration of maximum aerodynamic forces
- Check of the results of the measurements by numerical simulation
- Documentation