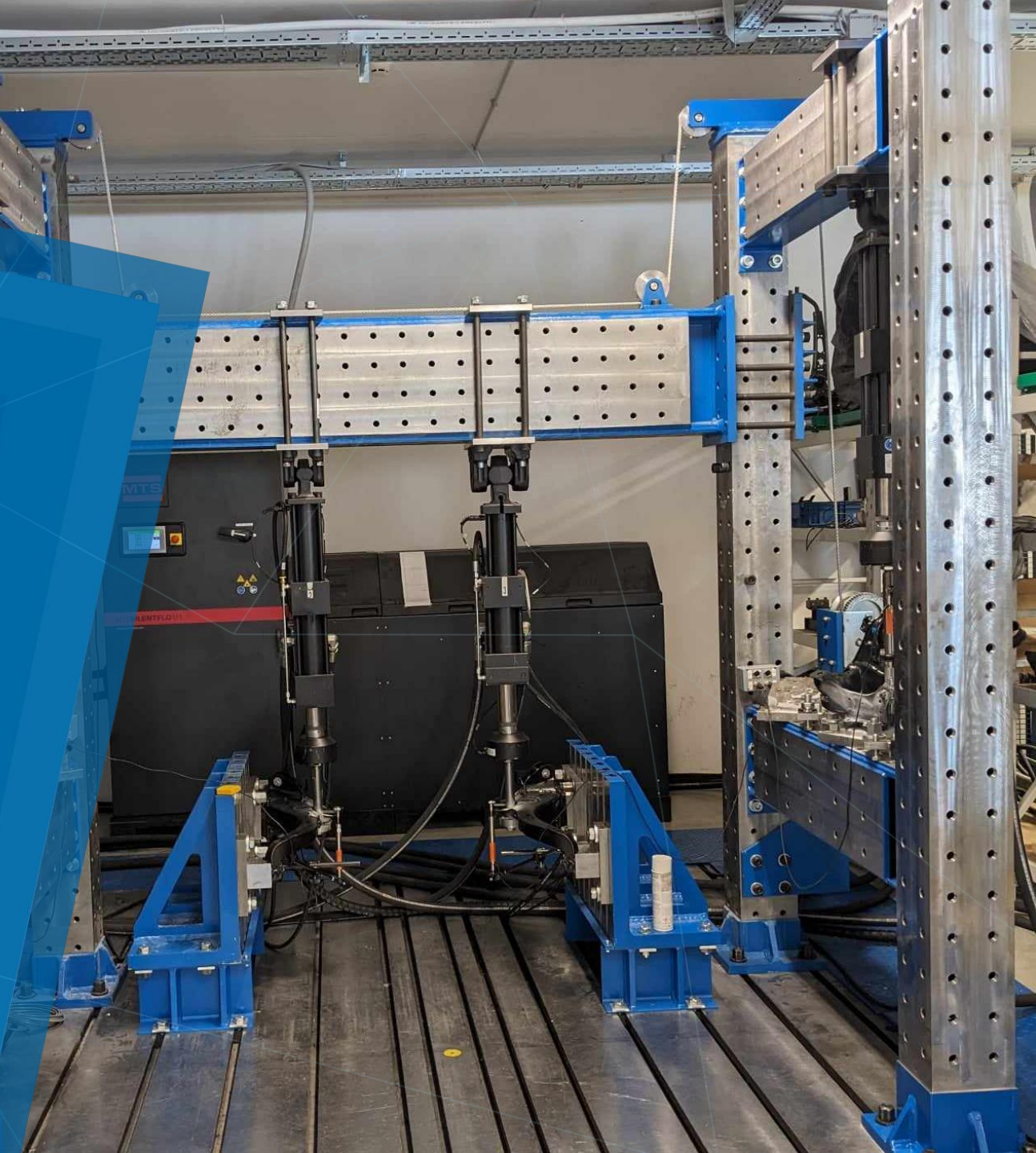


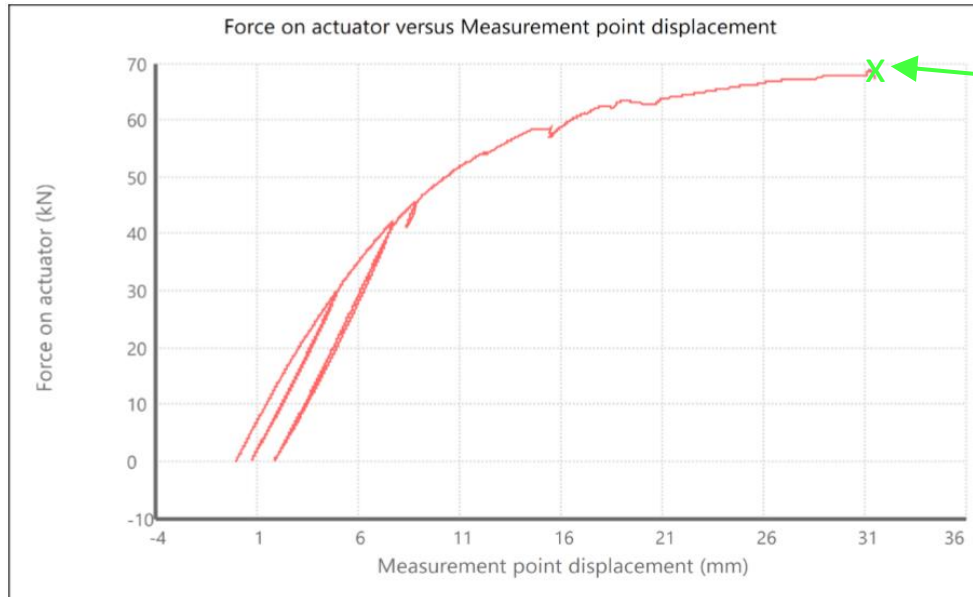
MTS test facility

TPV AUTOMOTIVE



WHEEL CARRIER

Static test



Customer requirements include:

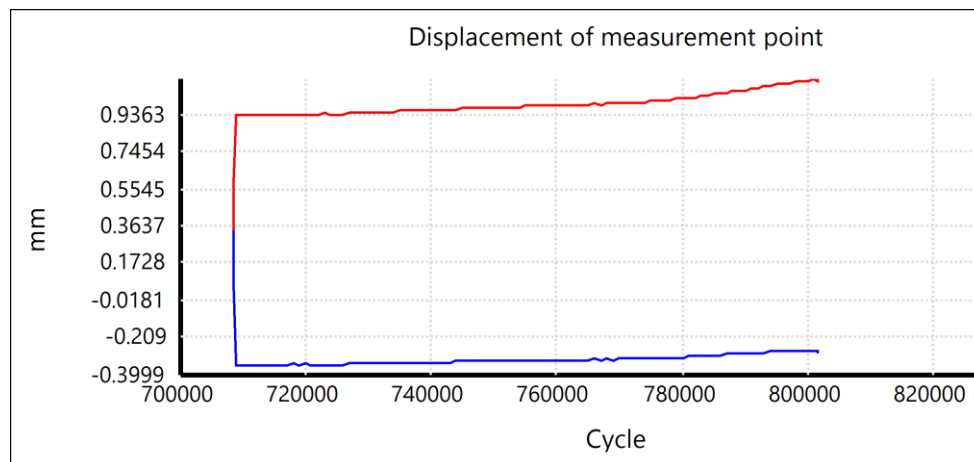
- Loading the part with two different force levels and then up to failure
- Measuring the resulting deformation after applying the first force

WHEEL CARRIER

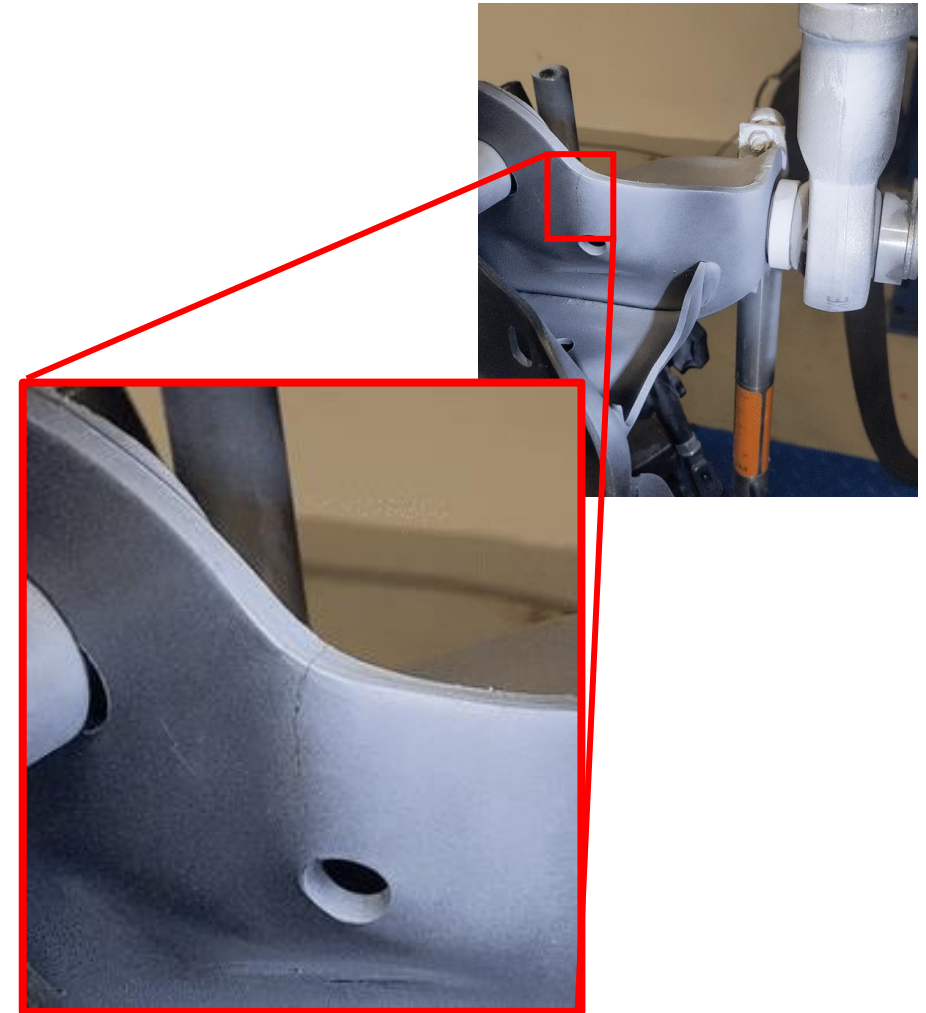
Dinamic test

Customer requirements include:

- Tracking the number of cycles until the first crack appears and the number of cycles until the end of the test during cyclic loading
- Inspecting and documenting crack lengths at selected milestones



- Increase in displacement at the measured point caused by crack growth



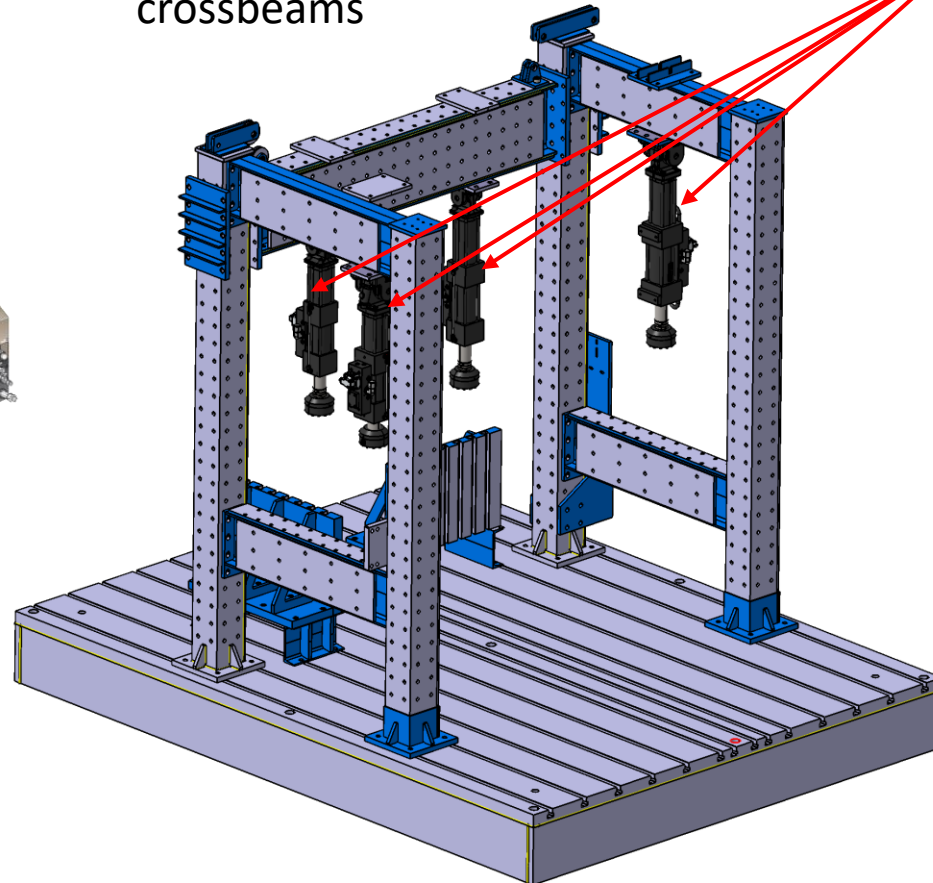
MTS TEST FACILITY

Basic elements

Power source (Hydraulic power unit and manifold)



Test bench with columns and crossbeams



Hydraulic actuators



External sensors



Control unit and Computer

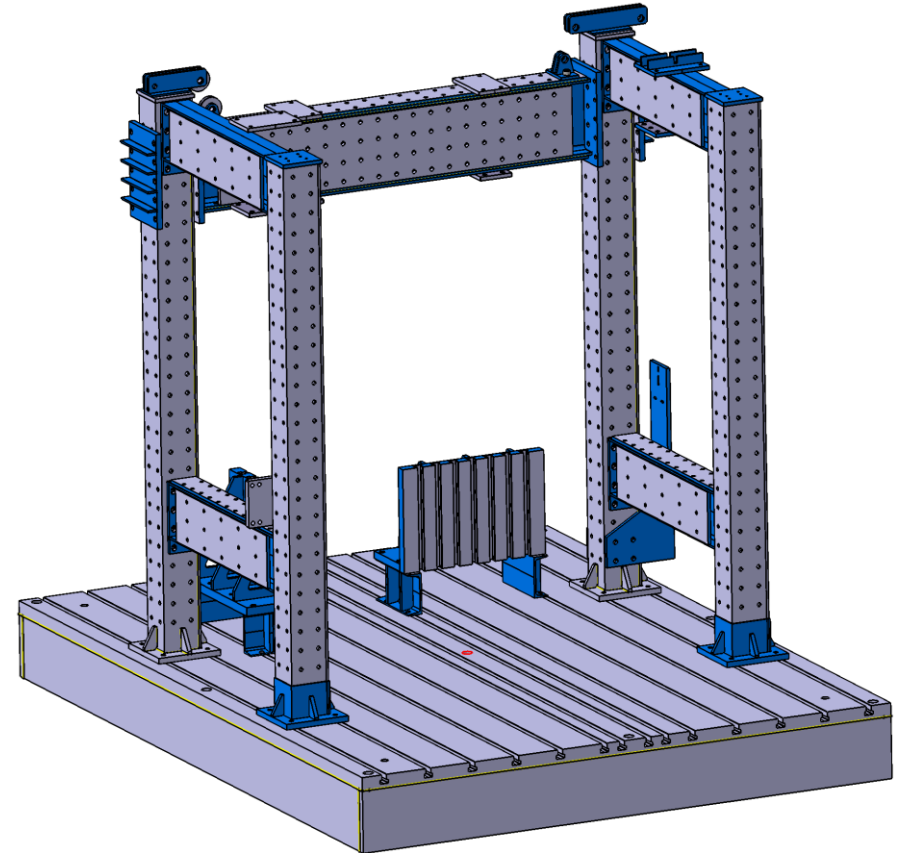


MTS TEST FACILITY

Test bench with columns and crossbeams

Function: Support for hydraulic actuators and fixtures

- Test bench dimensions **3 x 4 m**
- Crossbeam adjustable in height up to approx. **2,8 m**
- The structure allows flexible positioning of fixtures and actuators
- For larger samples, the structure size can be custom-built



MTS TEST FACILITY

Hydraulic actuators

Function: Transfer of loads to the samples

- We have four **(4)** hydraulic actuators
- They operate within a maximum force range of **± 100 kN** and a piston stroke of **200 mm**
 - 1st cylinder: 100 kN force, ± 100 mm stroke
 - 2nd cylinder: 100 kN force, ± 80 mm stroke
 - 3rd cylinder: 67 kN force, ± 100 mm stroke
 - 4th cylinder: 50 kN force, ± 80 mm stroke
- Tested on the wheel carrier at frequencies up to 20 Hz with ± 2 mm stroke (depending on material properties, force levels, and fixture stiffness)
- Theoretically achievable frequency: **50 Hz**



MTS TEST FACILITY

Control unit and Computer

Function: Control and monitoring of actuator operation

- Two possible control modes :
 - Force control
 - Displacement control
- Allows independent control of up to four hydraulic actuators, enabling 4 different tests to run simultaneously
- Supports single-component and synchronous control for multiple cylinders operating simultaneously

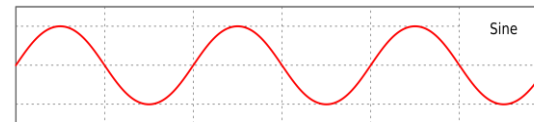


MTS TEST FACILITY

Control unit and Computer

- Sample excitation signal types:

- Sine



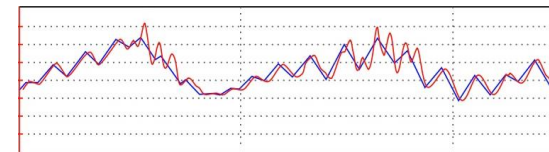
- Pulse



- Triangle



- Arbitrary signal (e.g., from road surface)



Real signal from road testing

- Software allows custom test execution via programmed sequences

