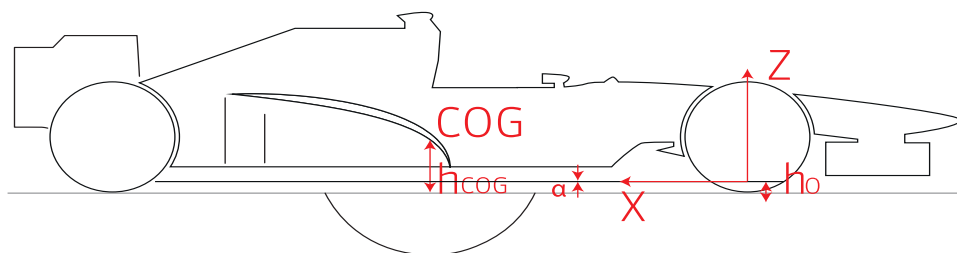




CENTRE OF GRAVITY RIG

A specially-developed rig to determine, to a very precise level, the centre of gravity of a vehicle and the moment of inertia around the three main axes. Various complete cars can be mounted in exact road/track specification, up to a maximum weight of approximately 2,300kg.

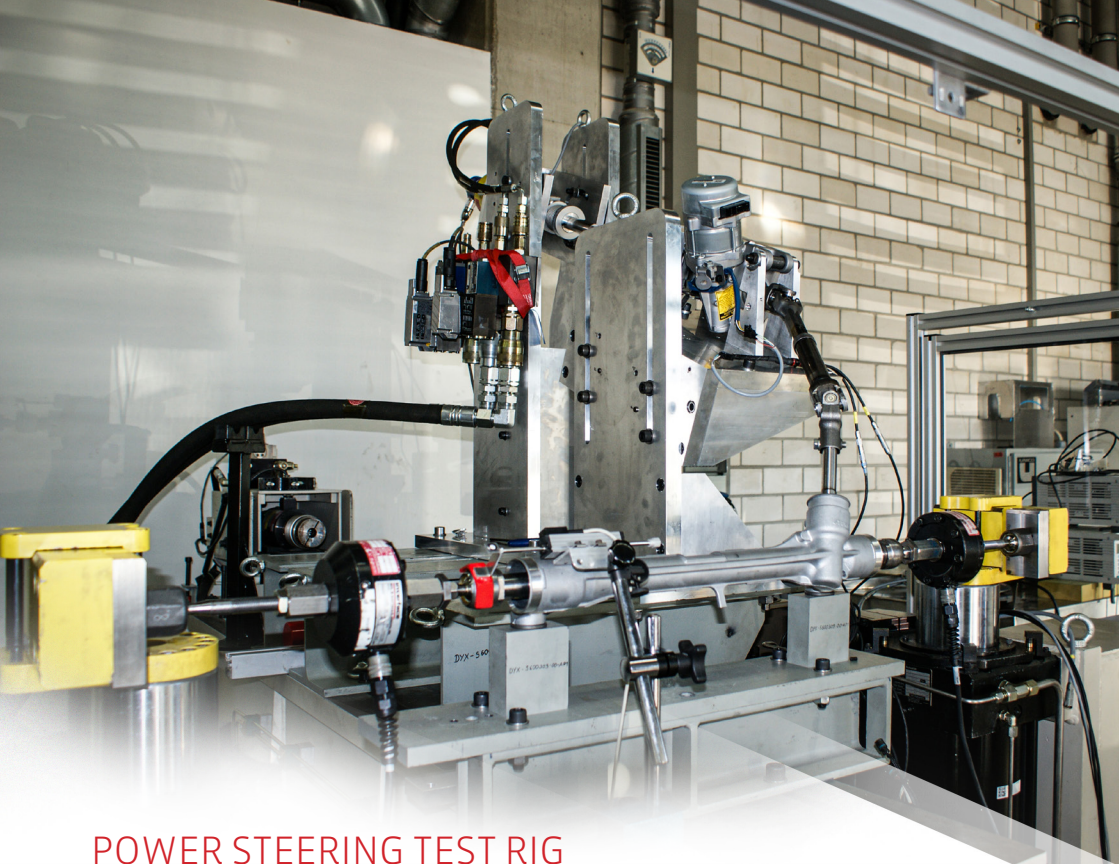


APPLICATIONS:

- Centre of gravity investigations
- Moment of inertia investigations

ACCURACY (Based on Formula 1 car)

CoG Height Over Road Surface	±0.5mm
Repeatability	±0.1mm
XCOG in Car Coordinates	±1mm
YCOG in Car Coordinates	±1mm
ZCOG in Car Coordinates	±1mm
IX Inertia Around X-Axis	±1 kg m ²
IY	±1 kg m ²
IZ	±1 kg m ²



POWER STEERING TEST RIG

This dynamic test rig delivers realistic simulation of all suspension, turning and driving torque forces. A variety of different power steering solutions can be tested for durability and performance. For exceptional realism, simulated car or recorded track data can be used to test specific scenarios.

APPLICATIONS:

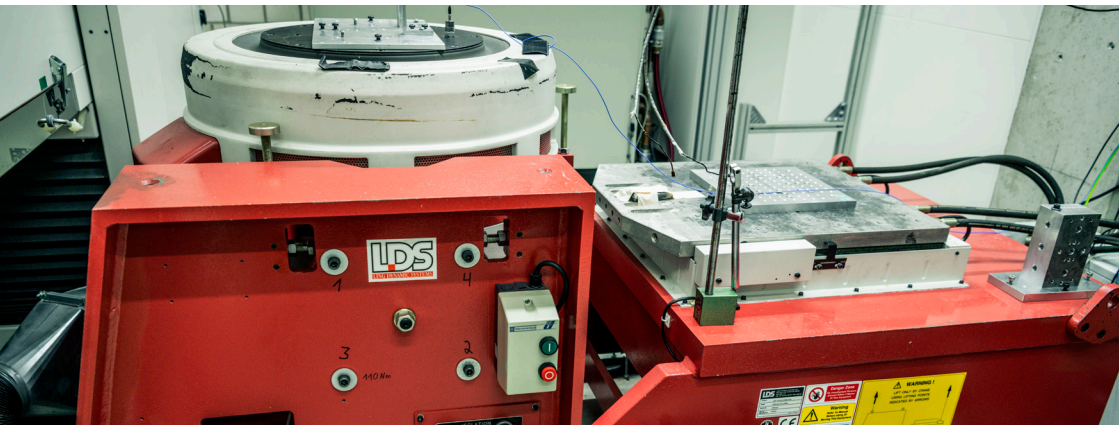
- Durability testing
- Linear spool valve set-up
- Hydraulic power steering set-up and optimisation

SPECIFICATIONS

Track Width	1000-1400mm
Recession/Precession	±220mm
Vertical Displacement	±50mm
Vertical Acceleration	25g
Lateral Displacement	±60mm
Lateral Force	±10kN
Steer Input Velocity	2000°/s
Steer Input Torque	±70Nm

SHAKER

This medium force, LDS-manufactured shaker, model V850 is an air-cooled electro-dynamic shaker produced for vibration testing of items, making it ideal for automotive uses. This tool can be used in either vertical or horizontal orientation, depending on requirements, and works in conjunction with our climatic chamber.



VERTICAL ORIENTATION

Positive Displacement Limit Peak	25.4mm
Negative Displacement Limit Peak	25.4mm
Max. Velocity Peak	2m/s
Max. Acceleration Peak	60gn
Min. Drive Frequency	5Hz
Max. Drive Frequency	3000Hz
Max. Drive Peak	2V
Sine Force Peak	22.2kN
Effective Mass of Moving Element	24.52kg
Plate Working Area (diameter)	400mm

HORIZONTAL ORIENTATION

Positive Displacement Limit Peak	23.5mm
Negative Displacement Limit Peak	23.5mm
Max. Velocity Peak	2m/s
Max. Acceleration Peak	37gn
Min. Drive Frequency	5Hz
Max. Drive Frequency	2000Hz
Max. Drive Peak	2V
Sine Force Peak	22.2kN
Effective Mass of Moving Element	61.01kg
Plate Working Area	600 x 600mm

CLIMATIC CHAMBER

The Vötsch Industrietechnik VCV 4120-5 climatic chamber is an optional addition to our shaker, allowing the simulation of mechanical and thermal loads in a dynamic environment.



APPLICATIONS:

- Stress and durability testing at a range of temperatures
- Stress and durability testing in different humidity environments.

TEMPERATURE TESTS	
Chamber Volume	1200l
Temperature Range	-40°C to 180°C
Temperature Fluctuation	±0.1 to ±0.8K
Deviation in Space	±0.5 to 2K
Temperature Gradient	1 to 4K
Temperature Change Rate	5.5K/min (cooling and heating)
Heat Compensation at 20°C	5000W
Heat Compensation at -20°C	2000W
Calibrated Values	23°C and 80°C
CLIMATIC TESTS	
Temperature Range for Relative Humidity	10-95°C
Temperature Fluctuation	±0.1 to ±0.3K
Deviation in Space	±0.5 to 1K
Temperature Gradient	1 to 2
Humidity Range	10-95%
Humidity Fluctuation	±1 to ±3%
Dew Point Range	4°C to 94°C
Heat Compensation	500W
Calibrated Values	23°C/50% and 95°C/50%



MATERIAL TEST SYSTEMS

TGR-E has three MTS 810 uniaxial material test systems. The units use servo-hydraulic frames and can be customised to address a whole range of material testing demands. These test systems are suitable for large specimens and can accommodate various materials, including alloys and composites. TGR-E's range of material test systems includes MTS 318.10, 318.25 and 318.50 models.

APPLICATIONS:

- Fatigue analysis
- Damper and suspension testing
- Side-intrusion or chassis safety testing
- Material tests for toughness and fatigue
- Sine wave simulation up to 3m/s

SPECIFICATIONS	318.10	318.50	318.25
Actuator	50kN	500kN	100kN
Vertical Test Space	1308mm	2108mm	1625mm
Working Height	889mm	889mm	889mm
Column Spacing	533mm	762mm	635mm
Column Diameter	64mm	102mm	76mm
Base Width	864mm	1245mm	1003mm
Base Depth	610mm	914mm	762mm
Diagonal Clearance	2718mm	3835mm	3251mm
Overall Height	2540mm	3581mm	3023mm
Stiffness	2.6 x 108 N/m	7.5 x 108 N/m	4.3 x 108 N/m

DAMPER DYNO

This MTS-manufactured 850 Series damper test system features high-performance hydraulic actuators. Three load cells are available for simultaneous testing and all deliver accurate results for static or dynamic testing.



APPLICATIONS:

- Damper and component evaluation
- Durability testing
- Performance testing

SPECIFICATIONS	
Actuator	Series 850
Actuator Stroke	+ 125 mm
Load Cells	2 x 10kN 1 x 25kN
Mounting Threads	M12 x 1,25mm
Vertical Test Space	1397mm
Column Spacing	533mm
Base Width	1067mm
Base Depth	1143mm
Overall Height	3150 mm



COMPONENT TESTING AREA

In this specific area of TGR-E's chassis testbench department, we offer various component durability and reliability tests. With our customizable and modular test equipment, we combine wide range of actuators and sensors for mechanical component tests.

OPTICAL MEASUREMENT SYSTEMS

TGR-E possesses several systems designed for highly accurate optical measurement of large or small objects. TriTop is an optical coordinate measuring machine which includes deformation module. ATOS is a very accurate three-dimensional digitizer for creating CAD drawings of small or large parts via reverse engineering. ARAMIS is an optical three-dimensional deformation analysis tool which indicates any tiny structural change on a part during use.

APPLICATIONS:

- Mobile coordinate measurement
- Static movement analysis
- Static deformation analysis
- Three-dimensional digitisation for CAD export
- Reverse engineering projects
- Three-dimensional surface coordinate mapping
- Three-dimensional displacement and velocity analysis
- Surface strain testing
- Strain rate analysis