



Contact

Engineering Center Steyr GmbH & Co KG

Steyrer Straße 32
4300 St. Valentin
Austria

Office +43/7435/501-0
Email info.valentin.mpt@magna.com
Web engineering.mpt.magna.com

Driveline Testing

Functional Testing

- Lubrication and ventilation testing
- Bearing adjustment
- Contact pattern
- Shifting of gears
- Engagement of locks
- Clutch characteristics
- Temperature behavior loaded
- Efficiency measurement
- NVH measurements



Ultimate Strength Testing

- Static ultimate strength testing
- Dynamic ultimate strength testing



Durability Testing

- Gears, bearings
- Differential
- Seal rings
- AWD clutch
- Actuation system
- Park lock

Thermal System Testing

Thermal System Tests Bench

- Validation up to complete vehicle thermal systems (HVAC, refrigerant and coolant system)
- Conditioning & control of coolant and air flow (vehicle in the loop)
- Control strategy development & validation
- Component & system characterization
- System efficiency investigations
- Functional & durability validation

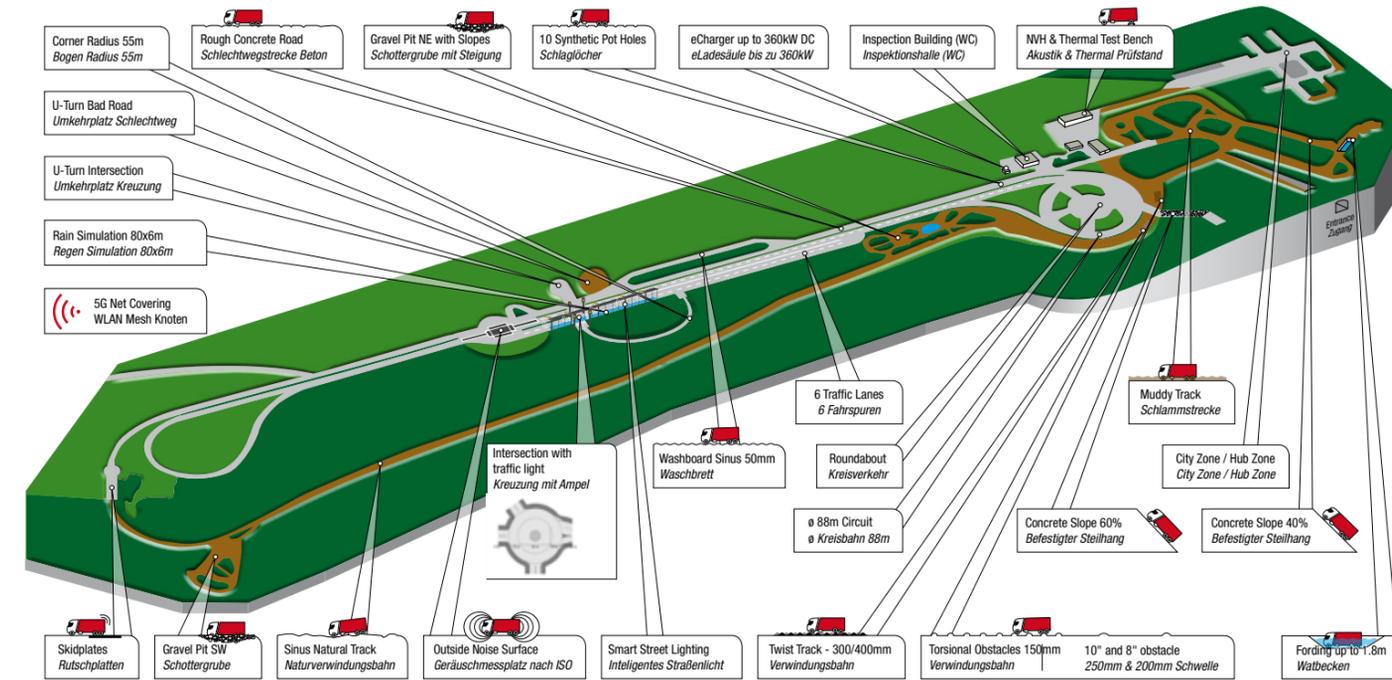


Thermal Vehicle Testing

- Validation of vehicle thermal & energy management
- Validation of cabin HVAC & thermal comfort system
- Performance & efficiency verification
- Calibration of thermal system control logic
- Chassis dyno, test track and on road testing



St. Valentin - ECS Proving Ground



Testing Services



Testing and Verification
from One Source by
Magna Powertrain
Engineering Center Steyr

engineering.mpt.magna.com



Gearbox & eDrive Testing

Main Development Topics

- Component testing
- System and functional testing
- Benchmarks
- Durability tests
- Efficiency analysis
- High dynamic tilting tests



Highlighted Specification

- Gearbox input speed < 20.000 rpm
- Power up to 800 kW for each test bench dyno
- Wheel torque up to 60.000 Nm
- Battery simulator up to 1,2 MW
- Environmental conditions (water, oil and environment)
- Wide range of applications: passenger car, light and heavy duty trucks, nonroad,
- Complete driveline testing up to 6 machines at one setup



Environmental Inverter & EMC Testing

Environmental Testing eDS, Inverter & eMotor

- Climatic
- Mechanic
- Lifetime
- Application related

Inverter Testing

- Functional testing of inverter and subcomponents
- Thermal verification
- EoL testing

EMC Testing

- Emission
- Immunity



Engine Test Benches

Main Development Topics

- Dynamic and steady state testing
- Function and durability testing
- Engine and OBD calibration
- Exhaust gas after treatment calibration and development

Specification & Supported Engines

- Compression and sparked ignition engines
- Power range: up to max. 520 kW
- Field of applications: passenger car, light and heavy duty trucks, nonroad,

Measurement Equipment

- AVL FTIR/IAG FTIR
- AVL Micro Soot
- AVL Particle Counter
- AVL Opacimeter
- AVL Coriolis
- AVL Indicating System
- AVL Flow Sonix

High Altitude & Climate Test Bench

Test Chamber

- Max. altitude 5000 m (540 mbar)
- Performance 500 kW
- Torque 2600 Nm / 3100 Nm peak
- Max. speed 8000 U/min
- Temperature -30°C / +50°C



Fatigue Laboratory / Fatigue Testing

Equipment & Infrastructure

- 250 servo-hydraulic actuators
- Forces between 10 kN – 500 kN
- Frequency up to 100 Hz
- Up to 40 actuators can be controlled simultaneously
- Max. weight of specimen: 50 tons

Main Testing Topics

- Cabin / body
- Axle and suspension
- Add on parts and components
- Frame and subframe
- Steering system
- Determine material properties
- Material testing (high T)
- Testing under corrosion



Fatigue Testing Workflow

- Creation of test program and iteration
- Concept and strategy
- Design of test rig
- Test rig setup



4WD Chassis Dynamometer

Main Development Topics

- Acoustics and vibrations
- Energy and thermal management
- Functional development
- Emission measurement

Specification

- 4 single wheel drives 4 x 250 kW
- Maximum vehicle speed 260 km/h
- Max. drag force 12.000 N / axle
- Flexible wheelbase from 2.0 – 4.4 m
- Vertical load per axle 4.500 kg

Wind Tunnel

- Airflow 140.000 m³/h
- Variable outlet 0,54 ... 1,8 m²
- Temperature condition -20°C up to +50°C

NVH Test Cell

- Free field from 40 Hz to 10 KHz
- Cell dimensions (l x b x h) 12 x 8,3 x 4,5 m



Battery Cell Testing

Test Configurations

- Electrical characterization (performance, capacity, inner resistance)
- Thermal performance characterization
- Aging and lifetime
- Engineering development of electrothermal cell models

Temperature Chamber

- - 40 to +90°C
- 5 K / min
- 4500 W heat compensation
- 1000 l
- Safety: HL5

Cell Cycle

- 0 – 5 V
- 12 channels a 50 A
- 4 channels a 600 A
- Parallelization up to 2400 A
- ± 0,01 % @ current
- ± 0,025 % @ voltage

