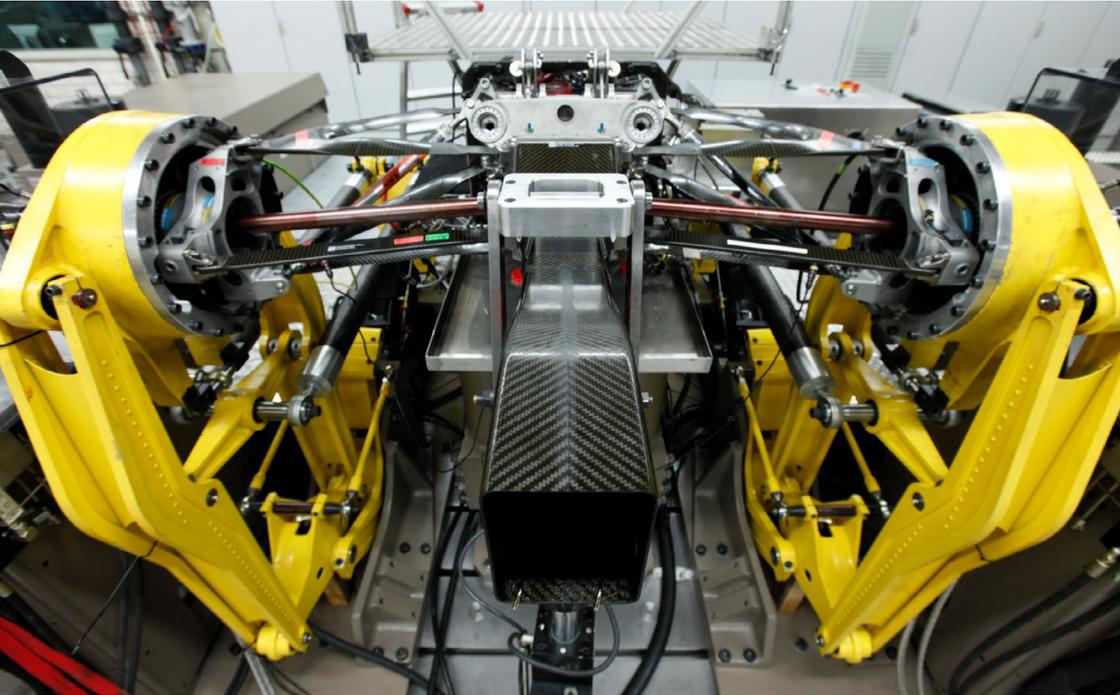


## TRANSMISSION TEST SYSTEM

A unique hardware-in-the-loop tool for thorough transmission testing which simulates input and output forces on the gearbox whilst at the same time recreating 4 DOF suspension inputs. Suitable for various transmission types and with fully heat conditioned lubricants for more realistic results.



### APPLICATIONS:

- Endurance tests with real-time lap simulation (Hardware in the loop or a dynamic simulation model)
- Launch and clutch development, including burnout simulation
- Complete rear-end testing, including uprights and hubs (performance and reliability)
- Compatibility with prototype gearboxes due to variable mounting plate
- Efficiency testing
- Adaptable for various test scenarios, including drive shaft testing

# TRANSMISSION TEST SYSTEM

## OUTPUT DYNANOMETER

<b>Continuous Power</b>	450kW
<b>Maximum Speed</b>	3,100rpm
<b>Base Speed</b>	1,400rpm
<b>Continuous Torque at Maximum Speed</b>	1,500Nm
<b>Peak Torque (1s) at Maximum Speed</b>	2,000Nm
<b>Continuous Torque at Base Speed</b>	2,700Nm
<b>Peak Torque (1s) at Base Speed</b>	3,750Nm
<b>Inertia of Motor</b>	0.6kg*m <sup>2</sup>
<b>Motor Torque Control</b>	3ms

## LATERAL INPUT (FRONT)

<b>Maximum Speed</b>	9000 rpm
<b>Continuous Power at Maximum Speed</b>	635 kW
<b>Peak Power at Maximum Speed</b>	760 kW
<b>Continuous Torque at various speeds</b>	9000 rpm - 705Nm; 6500 rpm - 905 Nm; 1000 rpm - 1180Nm
<b>Peak Torque at various speeds</b>	9000 rpm - 800Nm; 6300 rpm - 1210 Nm
<b>Inertia</b>	0.1kg*m <sup>2</sup>

## ROAD SIMULATOR

<b>VERTICAL ACTUATOR</b>	<b>Maximum Yoke Force</b>	+14 / 0 kN
	<b>Maximum Yoke Displacement</b>	± 60mm
	<b>Response</b>	50Hz
<b>LATERAL ACTUATOR</b>	<b>Maximum Yoke Force</b>	+14 / -7 kN
	<b>Maximum Yoke Displacement</b>	± 15mm
	<b>Response</b>	50Hz
<b>DOWNFORCE ACTUATOR</b>	<b>Maximum Yoke Force</b>	+15 / 0 kN
	<b>Maximum Yoke Displacement</b>	± 90mm
	<b>Response</b>	50Hz
<b>LONGITUDINAL ACTUATOR</b>	<b>Maximum Yoke Force</b>	+10kN
	<b>Maximum Yoke Displacement</b>	±16.5mm
	<b>Response</b>	50Hz
<b>LONGITUDINAL ACTUATOR</b>	<b>Maximum Yoke Force</b>	+4/0KNm
	<b>Maximum Yoke Displacement</b>	±5°
	<b>Response</b>	50Hz

# LUBRICATION TEST SYSTEM



The forces experienced by transmission lubricants is recreated using real car data (Ax, Ay and Az acceleration data) which is recreated by the rig in rotation around two axes. This causes transmission oil distribution to be recreated accurately. A high-speed AC induction motor recreates the drive input from the engine. Oil can be conditioned to recreate different temperature scenarios. This delivers a very accurate analysis of lubricant behaviour in on-road conditions.

## APPLICATIONS:

- Complete gearbox lubrication testing and analysis
- Replay of lap profiles (speed, acceleration)
- Specialised synthetic tests focusing on cornering and straightline details
- Spray bar set-up development
- Oil pump tests
- Cooler pressure drop testing



## SPECIFICATIONS

<b>Continuous Power</b>	63kW
<b>Maximum Speed</b>	20,000rpm
<b>Torque</b>	60Nm
<b>Pitch Angle</b>	-90° to 80°
<b>Roll Angle</b>	±60°