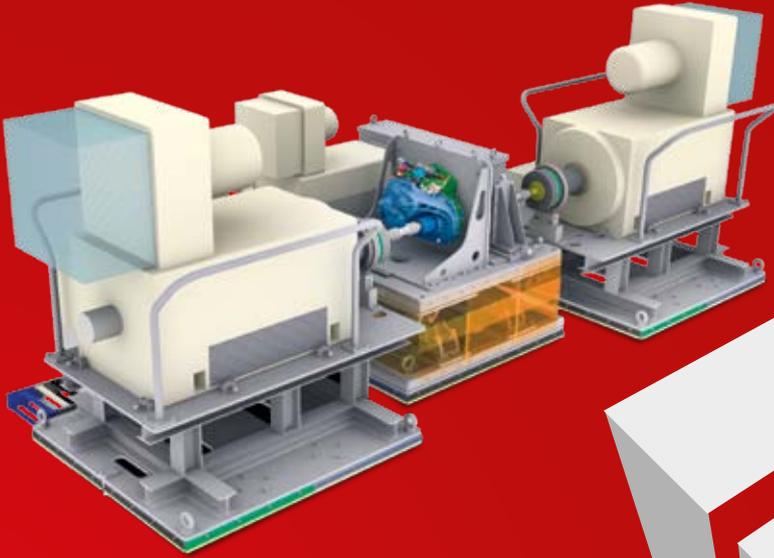
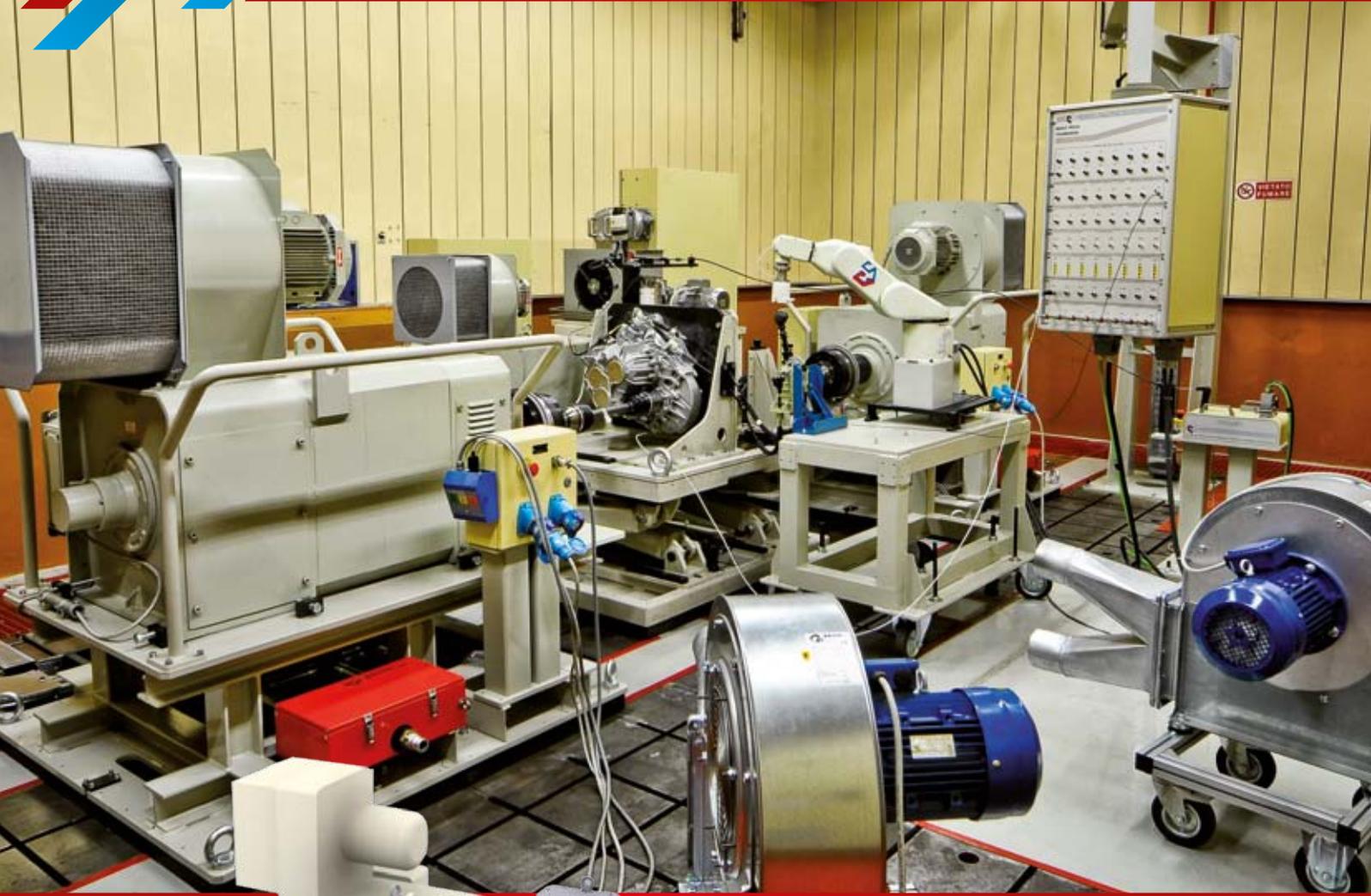


TRANSMISSION TEST CELL



AUTOMOTIVE TESTING SOLUTIONS

TRANSMISSION TEST CELL



Gearbox

Gear multiplier

Torquemeter

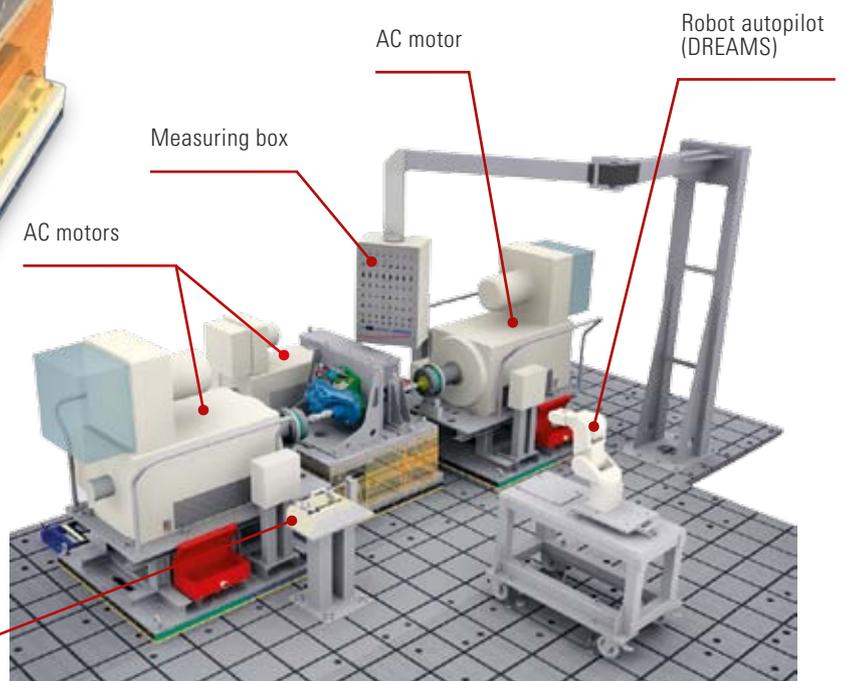
AC motor

Robot autopilot (DREAMS)

Measuring box

AC motors

Clutch actuator (DREAMS)



TRANSMISSION TEST CELL

FEATURES

The Transmission Test Cell is an example of high-tech design. The solutions adopted are highly innovative and they define a clear-cut divide between the old approach to transmission tests and the modern era of driveline testing.

The transmission assembly is tested by means of three three-phase asynchronous motors controlled by a regenerative inverter. The first motor simulates the torque normally generated by the engine while the other two absorb this torque at the output shafts thus simulating vehicle inertia.

The gear lever and the clutch are actuated by DREAMS, Control Sistem's well-tested automatic drive system. The motors are controlled by the DBStr ("Dynamic Braking System transmission") automation box produced by Control Sistem.

The Transmission Test Cell is used to test both automotive gearboxes and drive axles. In the latter case, the motor that delivers torque must be positioned in a different manner than in the gearbox configuration. This rearrangement is easily accomplished by means of air cushions installed beneath the mechanical supporting system.

The automation and control software is based on INT9000 environment developed by Control Sistem. It supervises and controls both the standard peripherals connected (DREAMS and DBStr) and the micro PLCs that manage all the auxiliary circuits of the testing room.

The software application is extremely flexible, it allows to define every kind of test cycle thanks to few and simple operations. An elegant graphical interface drives the user step by step: from the gearbox parameters input up to the data saving configuration.

ADVANTAGES ARISING FROM THE USE OF ELECTRIC MOTORS

- | The simulation of vehicle inertia does away with the need to fit bulky flywheels on the countershafts
- | Electric motors make it possible to execute dynamic tests (reproduce real dynamic stress conditions on the gearbox)
- | The electric motor on the main shaft replaces the engine, which means the testing room does not have to be equipped with auxiliary engine systems (i.e. lubricant, fuel, cold water, etc.)
- | Thanks to the use of regenerative inverters, the energy dissipated by the two motors applied to the countershafts is converted into electric energy which is used to power the first motor. This strategy enables the overall energy consumption to be greatly reduced.

TECHNICAL SPECIFICATIONS

MECHANICAL SETUP

The Transmission Testing Cell is composed of:

- | Three AC motors, powered with 400Vac or 500Vac
- | Three torque meters, one on the gearbox main shaft and two on the countershafts
- | One gear multiplier between the first motor and the gearbox
- | Three movable, mutually independent engine supporting units, moved by means of air cushions
- | DREAMS gear shifting and clutch engagement system
- | DBStr control unit for managing all the dynamics

TRANSMISSION TYPES

- | Manual, automatic or semi-automatic with any number of ratios and lever positions
- | Transversal or longitudinal
- | With or without differential group

MAIN PERFORMANCE OF THE SYSTEM

Engine simulation

- | Max speed: ± 7200 rpm
- | Max torque: ± 650 Nm at 2400 rpm
- | Max power: 340 kW

Vehicle simulation

- | Max speed: ± 3000 rpm
- | Max torque: ± 3400 Nm at 700 rpm
- | Max power: 250 kW (each motor)

Note: all the performances are adaptable on customer needs

CONTROL SYSTEM

Expert engineering, flexible deployment.

Control System is a leading producer of Testing Facility solutions for the Automotive sector providing all-round service and extensive specialization across the vehicle testing spectrum: Engine Testing Cells, Components Testing Rigs, Powertrain & Gearbox Testing Solutions. Control System also develops in-house complete dedicated management Software that is a key feature of the entire test process alongside the other elements in the Testing chain.

The high-level technical and entrepreneurial capacity acquired in over 20 years experience in the Automotive sector enables Control System to deliver cutting-edge solutions comprising latest-generation technology as well as sophisticated Hardware and Software systems. Proven expertise in the sector has enabled the Company to collaborate with top automakers both in Italy and worldwide with consistently excellent results.

Control System's real strength is its highly flexible ability to design and produce solutions tailored to customer specifications or developed in conjunction with customers themselves – a versatility that has become a fundamental market plus in the development of each project.



Control System S.r.l.

Via Collegno, 29 int. • 10044 Pianezza (To) Italy
Tel. +39 011 967 20 72 Fax +39 011 967 20 44

info@controlsystem.it • www.controlsystem.it