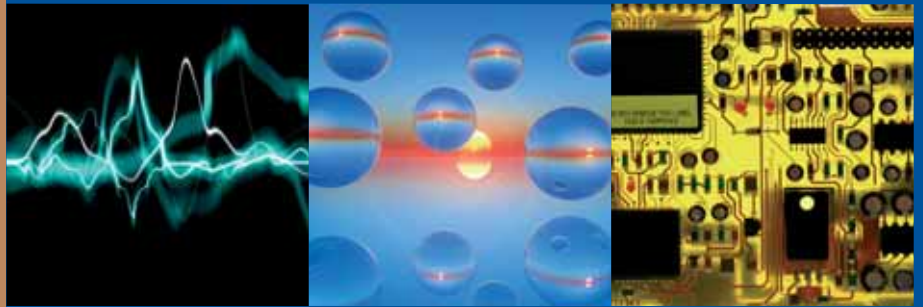
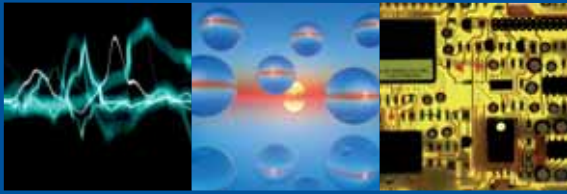


DCTC

Dry Corrosion Test Cabinet





Why Dry Corrosion Test?

Dry Corrosion Test Cabinet

UNDER-PAINT FILM CORROSION: FILIFORM AND SCAB CORROSION

A professionally painted metal surface should never be corroded; the main function of the paint is actually to protect the metal support from corrosion besides being an aesthetic factor.

Nevertheless, painting cycles are sometimes performed on supports that have not been treated properly. In this case, the symbiosis between paint and support becomes extremely vulnerable and a small grain of dust on a scarcely painted edge or any other cause is enough to start the corrosion process.

For example, if a car is hit by a stone, its paint cracks: corrosion propagates under the paint layer with short-term destructive effects, on the sheet metal first and then on paint itself. The real enemy that traditional salt spray chambers fail to detect is this kind of corrosion that propagates under the paint film and whose effects may be either a "scab corrosion" or a "filiform corrosion".

WHY DRY CORROSION TEST?

The ISO (International Standards Organization) Standard 7253, of 1984, sets forth both the application modes of salt spray tests and their limits. This standard actually states that salt spray tests are not valid as "corrosion tests" (not involving a real exposure to environmental agents) but they are only a sort of "behavioural test" to check the quality of different lots of painted products as well as the quality of the painting processes. From what has been said so far, the need of laboratory tests aimed at detecting and highlighting the two forms of under-film corrosion (filiform and scab) in a fast and easily reproducible manner clearly emerges.

This test already exists: it is the so-called Dry Corrosion Test. The procedure is the same as that followed for salt spray tests, but the two salts used are different: sodium chloride and ammonium sulphate.

Moreover, in dry corrosion tests, any wetting cycle is followed by a drying cycle with dehumidified hot air. A complete test cycle may last from 500 to 1000 hours depending on its severity.

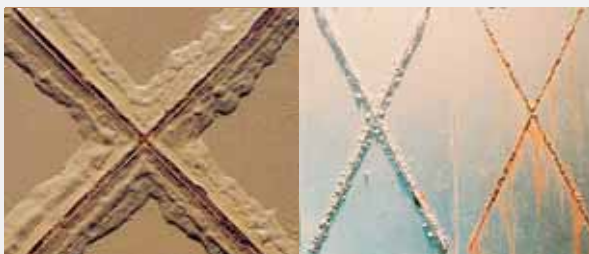
DCTC™: DRY CORROSION TEST CABINET

DCTC™ is a system designed to recreate the corrosion processes on both painted and bare metallic surfaces in the laboratory. All DCTC™ equipment can carry out tests according to UNI 9399 standards (filiform corrosion) and UNI 9590 (scab corrosion).

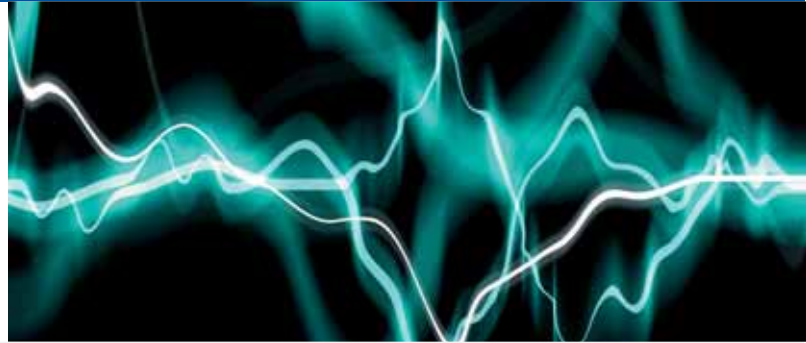
The systems can also perform traditional salt spray tests according to the most important national and international standards (continuous salt spray tests - ISO 9227, ASTM B117 and DIN 50021; alternate salt spray tests - DIN 50907) and have also been customised to suit the specific corrosion test needs of some of the largest automotive manufacturers in the world.

Therefore, if you really intend to reduce the damages caused by corrosion, choose the model of Dry Corrosion Test Cabinet that best suits your testing needs.

DCTC™ chambers: Created Under the Sign of Total Quality. All DCTC™ salt spray chambers are manufactured following the principles of Total Quality, according to ISO 9001 (EN 29001) standards.



Focus on features



EXTERNAL EXECUTION

Plastic (600-1200 l)

Stainless steel (2300 l)

External panels are completely removable for easy maintenance.

INTERNAL EXECUTION

The test compartment is molded from a single piece of fiberglass reinforced plastic to ensure long-life and a perfect seal.

HEATING

Shell-type heating system insulated with self-extinguishing glass wool.

ACCESS HOOD

- Completely transparent PVC hood
- Reversed V-form to allow a better inspection of the test environment and an easier flowing of condensation drops to prevent them from falling onto the specimens under test
- Servo-assisted opening/closing by means of small gas pistons. Pistons create a small pressure on the sealing gasket when the hood is closed. They also permit keeping the hood in an open position (600-1200 l); automatic hood opening by means of an electropneumatic system (2300 l).
- "full-tight" silicon gasket for perfect seal between the access hood and the test compartment (600 -1200 l); water filled channel placed along the closing edge of the hood (2300 l).

COMPRESSED AIR HUMIDIFICATION

- By blowing compressed air into a thermo-regulated bath (humidifier) made of AISI 304 SS
- Indicator of relative humidity.

SALT SOLUTION TANK

- Made of anti-corrosive fibre-glass reinforced plastic
- Capacity: 120 litres for approx 7-days tests (according to most standards)
- Possible connection to an external tank (optional)

SALT SOLUTION ATOMIZATION

The salt solution is sprayed inside the test chamber through an adjustable universal nozzle made of polycarbonate, mounted on a hard plastic support. It is possible to adjust the intensity and precision of the spray by adjusting the speed of the membrane pump and the pressure of the compressed air (atomization). It is also possible to reduce the fumes inside the chamber at the end of tests by means of compressed air so as to discharge all residual fumes before opening the hood.

CONTROL AND REGULATION SYSTEM

Based on a PLC structure, it has a control panel consisting of a colour touch screen which allows the setting of the necessary parameters to perform automatic and cyclical tests. The following parameters may be set and displayed on the control panel:

- temperature
- number of cycles
- test duration

Output data are saved by the PLC and displayed on the monitor. "Alert" and "warning" functions are also available to ensure a correct chamber operation. They indicate:

- lack of demineralized water
- lack of compressed air
- lack of salt solution

The following tests are already stored in the PLC and may be performed simply by selecting them by means of the touchscreen: DIN 50021, UNI ISO 9227 (CASS), UNI 9399 (filiform), UNI 9590 (scab). Moreover, other tests may be programmed in and saved by the user.

EXTERNAL	MODEL	INTERNAL DIM. (MM)				EXTERNAL DIM. (MM)				WEIGHT	POW.	VOLTAGE
		W	D	H	H*	W	D	H	H*			
Plastic material	DCTC600 P	900	640	810	1100	1880	850	1290	1290	250	2.4	230/50/1+G
Plastic material	DCTC1200 P	1700	640	810	1100	2680	850	1290	1290	320	3.7	230/50/1+G
Stainless steel	DCTC2300 P	2000	1000	1000	1300	3085	1510	1575	1575	450	5.3	400/50/3+N+G

*height is inclusive of hood ** voltage tolerance $\pm 10\%$



DCTC1200 P

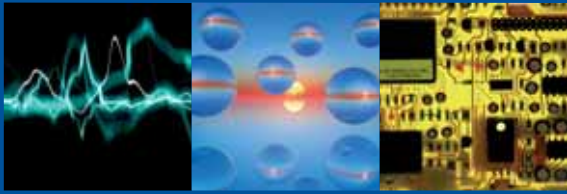




DCTC 1200P

ATT





Standard Functions

DRY CORROSION TEST

This kind of test consists of salt spray cycles followed by low relative humidity drying phases; it is performed according to UNI 9399 and UNI 9590 norms to highlight in a short time, and above all in a reproducible way, all under-film corrosion phenomena (filiform and scab). Particular care has been given to the generation of the salt spray which deposits onto the specimen in the form of uniform small drops, the very beginning of a powerful corrosive attack when water is evaporated during the drying phase.

CONTINUOUS SALT SPRAY (CONVENTIONAL SALT SPRAY)

It includes all the ISO, ASTM, MIL standards, DIN, etc.

ALTERNATE SALT SPRAY

It includes DIN 50.907 and DEF standards, whose cyclical variations may be divided into two phases:

- salt spray humid phase
- drying phase without air flow (stand by period)

CYCLICAL TESTS

PLC programmer allows the setting and performance of temperature cycles.

INCLUDED ACCESSORIES

- Pluviometer
- Hanging supports (no. 2 for DCTC600 P, no. 4 for DCTC1200 P)

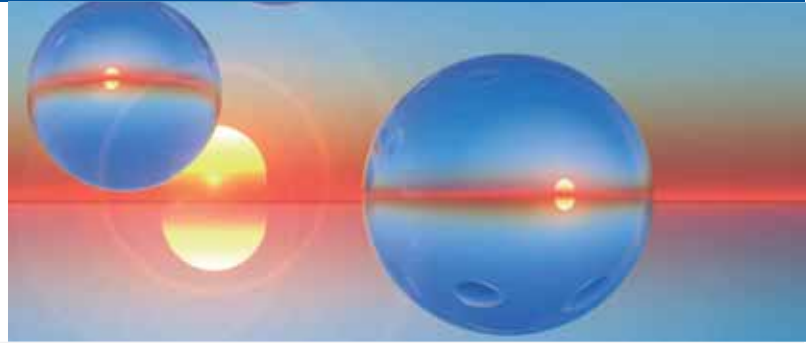
DCTC: PERFORMED STANDARDS

U.S.A.	U.K.	Germany	Italy	Automotive tests*
ASTM B117	Prohesion*	DIN 50907	UNI 9399	GM*
ASTM B287	BS 2011 P2.1*	DIN 50021 SS	UNI 9590	FIAT*
ASTM B368 (CASS)	BS 3900 F9	DIN 50021 ASS	UNI 5687-73	BMW*
ASTM D1735	BS 7479	DIN 50021 CASS	ISO 7253	VOLVO*
ASTM D2247*	BS 7479 AASS	DIN 50017*	ISO 9227	NISSAN*
ASTMG85 (1,5)	BS 7479 CASS	DIN 40046	ISO9227 NSS	TOYOTA*
ASTMG85 (2,3)*		DIN 50014*	ISO 9227 AASS	RENAULT*
MIL STD 202 G			ISO 9227 CASS	
MIL STD 810 G			CEI IEC 68-2-11	Others
MIL STD 883				JIS Z2371*

*only on request (optional)



Optional accessories



CONTROL VIA PC

A dedicated software allows test management and control (local and remote) via PC. The control system is interfaced through an Ethernet port. The system allows the following functions:

- Windows XP or VISTA 7, 8 (32 or 64 bit) professional edition or higher
- control of input data
- numeric and graphic output data
- modification of input data during test execution
- personalised selection of scales and curves for the charts to be displayed and printed
- colour prints
- test data storage for subsequent export and processing by other applications

GRAPHIC RECORDER

- 6 channel micro-processor-based, for temperature and relative humidity (wet bulb temperature)

ADDITIONAL PROBES

- PT100 probes (max no.3)

ADDITIONAL PORTHOLES

SPECIMEN SUPPORTS

- Racks with 19 positions for panel-like specimens, with gradual inclination grooves
- Support platform placed at the bottom of the test compartment for large-size specimens
- Set of no. 4 additional hanging supports for specimens:
 - no. 1 set for DCTC600 P
 - no. 2 sets (max.) for DCTC1200 P

SINGLE-COLUMN DEMINERALIZATION SYSTEM

Used to decalcify water thus allowing factory water to be used to supply the humidifier. Spare columns available.

AIR COMPRESSOR

- Complete with tank, to be used when no other source of compressed air is available.

ADDITIONAL TANK

- Made of PE, capacity 200 litres, to be placed outside the chamber.
Sizes: 600x800x700 mm (WxDxH).

DIGITAL PH MEASURING SYSTEM

- Complete with single-tube electrode (benchtop)

CASTORS

- Complete with adjustable supports for chamber levelling and for chamber braking (when in position) (600 - 1200 l)

WETTING TEST

VDA TEST (621 - 415)

- with or without cooling unit.



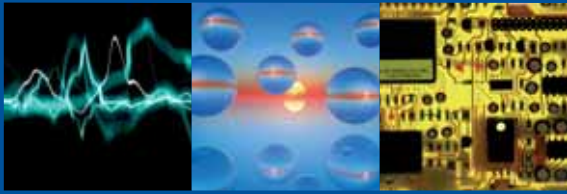
DCTC2300 P model



DCTC1200 P equipped with cooling unit for VDA test







Main advantages

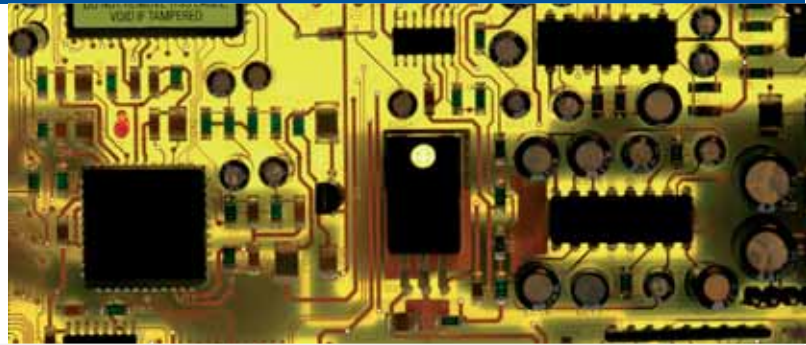
- 1 Salt solution top loading
- 2 Fluxmeter for salt solution flow reading
- 3 Indicator for salt solution level
- 4 Membrane pump for improving the regulation of the salt solution and the precision (atomization)
- 5 Easily inspectable stainless steel humidifier
- 6 Control panel: digital and PLC-based with 6-language interface: Italian, English, French, German, Spanish, Dutch
- 7 Acoustic alarm: to signal the absence of compressed air, water and/or salt solution
- 8 Manometer and regulating valve for the control of compressed air flow
- 9 Magnetic switch for turning off the spraying when the hood is open
- 10 Hood: fully-transparent, with servo-assisted opening
- 11 Main switch
- 12 USB port for test data export
- 13 Ethernet port
- 14 Specimen supports slots (standard):
no. 2 hanging supports for DCTC600 P
no. 4 hanging supports for DCTC1200 P
- 15 Adjustable nozzle (vertically and rotation)
- 16 Compressed air to reduce the fumes inside the test compartment
- 17 R.H. indicator (wet bulb)
- 18 Compensation valve for the compensation of the pressure inside the chamber and for the discharge of fumes from the test compartment at the end of a cycle
- 19 Condensate drain



Customized corrosion chambers

ACS has an extensive experience in the design and production of special chambers for corrosion testing, mainly for the automotive industry, including Kesternich tests (DIN 50018, ISO 3231, etc...).

The advancement of corrosion test applications in the automotive field led up to the launch of new special testing benches, in which alternate exposure conditions cause more severe effects on the products under evaluation. Other conditions than the sole salty atmosphere, indeed, are involved in the real use of vehicles and they worsen the effects of salt corrosion. Entire vehicles or relevant components can be subjected to the alternation of high and low temperatures, wet and dry conditions, direct salt solution washing (i.e. splash test, salt rain) inside a global cycling test with duration of many weeks.



Walk-in salt spray chamber
UCNS150+2055



Test chamber for accelerated-aging of high voltage isolators: temperature, humidity, sun light, salt spray. Useful capacity: more than 700 m³ (courtesy EDF France)



Walk-in corrosion chambers.
Pôle Corrosion Renault

Angelantoni Test Technologies (ATT), a company of the Angelantoni Group, is the only company capable of offering a broad range of test solutions for a great variety of applications, thanks to the expertise and technical know-how of its worldwide teams of experts. The leading test technology brand of ATT is **ACS**, world-famous since 1952 for its design and manufacture of a comprehensive range of environmental test chambers, including high-tech test equipment such as high vacuum chambers for aerospace applications and calorimeters.

Our core competencies and services for total customer satisfaction:

- Training, both at our facility and at customer site
- Testing and quality checks
- Installation and start up
- Preventive maintenance
- Service
- Calibration using SIT certified instruments
- "Full risk" assistance contracts
- Extended warranties
- Existing chamber validation
- Retrofitting of older chambers, including instrumentation and new environmentally friendly refrigerants
- Exchange and sale of used chambers
- Research and development
- Production and assembly
- Market analysis and advice
- Special applications



ISO 14001



ISO 9001