

SCM LABORATORY CAPACITY

2024/03/29

Do you need any further information or a quote ?
Consult us:

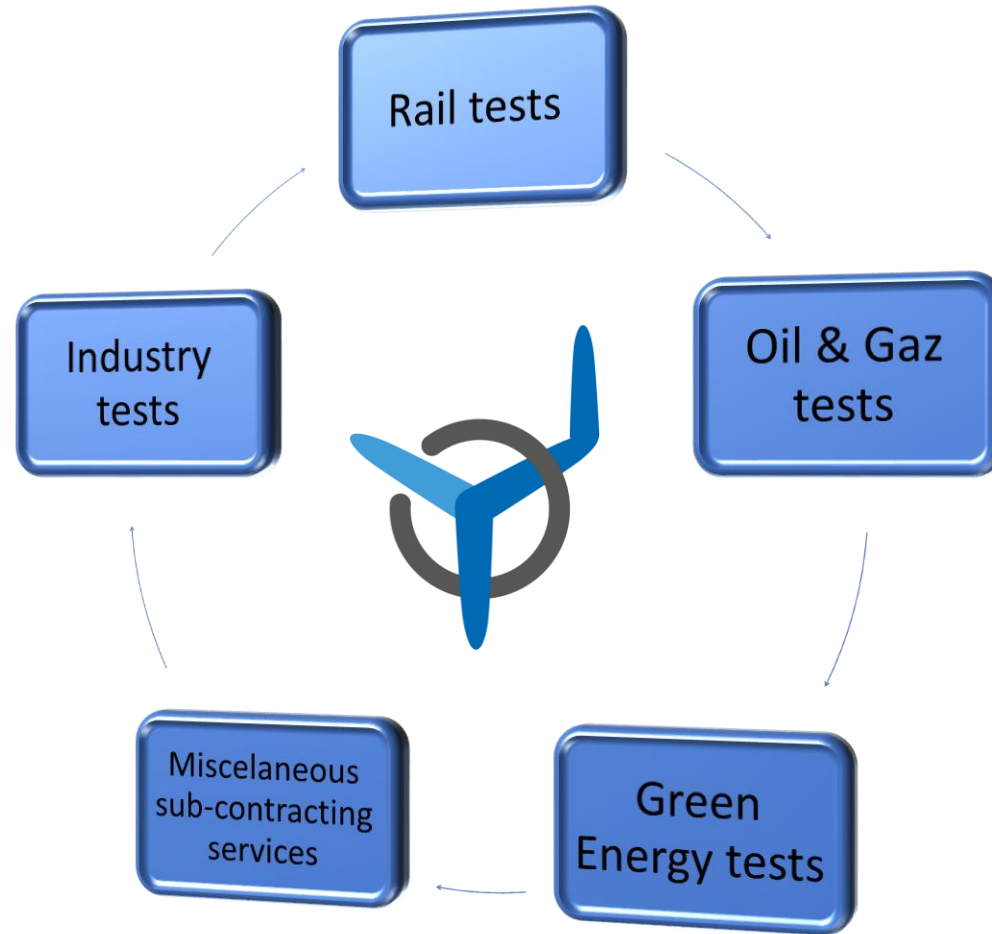
- LABORATOIRE@SCMLEMANS.COM
- +33 (0)2 43 61 73 82



SCM

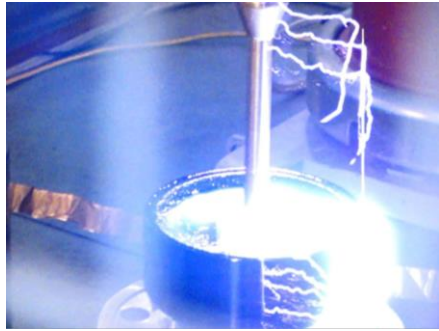
Systèmes et Connectique du Mans

SCM Laboratory field of activity

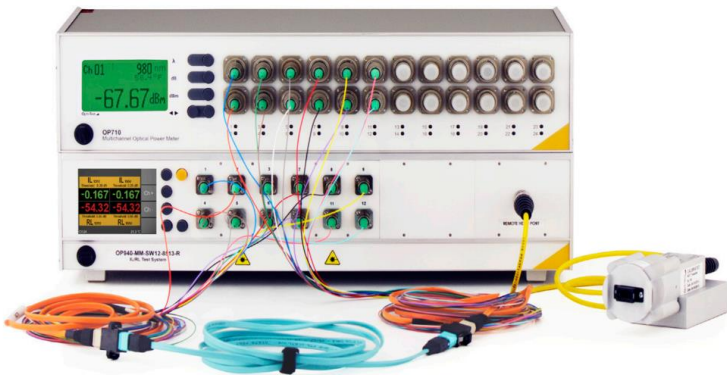


Team services - tests capabilities

Electrical Signal, contact et insulation resistances, Heating tests ...



Optical measures / OTDR, Power Meter



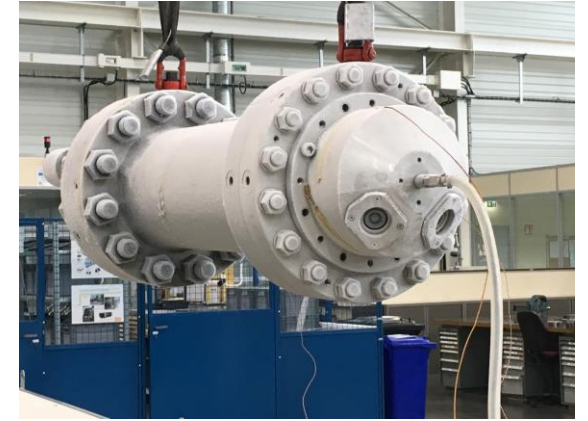
Hyperbaric, High Pressure, Water & Gas, Turbid Water ...



Electrical High Voltage, Partial Discharge, Proof Voltage ...



Environment tests, Climatics Chambers, Thermal Chocs, Salt Spray Chamber ...



Mechanical test, endurance, materials testing, IK, IP...



Laboratory organization

- A workshop of 1000 m² and an office of 100 m² with access control.
- An outdoor test platform for the big pressure vessel and the gaz equipments.
- 2 engineers for the tool design and the writing of the test procedures.
- A team of 13 technicians for the product qualifications and the FAT.
- Equipments that meets current standards.
- ISO 9001 quality system and HSE policy.
- Formations and regulatory approvals.



Laboratory organization



External test platform for large pressure vessels and gas testing



In-house machining for rapid prototyping and tooling

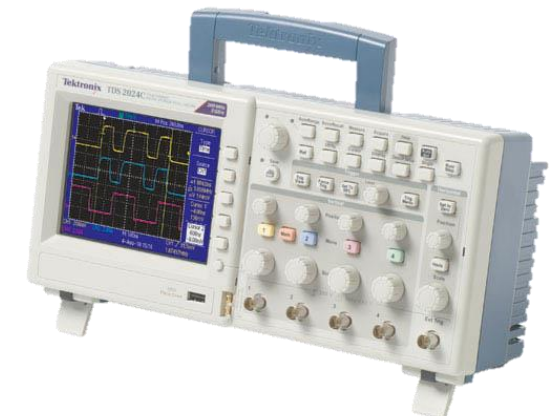


Metrology device for all types of dimensional measurements



Acquisition and signal analysis

- Several sensors to record temperature, humidity, voltage, current, load....
- Reliable DAQ for long recording periods.
- High frequency acquisitions for transient signals.
- Isolating sensors for HV environment.
- Various oscilloscopes.



Optical performances capacity

- OTDR SM and MM. IL and BR measurement at 0.1 dB accuracy.
- Optical sources SM et MM for continuous measurement.
- High Speed Multichannel Optical Power Meter for micro cut detection.



Electrical measurements

- Continuity: Up to 600 A with $\mu\Omega$ accuracy
- Insulation: Up to 10 kVDC for IR measurement up to 15 T Ω .
- Voltage withstand test : Up to 25 kV DC and up to 10 kV AC (200 kV with HVAC generators).



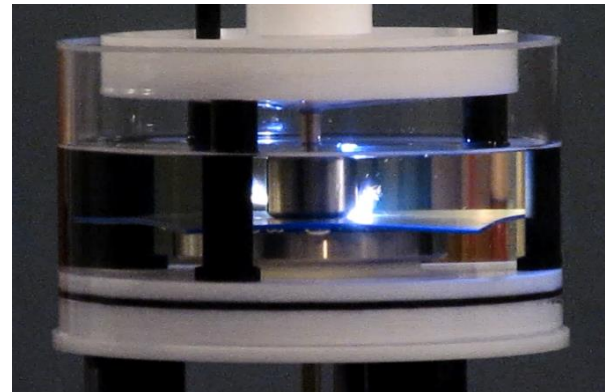
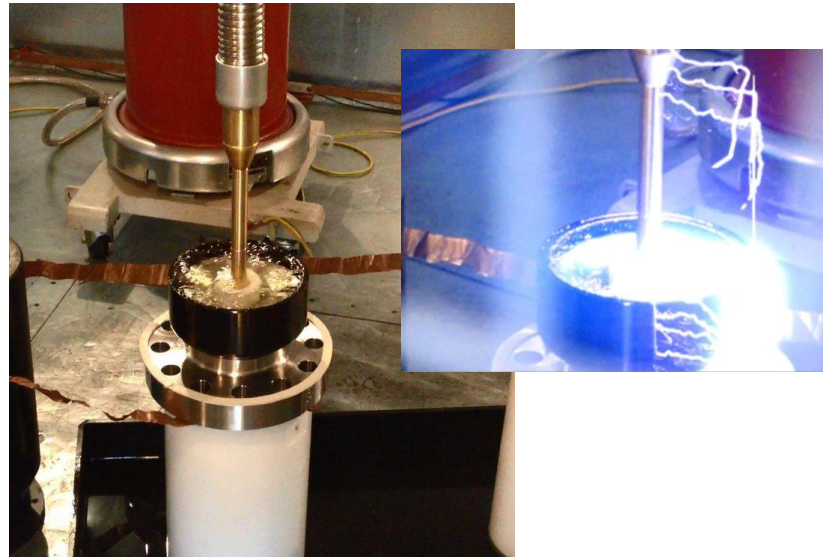
HV PD Free generators - Large Faraday cage

- Generator 75 kV AC / 90 kVA / 50 Hz programmable
- Measurement with accuracy < 0.2 pC per IEC 60270
- Dimensions : 8x8m Door opening for large DUT.
- Safe, Open Door testing option available for high length DUT (BGND < 2 pC)
- Safety equipment and trained technicians



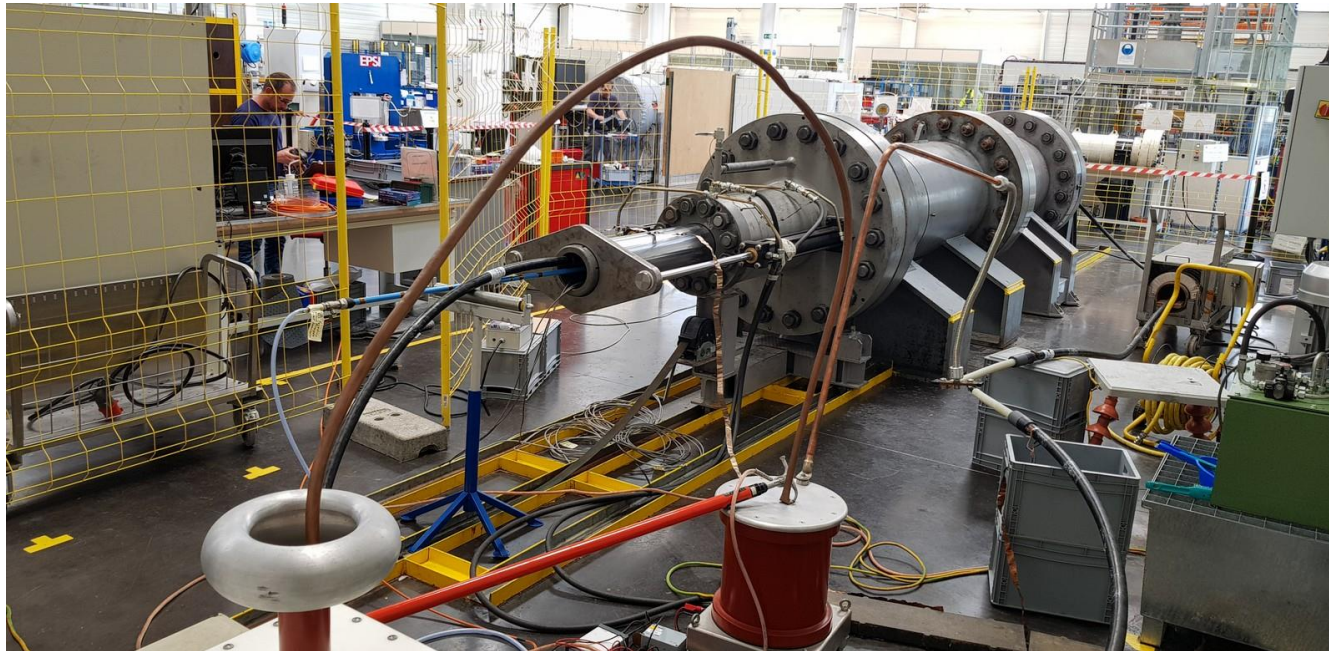
HV generator – PD measurement – Small faraday cage

- Generator 200 kV AC / 90 kVA / 50 Hz programmable.
- Measurement with accuracy < 0.5 pC per IEC 60270.
- Dimensions : 4x3.5 m for components or material testing.
- Safety equipment and trained technicians



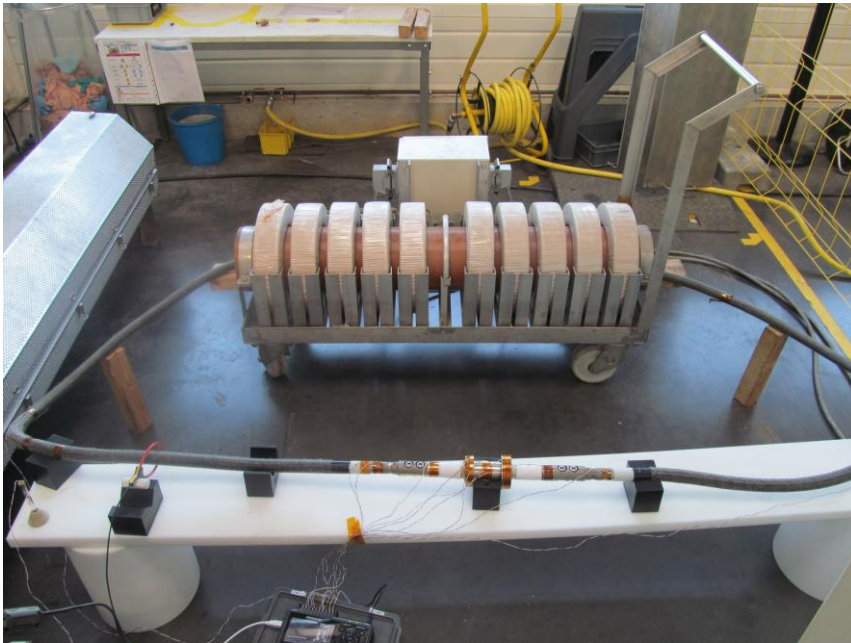
HV generators – Mobile benches for combined tests

- Mobile generators (25, 30 and 75 kV) with PD acquisition systems.
- Filtering capacity for an optimal outside PD measurement (BGDN < 2 pC)
- PD measurement on DUT subjected to severe environment (hydro or gas pressure, vacuum, humidity, temperature...)



Temperature rise test for cables or connectors

- Induced current generators up to 2000 AAC from 50 to 200 Hz
- 50 hz 2000 AAC with heating room for relative measurement.
- Temperature and current recording capacity.
- Inductive rings for voltage combined.

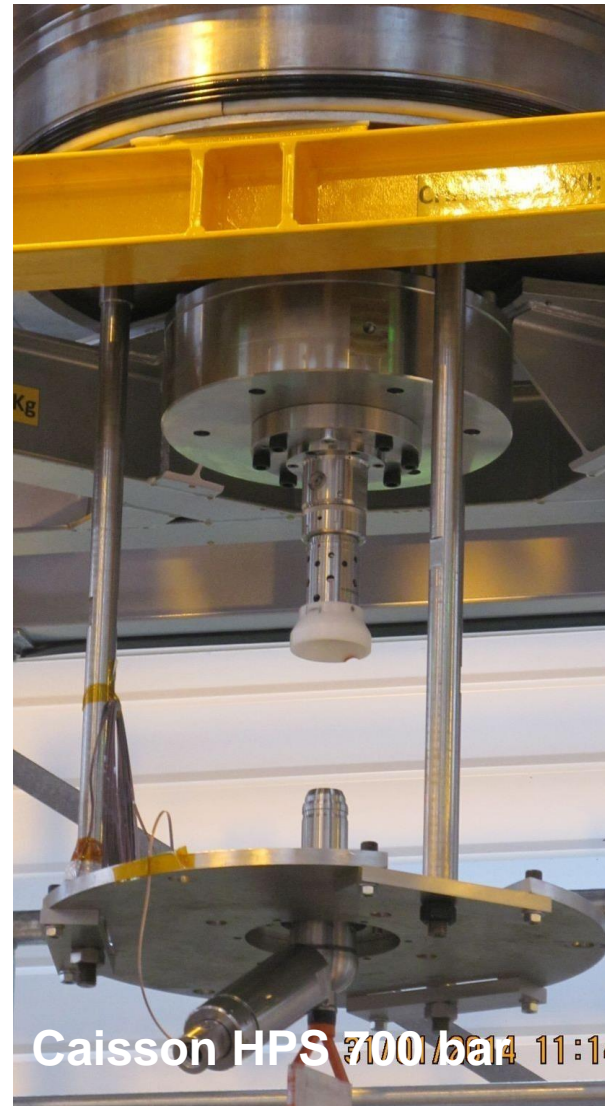


High pressure vessel : Connection tests under pressure

Name	Fluide	Volume (L)	Pressure max (bar)	T° max (°C)	Length (mm)	Diameter (mm)	Actuator stroke (mm)	Closing system
Caisson DEUTSCH 60 bar	water (turbide)	1 600	60	ambient	2 500	900	270	bolted
Caisson HPS 700 bar	water	1200	700	ambient	3 000	700	700	quarter turn
Caisson Nova Swiss 2500 bar	water	41	2 500	200	1 300	200	300	quarter turn
Caisson CMCTSS 500 bar	water	1050	500	ambient	4 400	580	800	bolted
Caisson CMI 200 bar DN 900	water (turbide)	16 000	200	100	26 000	900	600	bolted



High pressure vessel : Connection test under pressure



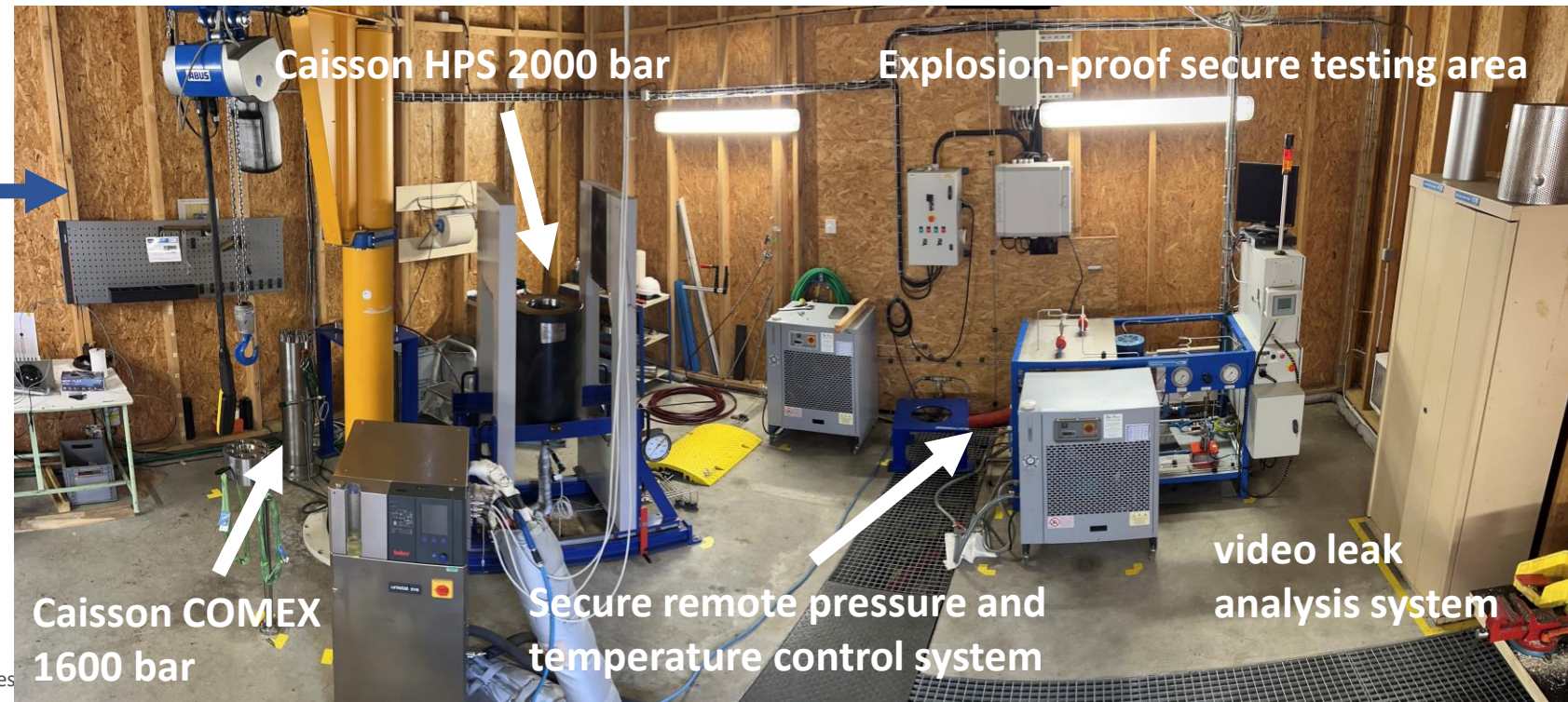
High pressure vessel : Temperature and pressure



Name	Fluide	Volume (L)	Pressure max (bar)	T° max (°C)	Length (mm)	Diameter (mm)	Closing system
Caisson NS 2500 bar	water	41	2 500	200	1 300	200	quarter turn
Caisson ESPI 2000 bar Température	water glycol	20	2 000	-20 / +200	355	250	Frame closure
Caisson HPS 1800 bar	water glycol	11	1 800	-5 / +121	850	127	Frame closure
Caisson SMB 520 bar Biz-biz	water glycol	13	600	80	500	127	bolted
Caisson DEUTSCH 2000 bar Optique	water	0,6	2 000	200	136	69	bolted
Caisson CMI 200 bar DN900	water glycol	16 000	200	100	26 000	900	bolted
Caisson NS 350 bar	Salt water	400	350	0 / +100	2000	500	bolted

High pressure vessel : Gaz pressure test

Name	Fluide	Volume (L)	Pressure max (bar)	T° max (°C)	Length (mm)	Diameter (mm)	Closing system
Caisson COMEX 1600 bar Gaz	Azote / Nitrogen	49	1 600	110	623	99	bolted
Caisson HPS 2000 bar Gaz	Azote / Nitrogen	16	2 000	-20 / +200	530	150	Frame closure



High pressure vessel : factory acceptance tests

Name	Fluide	Volume (L)	Pressure max (bar)	T° max (°C)	Length (mm)	ID(mm)	Closing system
Caisson CMCTS 500 bar	eau	1050	500	ambient	4 400	580	bolted
Caisson SMB 350 bar	Eau / azote	120	300	ambient	560	506	bolted
Caisson CMCTS 450 bar Deep Vision	eau	123	450	ambient	1 470	326	bolted
Caisson CMI 300 bar 60 mètres	eau	4 500	300	ambient	62 000	300	bolted
Caisson HPS 500 bar Jumper	eau	400	500	ambient	1 000	700	Frame closure



Thermal tests

- Damp heat tests : max 680 L
- Salt Spray test: 400 L, 20 to 50°C
- Material ageing : max 972 L, 350°C
- Enclosure of 4 m² and ice water tank for thermal shocks.
- Air/Air thermal shock chamber : 200 L, -50 to 180°C
- Vacuum ovens for material testing



Mechanical tests and degree of protection

- Mating force tests : max 50 kN on the mating table and 100 kN on the tensile machine.
- Mechanical endurance tests on automatic bench.
- Tensile test, torque measurements....
- IK Pendulum hammer, IK1 / IK3 / IK5 / IK7 / IK9
- Access protection IP1X to IP6X; Watertightness IP X5 to IPX8



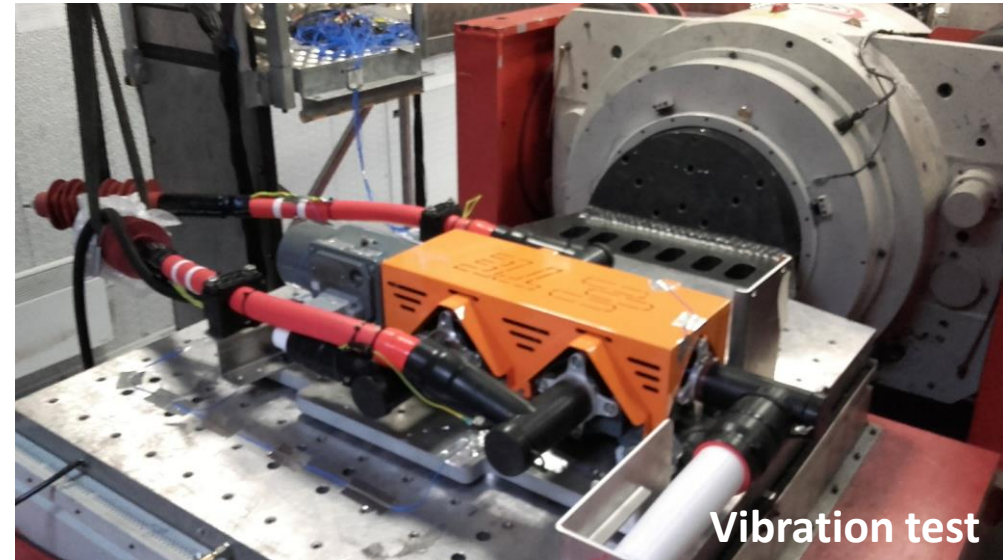
Chemical tests

- Hardness measurements (Vickers and Shore A).
- Metallography analysis : polishing machine and microscopes.
- Resistance to fluid tests and compatibility tests.



Subcontracted Tests

- Lightning impulse test
- Short circuit test
- Shocks and vibrations
- Materials analysis



Lifting and handling equipments

- 3 bridges (16T, 10T and 2*5T)
- Several handling equipments (forklifts, workshop crane, tractors...)
- All the necessary for the torques tightening



THANK YOU



LABORATOIRE@SCMLEMANS.COM