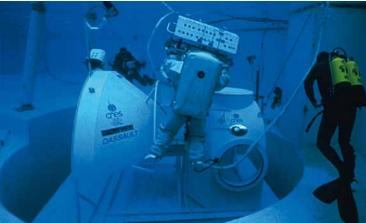


# Extreme Environment Engineering Department Hyperbaric Experimental Centre







## HYPOBARIC AND HYPERBARIC TEST PLATFORM

Certification - Validation - Conception - Manufacturing

#### COMEX

**COMEX** was founded in Marseille in 1961 and became the first company worldwide to supply diving services, engineering and technology for human and robotic underwater interventions. The company owns today a fleet of two research vessels, ROVs and a manned submarine.

The HYPERBARIC EXPERIMENTAL CENTRE (CEH) features exceptional test facilities. All its hypobaric and hyperbaric chambers can be used for the qualification of equipment and human intervention methods in hostile environments for the purpose of scientific and industrial research (nuclear, oil, chemical industry, space, etc...).



### APPLICATION FOR ALL SECTORS







Subsea and offshore industry

Aerospace industry

Chemical industry

Mechanical industry

Defence and security

Scientific research

Renewable energy

Optical instrumentation

Food industry







## HYPOBARIC AND HYPERBARIC FEATURES



Test of deep-sea products to -4000 m



Test of equipment in hypobaric conditions



**ROV** test



Chamber C 2400

#### An integrated solution provider

- Feasibility studies
- 3 D modeling
- Design and manufacturing
- Definition of test procedures
- Validation and certification
- Data acquisition
- Calibration instrumentation
- Volume change measurement
- Specific adaptation
- Physiological and biological studies

#### A wide range of capabilities testing

- Hypobaric chambers from 0 Patm to vacuum
- Hyperbaric chambers from 0 Patm to 400 bar
- Volume of the chambers up to 65 m<sup>3</sup>
- Fluid: liquid or gas
- Gas: air, oxygen, helium, hydrogen, gas mixture
- Several deep pools

#### Security

- A know-how acquired over 50 years
- ISO 9001 V2008 certification
- A site fenced and guarded day and night



CE 4000



Hydrosphere (5m / 16' diameter)



Chamber CE 100



Test pool

	CHAMBERS	VOLUME	Size : diameter = Ø, Length = I, Height = h		FLUIDE	PRESSURE	
40 000 m			Internal	Access or door	UNDER PRESSURE	Hypobaric (Bar)	Hyperbaric (Bar)
	CAISSON B	7,6 m <sup>3</sup>	Ø = 1,8 m l = 2 m	Ø = 0,6 m	Air	0.015	10
	C 2500	30 m <sup>3</sup>	Ø = 2,45 m l = 7,5 m	Ø = 0,6 m	Air, N <sub>2</sub> , He	0.015	20
	C 2400	35 m <sup>3</sup>	Ø = 2,3 m l = 9 m	Ø = 0,7 m	Air, N <sub>2</sub> , H <sub>2</sub> , Water	0.015	60
	CE 1000	1,7 m <sup>3</sup>	Ø = 1 m l = 2,2 m	Ø = 1 m	Water	0.010	70
	EMS 800	21 m <sup>3</sup>	Ø = 2,4 m	Ø = 0,73 m	Air, N <sub>2</sub> , H <sub>2</sub> , He	0.015	80
0	C 1200	4 m <sup>3</sup>	Ø = 1,5 m h = 2,2 m	Ø = 0,6 m	Air, N <sub>2</sub> , H <sub>2</sub> , He	0.010	120
	HTP 140	22,4 dm <sup>3</sup>	Ø = 0,25 m h = 0,46 m	Ø = 0,25 m	Air, N <sub>2</sub> , H <sub>2</sub> , He	0.010	140
	HTP 200	5 dm <sup>3</sup>	Ø = 0,15 m h = 0,3 m	Ø = 0,15 m	Air, N <sub>2</sub> , H <sub>2</sub> , He	0.010	200
	CE 2000	216 dm <sup>3</sup>	Ø = 0,20 m l = 6,9 m	Ø = 0,2 m	Water	0.010	200
	HTP XF	47 dm <sup>3</sup>	Ø = 0,28 m h = 0,75 m	Ø = 0,25 m	Air, N <sub>2</sub> , H <sub>2</sub> , He	0.010	200
	CE 2500	160 dm <sup>3</sup>	$\emptyset = 0,68 \text{ m}$ h = 0,52 m	Ø = 0,68 m	Water	0.010	250
<b>4</b> 000 MSW	CE 4000	8 m <sup>3</sup>	Ø = 2,5 m	Ø = 2,5 m	Water	0.010	400

HYDROSPHERE	VOLUME	Size : diameter = Ø, Length = l, Height = h		FLUIDE	PRESSURE	
	VOLUME	Internal	Access or door	UNDER PRESSURE	Hypobaric (Bar)	Hyperbaric (Bar)
	65 m <sup>3</sup>	Ø = 5 m	Ø = 1,8 m	Air, N <sub>2</sub> , He, Water	0.015	30

POOLS	VOLUME	SIZE	DEPTH	EQUIPMENTS
Pool 1	1 800 m <sup>3</sup>	25 m x 23 m	3 m	- 4,2 T overhead crane
its deep well	280 m <sup>3</sup>	Ø = 6 m	10 m	- Video records, photography by ROV or diver
Pool 2	100 m <sup>3</sup>	4 m x 8 m	4 m	- Electric and pneumatic energy
Pool 3	100 m <sup>3</sup>	4 m x 8 m	4 m	- Technical assistance

#### **Satisfied Customers:**

ESA, DGA, CEPHISMER, CGG, ROLEX, HASKEL, THALES, DCNS, CYBERNETIX, TOTAL, ONET, CNES, MEDES, DASSAULT, EAD Aerospace



The sense of mission