

WHO WE ARE

PUNCH Hydrocells, based in Turin in the "Cittadella Politecnica", has the mission to develop, engineer, integrate and sell propulsion, power generation and energy storage products based on **Hydrogen Technologies** and proprietary Control Systems. Our Hydrogen solutions covers the entire value-chain of hydrogen ecosystem: **Production, Storage and Distribution, Fuel Cells and Internal Combustion Engines.**



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FUEL CELL DYNO BENCH

by



OUR CAPABILITIES ON FUEL CELL



SYSTEM ARCHITECTURE



ENERGY CONTROL



VIRTUAL ANALYSIS



LV/HV DESIGN & SAFETY



ADDITIONAL MEASUREMENT



TCO ANALYSIS

“

We develop, engineer, integrate and sell

Energy Storage and Propulsion Systems

based on Hydrogen Technologies and

Proprietary Control Systems, Algorithms and Software

with the strengths and experience of an OEM and the agility of an innovative start-up

”



ABOUT THE DYNO BENCH:

BRIEF DESCRIPTION

KEY FEATURES

F L E X I B I L I T Y

ATM
LT-MT-LT

VOLTAGE
12-800v

BATTERY
SIMULATOR

KEY BENEFITS



Up 2 FC
module testing
(Single/Double)













Development
time reduction



Test complete
powertrain
system

TECHNICAL SPECIFICATIONS:

 Battery Simulator	275 kW DC output power 1250 V DC link voltage 1000A output current bidirectional Standard and custom battery models
 Automation system	AVL PUMA 2.0 INCA
 Safety management system	ATEX compliant Machinery directive complaint Application specific Vehicle architecture safety concept
 Dynamo	HORIBA High Dynamic 576 kW (30-55°C) & 125 kW (6-12°C) 5000rpm max speed
 Coolant conditioning system	Installed capability 280 kW (30-55°C) & 125 (6-12°C) 4 independent cooling circuits: - High Temperature 100kW - Low Temperature 30kW - Medium Temperature 135kW - Cabin Heating 30 kW
 H2 regulation system	H2 flow meter AVL Hytron: - Up to 25bar - Up to 30 kg/h
 Voltage regulation	In house Power distribution units, HV DCDs LV DCDC 800V 400v (35kW + 35kW) 12/24V
 FC Modules	2 X PEM up to 200kW Combined or individual modes
 HV electrical loads	Modular load up to 50kW (i.e HVAC, Electric Cabin Heater PTC Heaters)
 Additional measurement	DAQ systems, Coolant Flow Meter, H2 Emission analyzer (2003)