



CITEPH'S LINES OF ACTION

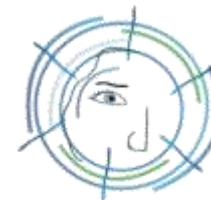
ENERGY AND
ECOLOGICAL TRANSITION



RESPONSIBLE
OIL & GAS



INDUSTRY 4.0
FOR ENERGY





CITEPH'S INNOVATION TOPICS

- **Environmental impact reduction & energy efficiency**

- Environmental impact reduction
- Energy efficiency
- Scope 1 & 2 emissions reduction
- Water quality management & desalination
- Soil degradation
- Decarbonization of processes
- Circular economy (Reduce, Reuse, Recycle)

- **New Design Capabilities**

- Simulation & material behaviour knowledge
- Nondestructive testing (NDT)
- New materials
- New manufacturing processes

- **Energy Storage Technologies**

- **Energy Distribution/Management Technologies**

- **New mobility & New marine propulsion systems**

- **Offshore & Subsea Technologies**

- Surface/underwater robotics & drones (ROV, AUV, surface drones...)
- New installation/maintenance/support assets

- Mooring
- Hydrodynamics
- SURF (Subsea umbilicals, risers and flowlines)
- SPS (manifolds, Xmas trees...)

- **Carbon capture, use and storage (CCUS)**

- Capture
- Transportation
- Usage
- Storage

- **Alternative Energy Sources**

- Solar Systems
- Wind turbines
- Marine power
- Native H2
- Bio H2 production

- **Liquid and Gas Processing**

- Flow assurance
- Process engineering
- Refining

- **Augmented Worker**

- Teleoperation
- Robotics & cobotics
- Virtual Reality (AV) & Augmented Reality (VR)
- Chatbot

- **Smart Assets**

- Sensors
- Big data & artificial intelligence
- Industrial internet of things (IIoT)

- **Clean Energy Vectors & Next-Generation Fuels**

- Electrolyser / H2 production
- LNG
- E-fuels
- Biofuels

- **Subsurface**

- Geophysics
- Geology
- Reservoirs
- Drilling
- Optimized resource management

- **Safety, Cybersecurity & Reliability**

- Quality, Health, Safety and Environment (QHSE)
- Industrial Cybersecurity
- Reliability
- Data center (Powering, cooling)