

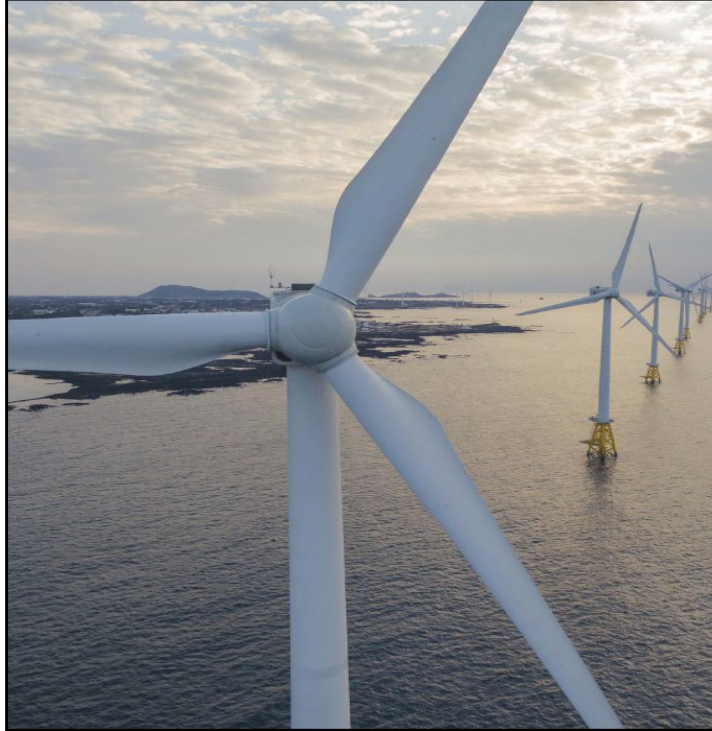


# Experimental and Computational Geodynamics Laboratory

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## Research areas



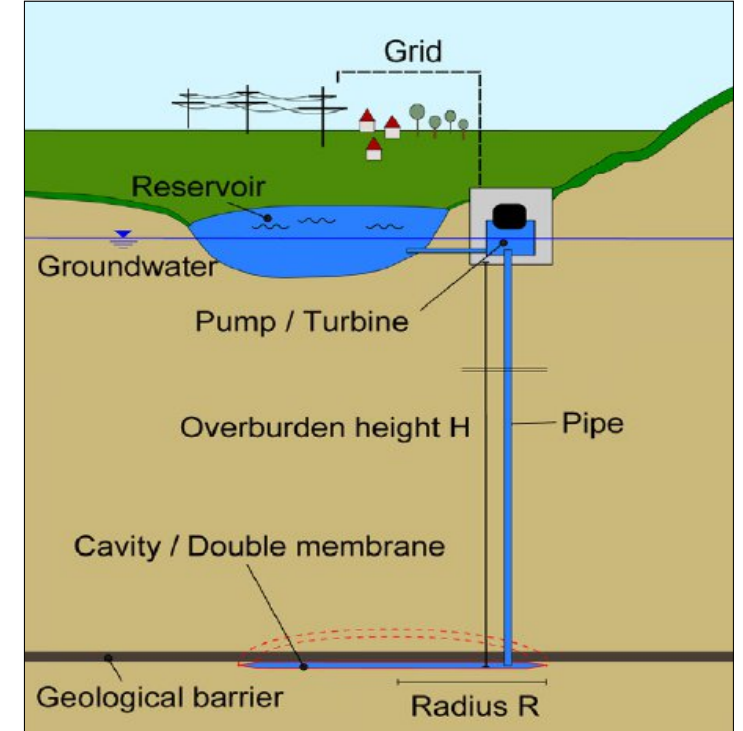
### Offshore Wind Energy

- Development of simplified guidelines for disaster resilient structure.
- Physical modelling of offshore wind turbine foundations.
- Challenges associated with harsh environmental conditions at offshore sites.



### Landslide

- Study of debris flow dynamics using field data, laboratory experiments and modelling.
- Analysis of entrainment, transport and deposition process
- Experimental focus on erosion thresholds, runout behaviour and morphological evolution



### Energy storage

- Using gravitational energy storage system
- Numerical analysis of structural, mechanical, and system performance.
- Prototype development and testing to evaluate efficiency, reliability, and operational challenges.



<https://sites.google.com/view/ecgl/home>

**For more details on research publications and our team, please visit the ECG Lab w**

# Hydropower Simulation Laboratory (HSL), IIT Roorkee

Part of Dept. of Water Resources Development & Management

**Hydropower Simulation Laboratory (HSL)** aims to model and simulate hydroelectric and various other advanced systems such as marine propulsion and validate the developed models through laboratory prototype. **Power Electronics and Hydro-Electric Machines Laboratory (PEHEM)** commenced with the aim of supporting the Indian hydropower projects to overcome challenges and improve productivity at maximum possible efficiency by adopting the latest technologies and advanced operational methods.

Research focus:

Hydropower systems & plant simulation

Power electronics & hydro-electric machines

Sustainable energy & marine propulsion

Cybersecurity for power systems

Infrastructure: Typhoon HIL-604, OPAL-RT, dSPACE, SCADA, advanced generators, converters & analyzers

Collaborations: NHPC, THDC India, ABB, NBCC, CDAC, MoE, international universities (UK, Canada, Italy)