SUPERCOMPUTING AND ENERGY FOR MEXICO

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ENERXICO

SUPERCOMPUTING AND ENERGY FOR MEXICO

EUROPE & MEXICO

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ENERXICO is a technical cooperation between Mexico and the EU.

The project will develop exascale-compatible performance simulation tools that will be of critical interest to the energy industry.

AREAS

- **Wind energy** industry.

- **Combustion efficiency** for transportation.

- **Oil & gas** industry in upstream, midstream, downstream sectors.

DESIRED IMPACT

- **Develop** beyond state-of-the-art high performance simulation tools for the energy industry.
- **Increase** the oil & gas reserves using geophysical exploration for subsalt reservoirs.
- **Improve** refining and transport efficiency of heavy oil.
- **Develop** a strong wind energy sector to mitigate oil dependency.
- **Improve** fuel generation using biofuels.

OBJECTIVES

EXASCALE COMPUTING

- Evaluate and improve the efficiency of HPC codes in potential exascale architectures.
- Identify the performance bottlenecks that may affect the codes.
- Enhance computational efficiency and scalability while achieving energy-efficient executions of HPC codes.

RENEWABLE ENERGIES

- Classify wind flows for wind farm design.
- Develop meso-scale techniques for numerical weather prediction.
- Assess meso-scale and micro-scale coupling techniques in complex flow.

COMBUSTION

-Develop and validate predictive simulation tools to optimise fuel design and performance.

-Develop combustion and emission models for new industrial guidelines for engine operation and maintenance.

OIL AND GAS ENERGIES

- Explore data processing of fine meshes to capture geological features.
- Forecast hydrocarbon at reservoir scale.
- Simulate experiments that can substitute expensive real laboratory exploration for new catalysts.