

## ENERXICO: Empowering the Mexican energy sector with supercomputing



HPC techniques have the power to improve and reform many industrial sectors. When the Mexican government and the European Union (EU) decided to collaborate to improve their energy industries, it was an opportunity for EU high-performance computing (HPC) researchers to team up with Mexican colleagues. The aim? To provide solutions for the oil and gas industry, improve wind energy performance and solve issues of combustion efficiency for transportation systems.

Recently launched in Barcelona, [ENERXICO](#), a new project jointly funded by European Union and the government of Mexico, brings together 15 institutions in an academic-industry collaboration to solve such real-world engineering problems. Coordinated by Barcelona Supercomputing Center (BSC) in Europe and the [Instituto Nacional de Investigaciones Nucleares \(ININ\)](#) in Mexico, it will focus on scaling in wind energy, oil/gas exploration and reservoir modelling, and biofuels for transportation. In parallel, to power these applications, the project will work on achieving scalable, energy-efficient simulations for the exascale era.

“ENERXICO will demonstrate the power of cross-border collaboration to put supercomputing technologies at the service of the energy sector”, commented [José María Cela](#), Director of the Computing Applications for Science and Engineering (CASE) department at BSC. “In this project, we aim to deliver tangible solutions for real-life industrial problems, while strengthening our collaboration with Mexico and getting exascale-ready HPC simulations.”

“Mexico through the ENERXICO project and the European collaboration aims to develop exascale-ready application codes, some of which Pemex plans to use as part of their production environment. This is a

major effort that could boost HPC applications in Mexico in the energy sector” said [Jaime Klapp](#), head of the Computational Fluid Dynamics group at ININ and co-founder of the Cinvestav-Abacus supercomputing centre.

ENERXICO will build upon the considerable expertise of its consortium to deliver ground-breaking new energy solutions, from wind turbine simulations to improve the efficiency of wind farms and make wind energy more competitive, to geophysics exploration and oil reservoir modelling, to thermo- and fluid-dynamic processes of biofuel combustion for transportation. In all of these areas, the project will work to overcome performance bottlenecks and deliver enhanced computational efficiency, resulting in a 10% energy reduction in pre-exascale simulations.

Further information: [ENERXICO on the European Commission’s CORDIS website](#)

### About ENERXICO

Running for two years from 1 June 2019 and with an overall budget of nearly €4 million, ENERXICO – Supercomputing and Energy for Mexico – brings together 15 institutions from the European Union and Mexico. ENERXICO applies exascale high-performance computing (HPC) techniques to different energy industry simulations of critical interest for Mexico. It will provide solutions for: the oil and gas industry in upstream, midstream and downstream problems; the wind energy industry; and combustion efficiency for transportation.

The project’s 14 partners include representatives from both academic and industry, with Petróleos Mexicanos (Pemex) as an observer. The full list of partners is as follows: Barcelona Supercomputing Center, Technische Universität München , Université Grenoble Alpes, Centro de Investigaciones Energéticas, Medioambientales y Tecnologías, Repsol, Iberdrola, Bull Atos, Universitat Politècnica de València, Instituto de Investigaciones Nucleares, Universidad Autónoma Metropolitana, Universidad Nacional Autónoma de México, Centro de Investigación y de Estudios Avanzados del Instituto Politécnico Nacional, Instituto Mexicano del Petróleo and Instituto Politécnico Nacional.

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