



Eni turns on one of the largest and energy efficient High Performance Computing System for Industrial Oil and Gas activities

With an upgrade of 1,500 IBM server nodes, 3,000 new Intel processors and 3,000 NVIDIA GPU accelerators, the energy-efficient HPC system allows Eni to increase its computational capability to 3 Petaflops to more effectively support exploration and reservoir activities.

San Donato Milanese (Milan), 3 July 2014 - Eni has put into operation its second major HPC system. The new supercomputer has an innovative approach based on the usage of accelerators to implement a so called “hybrid cluster architecture”. It comprises 1500 IBM iDataPlex dx360 M4 nodes, built on more than 30,000 processing cores, each equipped with two NVIDIA Tesla GPU accelerators connected by a high-speed InfiniBand interconnection. This choice is a result of years of research aimed at identifying the most efficient solution able to deliver the computational power required by proprietary seismic imaging algorithms and by reservoir simulation codes, and ensuring at the same time the best energy efficiency. The new HPC cluster is working alongside with the first GPU computing system installed last year (1500 IBM iDataPlex nodes and 1300 NVIDIA Tesla GPU accelerators).

With a total sustained computing capacity of 3 PetaFlops (scored with Linpack Benchmark, the measure of a system's floating point computing power) and a high performance storage of 7.5 Petabytes, the new Eni's HPC System is the largest supercomputer in Europe for Oil & Gas industrial production use and one of the largest in the oil industry, ranked number 11th on the new [TOP500 List](#). The “hybrid” nature of the computing architecture guarantees a stunning performance in terms of energy efficiency with 2.8 GigaFlops/Watt which will score the Eni's HPC system as the 9th in the [Green500](#). The overall efficiency of the system benefits also from the innovative cooling solution provided

by the hosting Eni Green Data Center. The Eni Data Center in Ferrera Erbognone (Pavia) has been built to host Eni's central computer processing systems, both for information management and oil and gas applications. The Green Data Center uses the most innovative infrastructure for energy efficiency, cutting CO2 emissions by 335,000 tons per year (about 1% of the Italian Kyoto energy target) and significantly reduces operating costs.

The new HPC cluster will support the core business of the Company by allowing faster and more accurate depth data processing. Eni has adopted the strategy of using the latest computing technology to spur on advances in exploration geophysics and in reservoir simulation. By utilising its own proprietary code, developed with the latest parallel programming tools, Eni can get high resolution 3D subsurface images from seismic data at more than five times the speed of conventional supercomputers, as well as granting the highest quality data needed to reduce exploration risk.

As far as dynamic reservoir simulation is concerned the new system allows more and more accurate dynamic simulations of oil and gas deposits to target a significantly higher level of detail of the model, as well as reducing the simulation time. These two aspects can be crucial for optimizing hydrocarbon recovery field development planning and time to market.

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