

Portugal's Sines Data Center Pioneers Sustainable Cooling with Atlantic Seawater

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Portugal is emerging as a global leader in green technology with the innovative cooling system implemented at the newly established Sines Data Center Campus. Located in the coastal town of Sines, this expansive €8.5 billion project by Start Campus, now the largest data center campus in Europe, utilizes the cold waters of the Atlantic Ocean to sustainably cool its extensive server infrastructure.

Built on the site of a former coal-fired power station, the Sines Data Center Campus represents a significant shift towards sustainable digital infrastructure. The facility is designed to eventually handle 1.2 gigawatts of power and, instead of relying on energy-intensive air conditioning, employs a system that draws in cold seawater for cooling purposes. This method not only significantly reduces energy consumption but also conserves precious freshwater resources.

The seawater cooling system is complemented by the campus's commitment to 100% renewable energy sources, primarily solar and wind power. This combination of natural cooling and clean energy allows the Sines Data Center to offer high-performance data services with a substantially lower carbon footprint.

The project is already generating considerable economic benefits for the region, with projections indicating the creation of up to 1,200 direct jobs and over 8,000 indirect jobs by 2028. These roles span various sectors, including engineering, construction, logistics, and data management. Furthermore, the presence of this major data hub is attracting additional digital businesses to Sines, positioning it as a key digital gateway in Europe, particularly for intercontinental data transfer between Europe, Africa, and the Americas, leveraging its direct connectivity to major subsea internet cables.

Portugal's strategic location on the Atlantic coast provides an ideal environment for this infrastructure

development. Sines, already a significant European port, offers ample space and power capacity to support large-scale digital growth. The national and regional authorities are further investing in infrastructure upgrades, including road and rail improvements, to support the data campus.

The Sines Data Center Campus is a privately funded initiative, backed by international investors recognizing Portugal's potential in the green technology sector. The project's repurposing of a former industrial site underscores Portugal's commitment to a sustainable and technologically advanced future, aligning its climate and digital ambitions.

The seawater cooling system operates as a simple yet highly effective closed-loop system. Cold seawater is drawn from the Atlantic to cool the servers and then returned to the ocean without the use of chemicals or significant energy input. This method offers superior efficiency compared to traditional cooling systems and is more sustainable than freshwater-based alternatives.

As the demand for data centers continues to rise globally, innovative cooling solutions like the one implemented in Sines are crucial for mitigating their environmental impact. By harnessing the natural cooling capabilities of the Atlantic Ocean and utilizing 100% renewable energy, the Sines Data Center Campus positions Portugal at the forefront of the green tech movement, aligning with the country's reputation for sustainability and technological advancement.