

Data Centers Look for Lower-Emission Cooling



BRUSSELS — Putting computers near water is usually discouraged. But water could become vital for some companies seeking to cool the powerful servers that store and exchange vast amounts of information.

Google, which runs five large data centers, is planning to open one of its most efficient facilities in a former paper mill on the coast of Finland later this year.

"It's the first time that I know that seawater has been used for data center cooling, but in other industries it's actually quite common," said Urs Hoelzle, a senior vice president at Google. "Over all, there is huge opportunity for improvement" in the way the industry approaches energy efficiency, including cooling, Mr. Hoelzle said.

Data centers account for most of the energy used by Google. The servers inside are key to ever-faster search results and data-rich services like video-conferencing and music downloads. Industries like banking and health care are also creating huge demand for added capacity.

In a study published three years ago, Jonathan Koomey, a consulting professor at Stanford University, found that powering and cooling the equipment in data centers represented about 1 percent of total global electricity consumption in 2005, or about 0.3 percent of global emissions of carbon dioxide.

Mr. Koomey said moving more of the operations run "in house" by companies to more efficient data centers would substantially lower the overall environmental footprint of the industry. He also said there was a need to continue making all data center equipment as efficient as possible. Locating "data centers near cool bodies of water is one technique that works," he said.

Even so, building more efficient data centers and getting smarter at managing them could "only blunt the underlying growth" of the sector and the "strong growth in the electricity that data centers consume," said James M. Kaplan, a partner at McKinsey & Co. in New York.

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Google already uses water for cooling at a center in Belgium. The facility treats and cleans water from a canal. The water is pumped to the data center and then into coils, over which warmed air from the servers is passed. The water in the coils absorbs the heat before it is pumped to a tower. Some of the water is recycled and some evaporates into the atmosphere.

That concept is somewhat similar to efforts by PEER 1 Hosting, which operates 17 server farms in Europe and North America and plans to open a new site at Portsmouth, England, in October.

New cooling methods could help PEER 1 win business and maintain profitability when electricity prices are rising, said Dominic Monkhouse, the managing director for PEER 1 in Europe. Companies like the giant supermarket chain Tesco that were directly or indirectly using PEER 1 services were demanding lower energy use from all parts of their supply chains, including data centers, as part of efforts to reduce their carbon footprint, he said.

Mr. Monkhouse of PEER 1 said the race to lower energy use at data centers had generated an explosion of ideas for cooling servers.

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