

Case | London

# Cloud House Data Centre, London Docklands



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**GRUNDFOS** 

Possibility in every drop

## Grundfos pumps are at the heart of an innovative cooling system that is enabling Digital Realty to use river water to cool massive banks of computers in its new Data Centre, saving energy and improving sustainability, while minimising water waste and cutting costs for itself and its worldwide user base.

Winner of the 2023 Green Data Centre of the Year Award, Digital Realty's Cloud House data centre located in the London Docklands – one of the most internet-connected locations in the United Kingdom – represents a breakthrough in the company's commitment to reducing their environmental impact and optimising their use of energy and natural resources, in line with the 2030 Carbon Neutral target and the latest European Code of Conduct for Energy Efficiency in Data Centres.

Digital Realty's global data centre platform, PlatformDIGITAL®, provides access to the company's global data centre footprint of 300+ facilities in 50+ metros across 25 countries in six continents, from which customers often find greater operational efficiencies, enhanced resilience, and lower environmental impacts.

### Groundbreaking design

Key to the outstanding environmental performance of the data centre is a pioneering highly energy-efficient cooling system that in place of traditional high energy air-conditioning or chilled water systems, uses deep water from the neighbouring Millwall inner dock to regulate the temperature of its server banks.

The groundbreaking system draws cool water from the dock through a primary set of pipes and passes this through a plate heat exchanger. This provides a cooling medium for the building's chilled water loop, generating cooled air which

passes via the air flow system through floor vents into the cold aisle containment system, cooling the racks.

The challenge for design consultancy, Deerns, was to find a pumping solution that would not only achieve the suction lift needed to raise the water from the dock, but that would maintain a sufficient flow rate to ensure that the return water was no higher than 27oC, to satisfy stringent environmental health requirements.

This required a high efficiency pumping system that would minimise water wastage, a key requirement for Digital Realty, whilst carefully managing the volume and speed of water through the system, responding to changes in demand, and meeting all the necessary conditions for the IT load air-conditioning system, since any fluctuation in temperature could damage the computer systems, putting customer data at risk.

### Grundfos provided the answer

Having worked together on similar projects in the past, Deerns, again turned to world-leading pump manufacturer, Grundfos, to provide the pumping solution. Following several design meetings, they agreed on a high-performance solution using Grundfos NBG 150-125-315/336, an end-suction, close coupled, single stage submersible pump with high efficiency IE3 motor and variable speed drive, designed to provide very high efficiency, even at full load.

Manufactured from corrosion-resistant stainless steel, the pumps are ideal for handling the dock's brackish water and capable of lifting up to 50 litres/second, well in advance of the new centre's requirements.

Grundfos' technical team evaluated the water quality in the dock and provided full calculations to prove the NBG's variable speed drive would maintain the required temperature differential of no more than 7.5oC between incoming and return water.

Once the specification was agreed, Grundfos worked closely with London-based installer and Building Services specialists, Gratte Brothers, to ensure both the main submersible pumps, and other Grundfos pumps used in the secondary chilled water distribution system, were delivered against a pre-determined schedule to precisely meet their installation requirements.

### 20 times more energy efficient

Primarily, the Grundfos pumps enables Digital Realty to take advantage of the abundance of dock water to cool their data centre.

The system is up to 20 times more energy efficient than traditional cooling systems and supports Digital Realty's ambitious plans to reduce Scope 1 and Scope 2 emissions by 68%, and become climate neutral, by 2030.

In addition, the new high efficiency pumps reduce water waste and make a significant contribution to the building's BREAAM Excellent sustainability rating, cutting energy costs and enabling Digital Realty to offer their worldwide user base, which currently spans 25 countries in 50+ metros, across six continents, a more cost-effective and sustainable solution.

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