

Facebook's hyperscale data center warms Odense

The custom-built Odense Data Center has been online since September, but its sustainability mission began years ago. The facility was located and designed with heat recovery in mind from the outset. The current goal is to recover and donate 100,000 MWh of energy annually from its servers — enough to warm 6,900 homes. This heat is donated to warm a local hospital and thousands of other buildings in the surrounding community. Like all Facebook's data centers, this one is supported by 100 percent renewable energy. In Odense, a new wind project is adding more electricity annually to the Nordic grid than the data center consumes.

The qualities that drew us to Odense include the ability to connect to a highly reliable Nordic electric grid with opportunities to add new sources of renewable energy, good access to fiber, and the talent needed to build and operate the data center. But what really differentiated this site from others was the opportunity for heat recovery.

Odense heats its buildings via a district heating system. The system, operated by Facebook's partner for this project, district heating company [Fjernvarme Fyn](#), sends hot water to the city's homes and other buildings, most of which use radiators for heat. A multidisciplinary team of Facebook engineers, architects, designers, facility operators, and energy professionals embarked on the journey with Fjernvarme Fyn to make it possible for the two-building, 50,000-square-meter facility to capture and recover the low-temperature heat generated by the thousands of servers and to deliver this heat for free to the community.

Rather than releasing the warm air from the servers into the atmosphere, the Odense facility directs it across copper coils filled with water. The process starts with Fjernvarme Fyn routing water from its brand-new heat pump

facility through insulated steel pipes to the roof of the data center, where it's directed into copper coils located inside each of the 176 cooling units. There, the warm air from the servers heats up the water that flows through the coils.