Completion of phase 1 of heat storage project

Copenhagen, 23th February 2018 – **Ross DK has together with its project partners completed the first phase of its project looking at heat storage. The project is focused on storage of heat in the limestone formation present across most of Denmark. The project has looked at the technical feasibility and business case for seasonal heat storage – and has concluded its feasibility.**

The project has focused on large-scale storage across seasons including modelling of thermal cycling, loss and flows as determined by the permeability of the limestone/chalk formation. Besides looking at how the wells and surface system can be set-up technologically, the project has evaluated on the commercial aspects of seasonal heat storage.

> Lars Andersen, CEO of Ross DK, said; "We set out in the project with an idea, and we conclude this first phase with the distinct feeling that this can be achieved. We recognize that the technology and concept have not reached commercial maturity, however, we are definitely on track."
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> He added; "We are looking for partners to take the project further - and the next phase will define the commercial, technical and regulatory frame for large-scale heat storage in combination with district heating."

The project has concluded that this type of thermal storage (dubbed HTES for unique identification) is fully feasible and that investments into these type of system technology can be recuperated with the normal parameters set for investments into district heating systems.

Project partners

The project Thermal Storage (HTES) has partly financed by EUDP. The scope of the project was to study the possibilities of storing heat in the limestone/chalk section beneath Greater Copenhagen (and ultimately places from large limestone/chalk sections)). The study was conducted during 2017 and involves project partners Ingeniør Huse, Awell, OE3i, GEUS and DTU Byg. The study is supported by HOFOR, Frederiksberg Forsyning, Hillerød Forsyning, CTR and Vestforbrænding, while Høje Tåstrup Forsyning, Ålborg Forsyning and Din Forsyning retain observer status in the project.

Presenting findings

> Lars Henrik Nielsen, Head of Stratigraphy Department, said; "Energy storage is gaining recognition as a vital part of our energy system. We have been working on projects with storage of heat in both limestone and sandstone plays – and the project Thermal Storage (HTES) show promise. GEUS support the further development of the project – to identify the boundaries imposed by nature.

Sources of heat

One aspect of the project has been studying where to access heat sources, and the project has looked at surplus electricity generated from wind turbines (in combination with kettle systems), solar thermal collectors as found in many district heating systems across Denmark, incineration of waste, wood pellets and wood chips and not least industrial waste.

The project finds that solar thermal can be hard to incorporate in the system due to the high-intensity production at midday, where the limestone formation is more geared to receiving/discharging energy at a steady, prolonged level.

Next phase

The next phase of the project concerns drilling a pilot to conduct a more refined analysis of the geotechnical and geochemical properties of an HTES system.

About Ross DK

Ross DK A/S is specialised in well management. We provide total life-cycle services from project inception through design and engineering to drilling and supervising of wells.

We provide services and solutions based on our extensive experiences with drilling operations in all corners of the planet. We stand by our customers with in-depth knowledge of the process flow, which leads to efficient execution of well projects.