

Renewable energy storage norway

The system for Guarantees of Origin was implemented by the EU Renewable Energy Directive 2009/28/EC, trading "green certificates", the sale of which in 2010 relabeled the calculated average electricity consumption mix of a Norwegian household down from the actual 99% to 36% renewable.[6]

The Norwegian Water Resources and Energy Directorate reported that, as of the beginning of 2023, Norway had 1,392 operational wind turbines distributed across 65 wind farms, with a total annual production of 16,923 GWh (11% of Norway's electricity generation).[17]

At the heart of Kongsberg Technology Park, Kongsberg Defence & Aerospace (KONGSBERG) has taken a groundbreaking step towards a more sustainable future. At Arsenalet Industrial Park, known for advanced production of defence products and technology, the establishment of Norway's largest renewable energy storage is now a reality.

Several alternative energy sources were considered when expanding "Arsenalet" by 30,000 square meters to ensure increased production capacity in the coming years. The decision was made to utilize energy from geothermal wells - an emission-free, silent and renewable solution.

"Sustainability and energy efficiency are always in focus to ensure efficient operation of buildings," says Hans Petter Blokkum, Managing Director of Kongsberg Technology Park. "The energy wells will reduce our carbon footprint and also lead to significant cost savings over time," he says.

Geoenergy can also be referred to as geothermal heat, near-surface heat, thermal energy, or energy wells. Regardless of the name, it involves extracting heat from the ground. The facility at "Arsenalet" can also deposit heat, providing both heating and cooling. The possibilities are numerous; it is emission-free and has minimal environmental impact.

Depending on energy requirements, one or more wells are drilled, typically reaching depths of 150-300 meters. It is important that the energy demand for heating is considered in light of the number of wells, to avoid depleting the ground faster than it naturally replenishes.

The energy well project became a reality through collaboration between Kongsberg Technology Park (KTP) and Kongsberg Eiendom, which owns and manages 520,000 square meters on behalf of KONGSBERG. The drilling was executed by B?sum Boring, a leading company in the field of energy drilling. The result is an impressive energy center that has been operational since January 1 and now supplies the entire industrial park with stable and environmentally friendly energy.

"The energy wells not only provide a sustainable energy source but also a solution that reduces production

costs for district heating and cooling," explains Lorentz Kolstad, who is responsible for operations and maintenance at KTP.

An energy well is a borehole in the ground that utilizes geothermal heat by using a pump for heating. The water in the well acts as the contact medium between the collector pipe and the bedrock. The water-filled part of the well is called an effective well. The temperature in the well is normally the annual average temperature at the site + 7°C.

The wells are used as an energy source for district heating production through heat pumps. Excess heat from district cooling systems is returned, stored in the energy wells, and reused when heat is needed.

From left to right: Roar Clausen, Project Manager, Frode Engedal, Head of Energy Production at KTP, Lorentz Kolstad, Head of Operations and Maintenance at KTP. The photo was taken by the heat pumps inside the energy center.

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