

Aneo Industry

Heat Pump Powered Steam Supply

Upgrading excess heat to process steam offers significant benefits for the industry, including reduced energy consumption, lower electrification demands and decreased CO₂ tax liabilities. Through our “Energy as a Service” model, Aneo enables customers to immediately capitalize on the advantages of steam-generating heat pumps - without bearing the technical risks associated with pioneering this innovative technology.



Zero emissions

Switching from fossil fuels to heat pumps can nearly eliminate your climate footprint, reducing CO₂ emissions by almost 100%. This transition not only helps the environment but also leads to significant savings in CO₂ taxes.

Reduce power demand

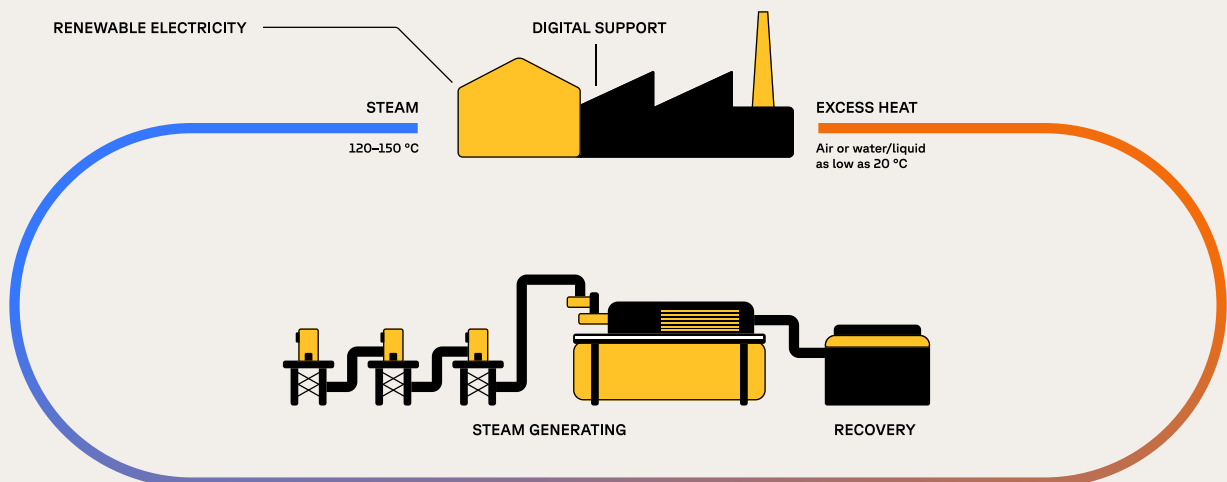
Integrating heat pumps lowers the demand on the electric grid compared to direct electrification. This makes it possible to implement the technology even in remote locations with limited grid capacity.

Energy Efficient

Our technology delivers steam at pressures up to 5 bar(A) or temperatures up to 150°C, achieving temperature lifts of up to 100 Kelvin with high COPs.

ECO friendly

Our technology uses PFAS-free natural refrigerants, ensuring long-term sustainability and reliable serviceability throughout its extended lifespan.

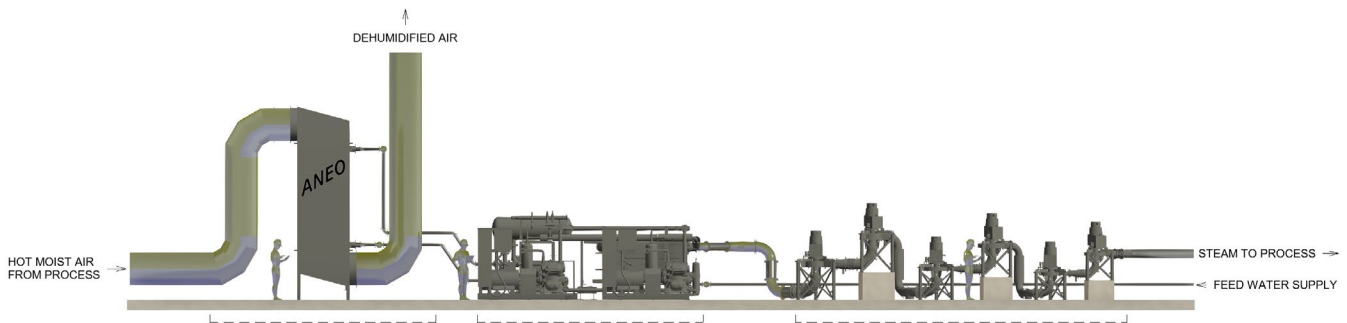


BENEFITS AND PERFORMANCE
*depending on temperature lift

Coefficient of Performance (COP):	2-5*
Excess heat recovery:	> 70%
CO ₂ savings:	90-100%

Facts about the steam producing heat pump

Heat supply capacity	1.5 – 5 MW (optional up to 20 MW)
Temperature range	Up to 150°C, delivered as 5 bar(A) steam (latent) via an open-loop heat pump. Optionally, pressurized hot water with temperature glides can be provided through a closed loop heat pump.
Working fluid	Ammonia (R717) and Water (R718)
Compressor technology	The bottom cycle utilizes piston compressors, while the top cycle is driven by centrifugal fans.
Costs	Offered under an “Energy as a Service” contract, based on expected annual heat demand, COP and operation hours. For Norwegian sites, long-term electricity contracts can be included. Typical contract duration is 15 years.
Expected lifetime	20-25 years, depending on operational hours
Size	Varies based on integration and temperature lift requirements. Minimum 50m ² .



Our concept for steam supplying heat pumps

Aneo's core technology is an integrated heat pump system capable of supplying process heat in the form of steam at up to 150°C or 5 bar(A). The steam producing heat pump (SPHP) is standardized to operate with excess heat temperatures as low as 20°C and can include a heat recovery unit for latent heat, if needed (e.g. moist air).

The recovered heat is transferred to the bottom cycle, where it is upgraded into low pressure steam using ammonia (R717) as the working fluid. The low-pressure steam is then further compressed by multistage steam compressors, allowing it to reach pressures of up to 5 barA/150°C. The multistage cascading design also enables the use of steam or hot water at lower temperatures or pressure levels, enhancing the system's COP.

The top cycle can also be integrated as a closed loop system to meet specific process requirements. This is particularly relevant for applications in the food, pulp and paper and chemical industries, where it can be used for processes like drying, evaporation, sterilization and thermal treatments. However, it is also versatile enough to be integrated into other processes and plant systems.

Aneo is implementing and operating the SPHP systems on-site for customers through an “Energy as a Service” model. Our service model includes technology, integration, investment, reliability, technical risk and service cost. Customers pay solely for the energy supplied by the SPHP system, simplifying the process and reducing financial risk.



Read and learn more
at aneo.com
←

CONTACT INFORMATION
post.industry@aneo.com

Aneo Industry AS,
Trondheim, Norway

ANEO