Feasibility of heat pumps supplying district heating systems: case study for Austria and Denmark - DTU Orbit (10/08/2019)

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The frame conditions for large-scale heat pumps (HPs) in district heating (DH) systems were studied for Denmark and Austria. While large-scale HPs are becoming more and more often implemented as DH supply units in Denmark, examples from Austria are rare. An economic analysis was conducted for both countries, comparing DH solutions based on either large-scale heat pumps or wood-fired heat only boilers to individual HPs. The results showed that large-scale HPs were beneficial compared to individual units down to linear heat demand densities of 0.85 MWh/m/a for Denmark and 0.97 MWh/m/a for Austria. The levelized cost of energy of central HPs could compete with wood-fired boilers especially for low DH temperatures (60 °C /30 °C). From a socioeconomic perspective HPs were beneficial compared to woodfired boilers. In Austria the private economic feasibility of wood-fired boilers benefits from subsidies, which showed to decrease the competitiveness of large-scale HPs.

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Organisations: Thermal Energy, Department of Mechanical Engineering, Austrian Institute of Technology
Contributors: Meesenburg, W., Geyer, R., Terreros, O., Pieper, H., Ommen, T., Elmegaard, B.
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