

Theoretically possible COPs of heat pumps according to heat source and network flow temperature, assuming an efficiency rating* of 50% and different flow temperatures of the district heating network

Figure 22



Fraunhofer IEG (2023). * The highest theoretical COP of a heat pump is measured using the so-called Carnot process. It can be used as a reference model for a hypothetical heat pump operating without losses. The ratio of real COP to Carnot COP is referred to as the efficiency rating. Due to various influencing factors, such as friction in the system or radiated heat, efficiency ratings are generally at around 40 to 60 percent at present. ** When the source temperature approaches the flow temperature, the COP converges towards infinity.