

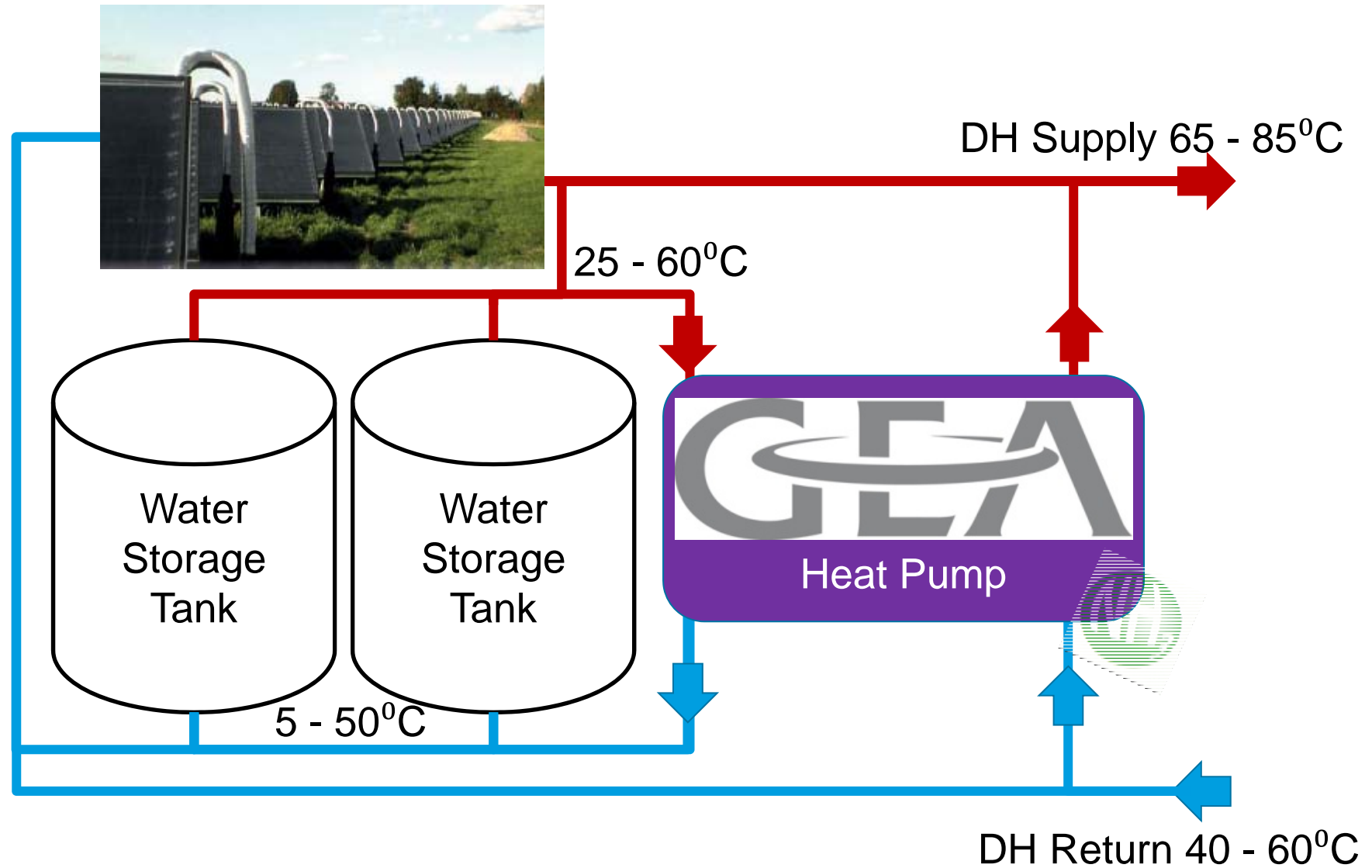
GEA Refrigeration Technologies

GEA Heat Pumps Solar heating applications / References

by Kenneth Hoffmann

GEA Refrigeration Technologies

Solar Heating



Solar Heating– with heat pump



1. Better utilization of solar panels

Colder supply water to solar panels increases kW/m²

2. Smart grid integrations improve payback period

3. Stepwise night time cooling improves overall efficiency

	Heating COP	DH Supply temperature	Storage Tank Temp.
After 4 hours	6.71	75°C	38°C
After 5 hours	6.19	75°C	35°C
After 7 hours	5.31	75°C	29°C
After 9 hours	4.82	75°C	23°C
After 12 hours	3.37	75°C	14°C
Average	5.28		

Heating duty kW	Application	Compressor technology	Design pressure bar	Source	Heating outlet °C
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More than 50 references sites

1840	Poultry	Screw	27	Refrigeration plant	45
1850	Bakery	Screw	35	Refrigeration plant	60
570	Poultry	Piston	40	Refrigeration plant	67

200 kW – 10 MW per Heat pump

3080	Biowaste processing	Screw	52	Waste Water	75
2800	Fluegas condensation	Screw	40	Fluegas Condensate	
1365	Geletine Process	Screw	40	Refrigeration plant	

High COP

Payback of less than 1 year

1250	Heating	Screw	52	Sea water	75
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