

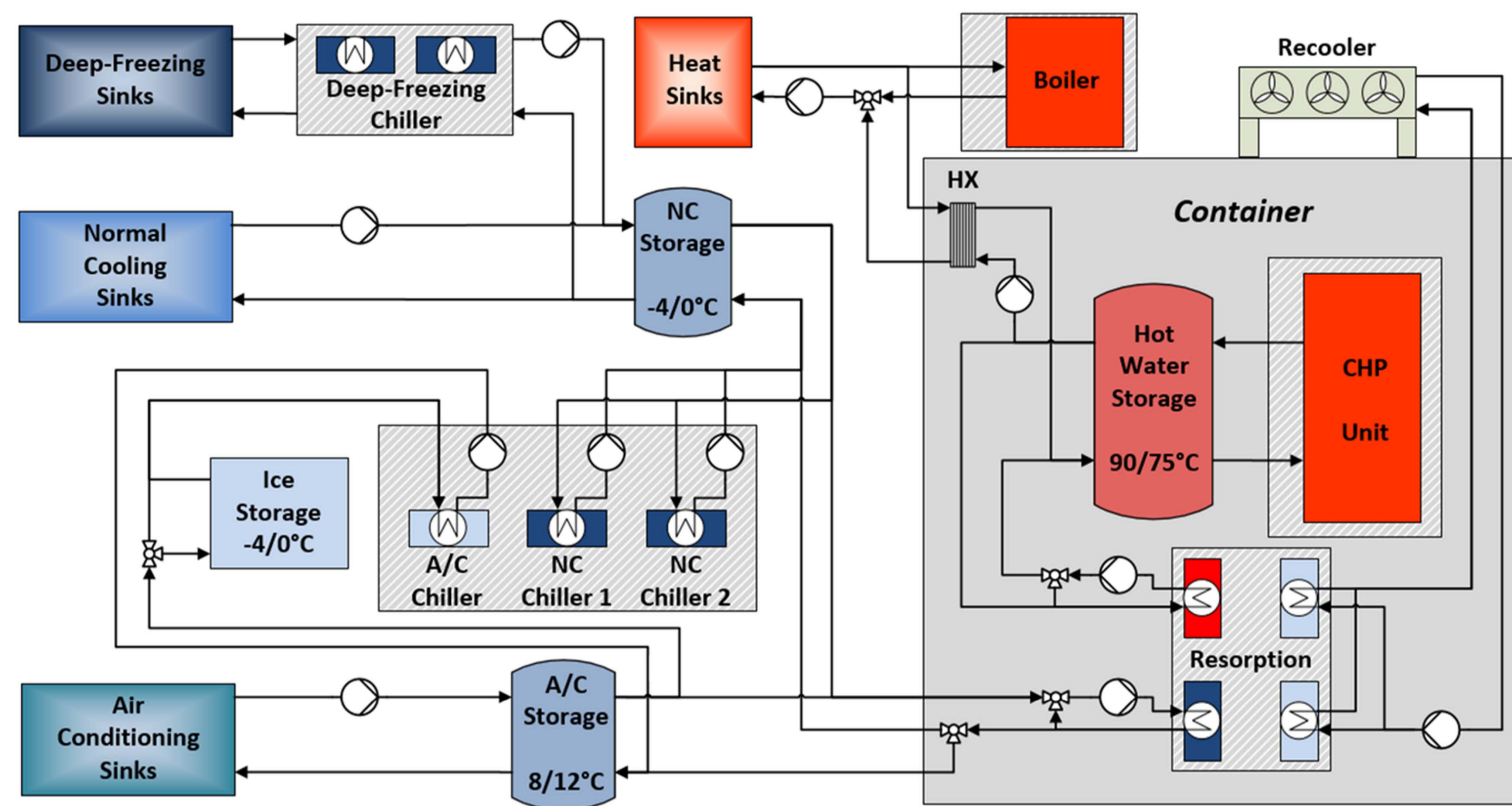
Absorption Resorption Refrigeration System for Supermarket Application Integration in the Heating- and Refrigeration-Network

Oliver Ziegler (oliver.ziegler@tu-dresden.de) // Ullrich Hesse // Christiane Thomas

The Idea

Implementation of a Resorption Refrigeration system in the Heating and Refrigeration Network of a Supermarket

Supermarkets usually have several consumers at different temperature levels. In this specific case, the heat is provided by a combined heat and power unit (CHP). In order to maximize the annual coefficient of performance, its unused waste heat is utilized by a resorption refrigeration system (RRS). This allows to relieve the conventional compression chillers and to provide cooling capacity on Normal Cooling (NC) and A/C level. For the temporal decoupling of load and availability also several storage devices (sensitive & latent) were integrated.



The System

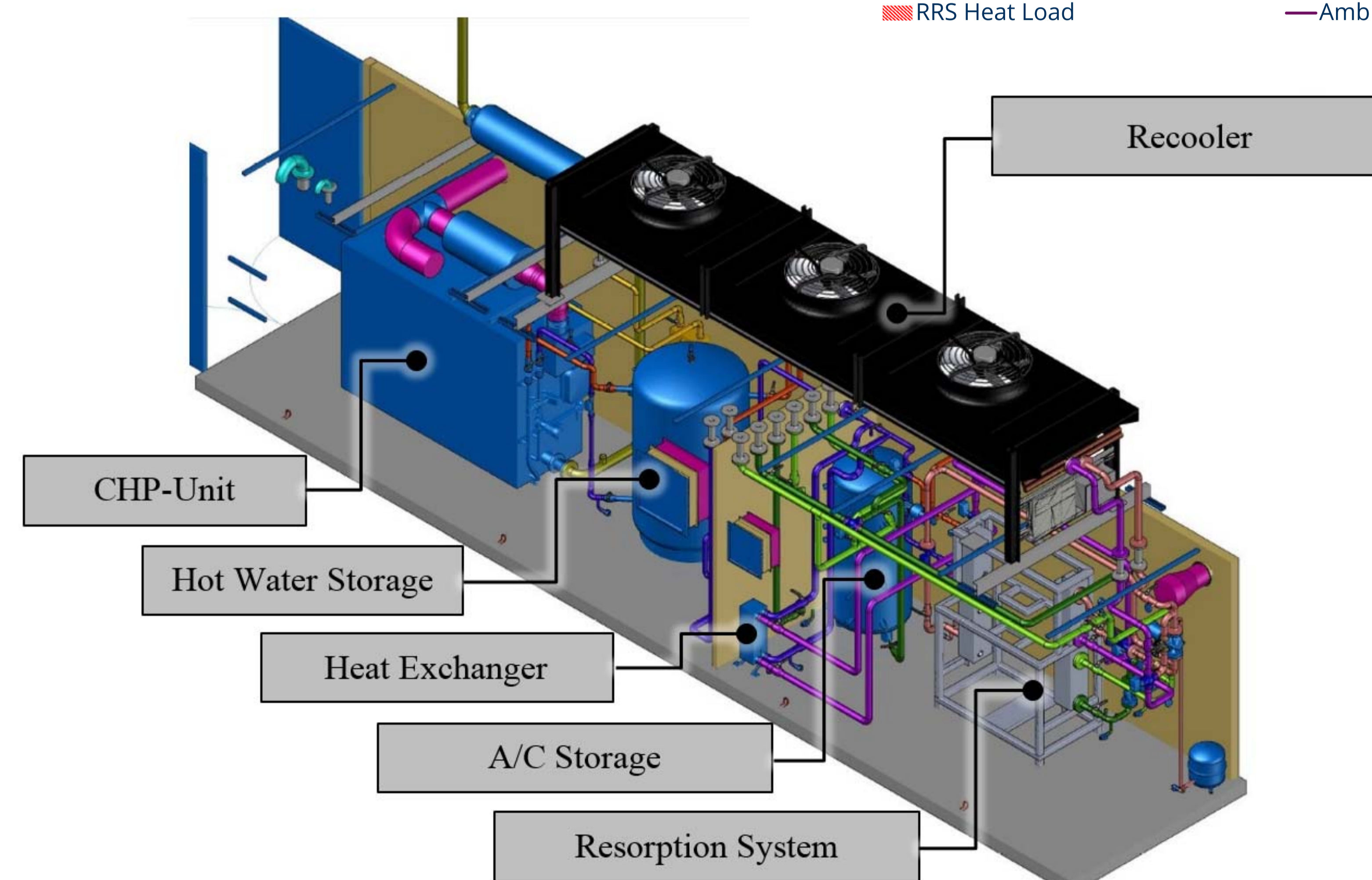
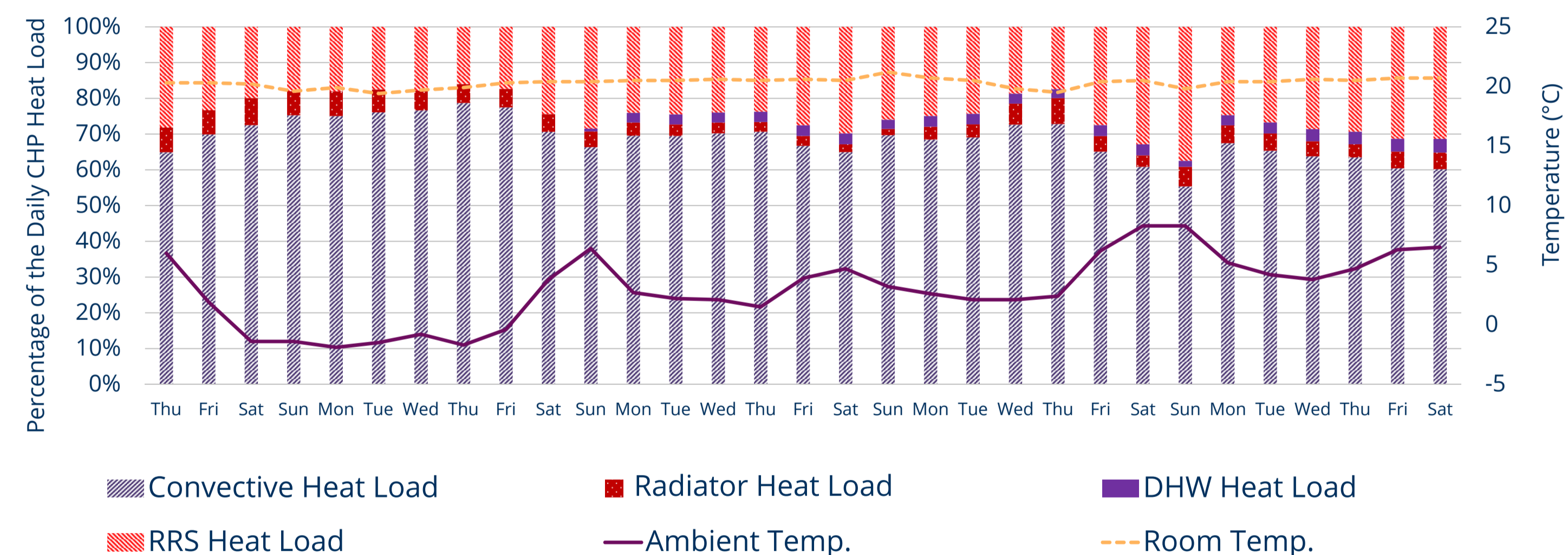
A Container Solution

Based on the results obtained in the laboratories of the TU Dresden regarding the operation of a resorption refrigeration system, a sister unit was manufactured and installed in a 40-ft standard sea container together with the necessary peripheral systems. This allowed a pre-assembly and a quick on-site connection to the existing systems. Finally, a control system was developed and optimized continuously to minimize the exergy losses of the entire system network.

Results

Minimizing Exergy Losses by CHP-Waste Heat Utilization

Depending on the ambient temperature, more or less heating capacity is available to operate the RRS, which can also be operated in partial load mode.



Technical Information

Resorption Refrigeration System

Maximum Cooling Capacity:	25 kW
Thermal supply capacity:	50 kW
COP:	0,3 - 0,6
Supply/Heating Temperature:	70 – 90 °C
Cooling Water Temperature:	10 – 28 °C
Temperature of Cold Decoupling :	
Normal Cooling	-4/0 °C
Air Conditioning	6/10 °C



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