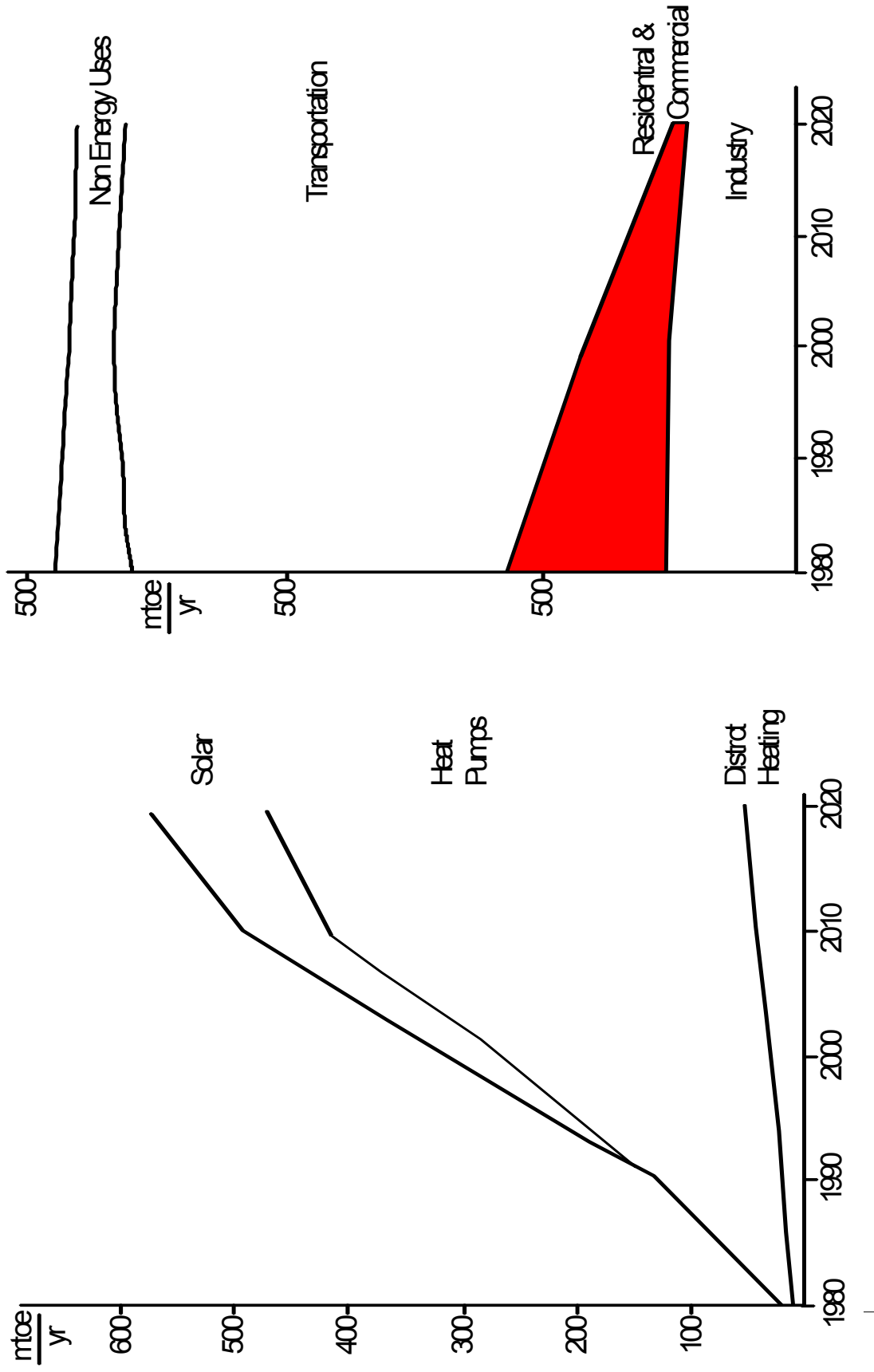


The Austrian Heat Pump Market

IEA Strategy Plan 1980



Heat Pump Market Development

- 1973 First Oil Price Shock
- Japan and USA: Air Conditioner were modified to Dual-Mode Units for both Heating and Cooling
- 1978 Zweiter Ölpreisschock
- Europe: Heating-Only Heat Pumps were introduced
- 1992 55 Million Heat Pumps in Operation
- 280 TWh/a Heat Delivery, 0.3 % of the World Energy Demand
- 2000 130 Million Heat Pumps in Operation
- 1,300 TWh/a Heat Delivery
- Europa: 4.3 Million Heat Pumps in Operation
- 1.5 Million are Heating-Only Heat Pumps

Heat Pumping Technologies in Austria

have a long tradition (Peter Ritter von Rittinger 1853)

after the oil price shocks

- retrofit with bivalent systems with outside air heat pumps
- new buildings with monovalent systems with ground water heat pumps

after 1985

- new buildings with monovalent systems with ground source heat pumps

special developments

- direct expansion systems (horizontally installed and vertical)
- CO₂ ground probes

integrated systems

air conditioning systems using the ground and activation of the building structure

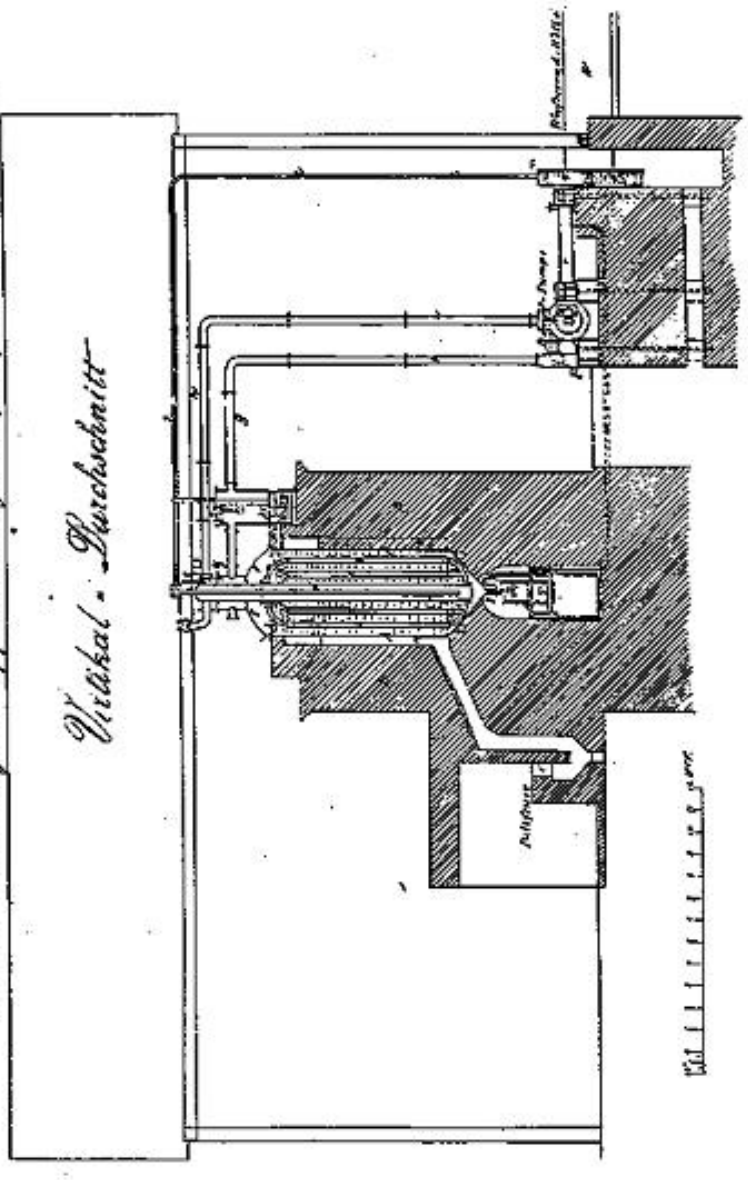
Co-operation with IEA, IIR, EHPA, D-A-CH

- heat pump quality label
- certification of heat pump installers



*Versuchs - Apparat
zum Abkühlen der Salzsäure
mittels der aus Wasserdampf durch Papierkugeln reproduzierten Wärme*

Vertikal - Durchschnitt



Peter Ritter von Rittinger Saltery of Ebensee: MVR System 1853-1855

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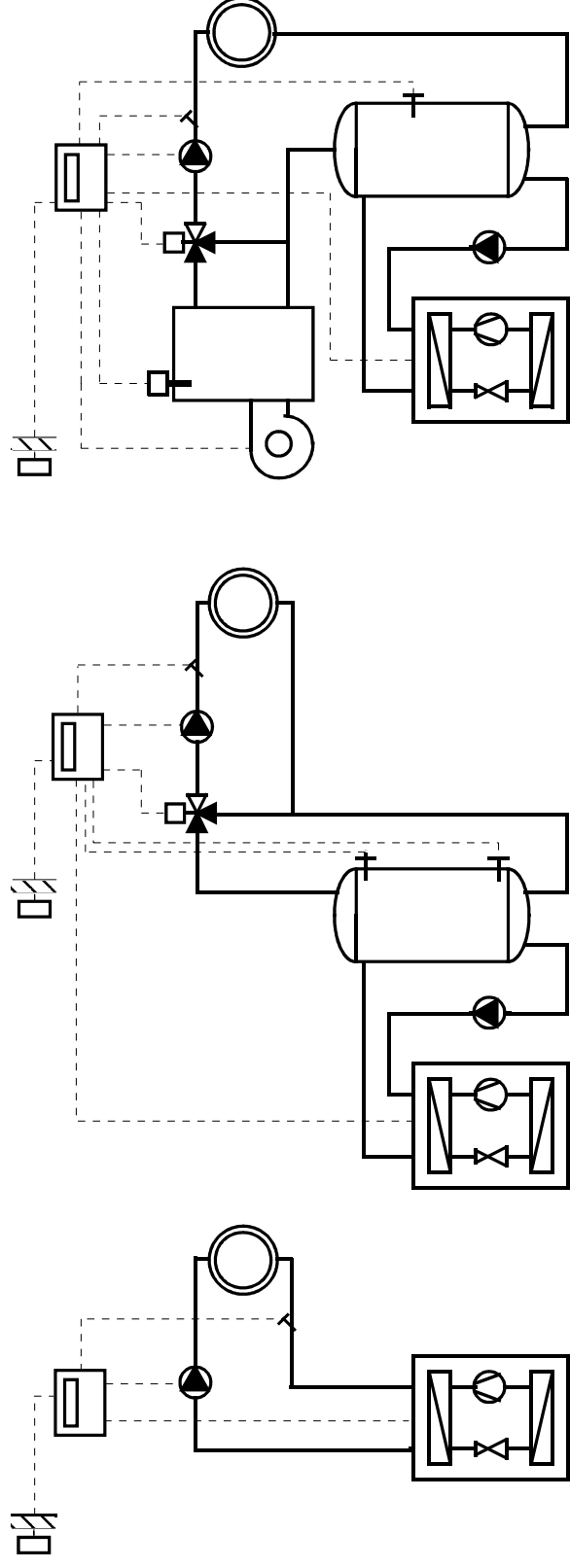
integrated systems

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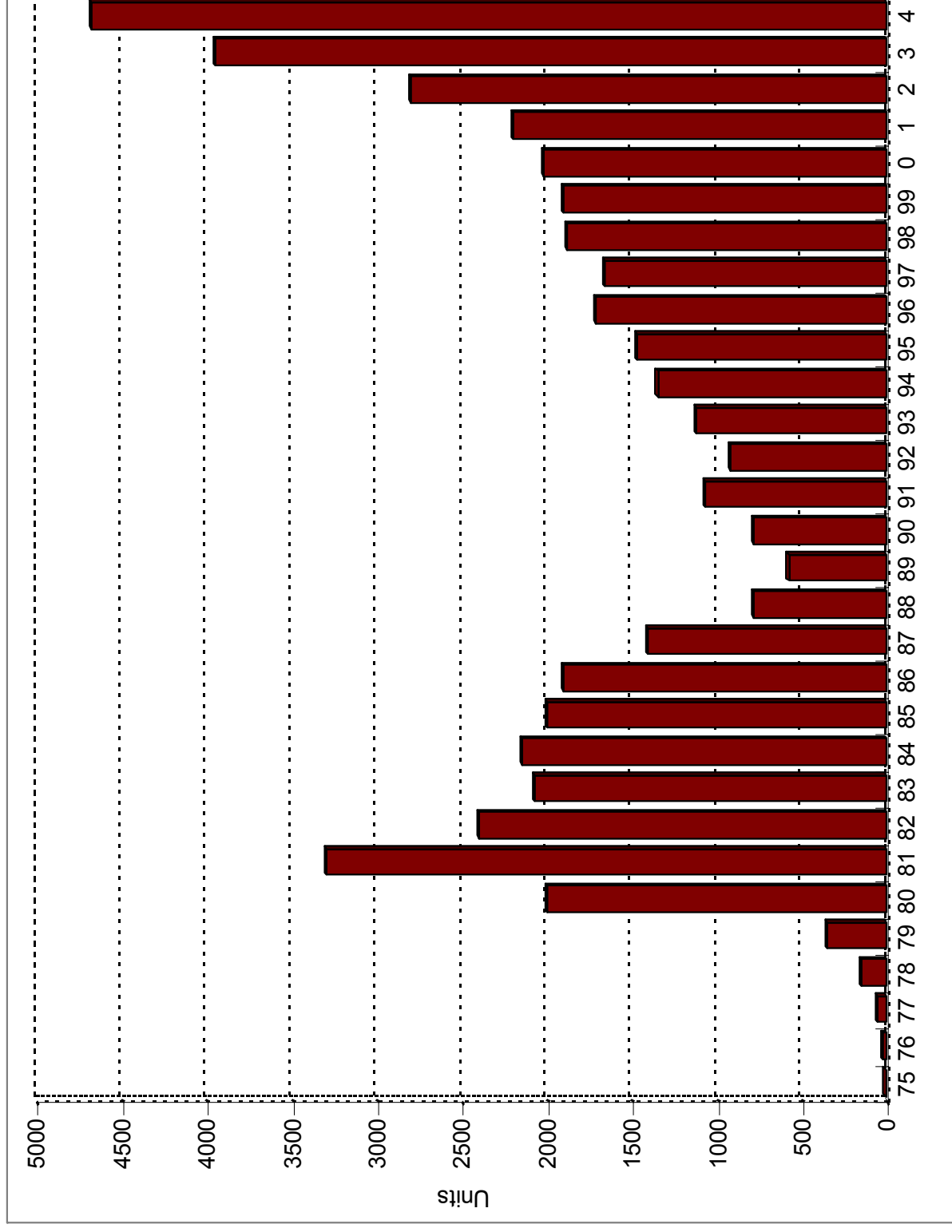
Co-operation with IEA, IIR, EHPA, D-A-CH

heat pump quality label

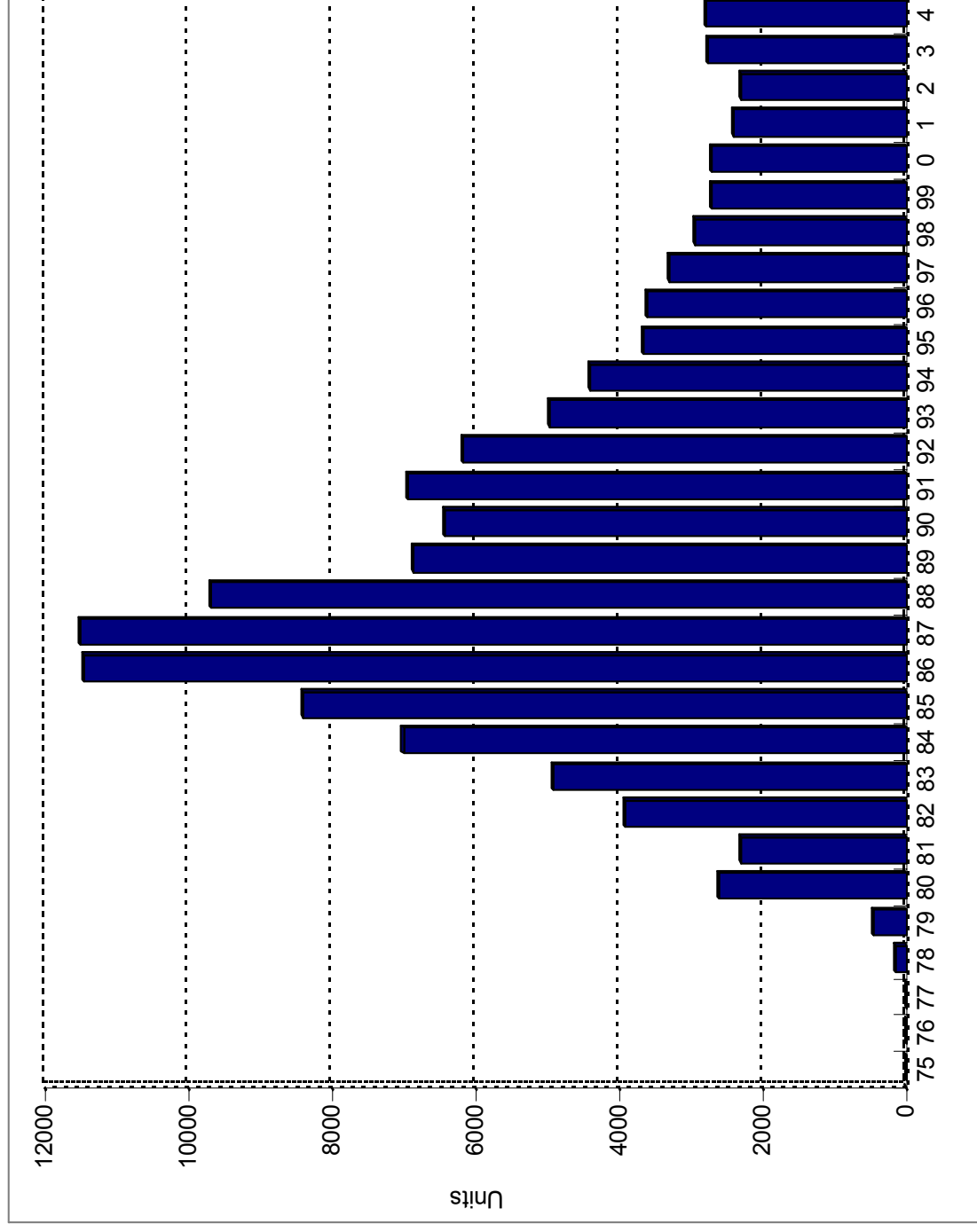
certification of heat pump installers



Heat Pumps: Market in Austria



Heat Pump Water Heaters Market in Austria



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integrated systems

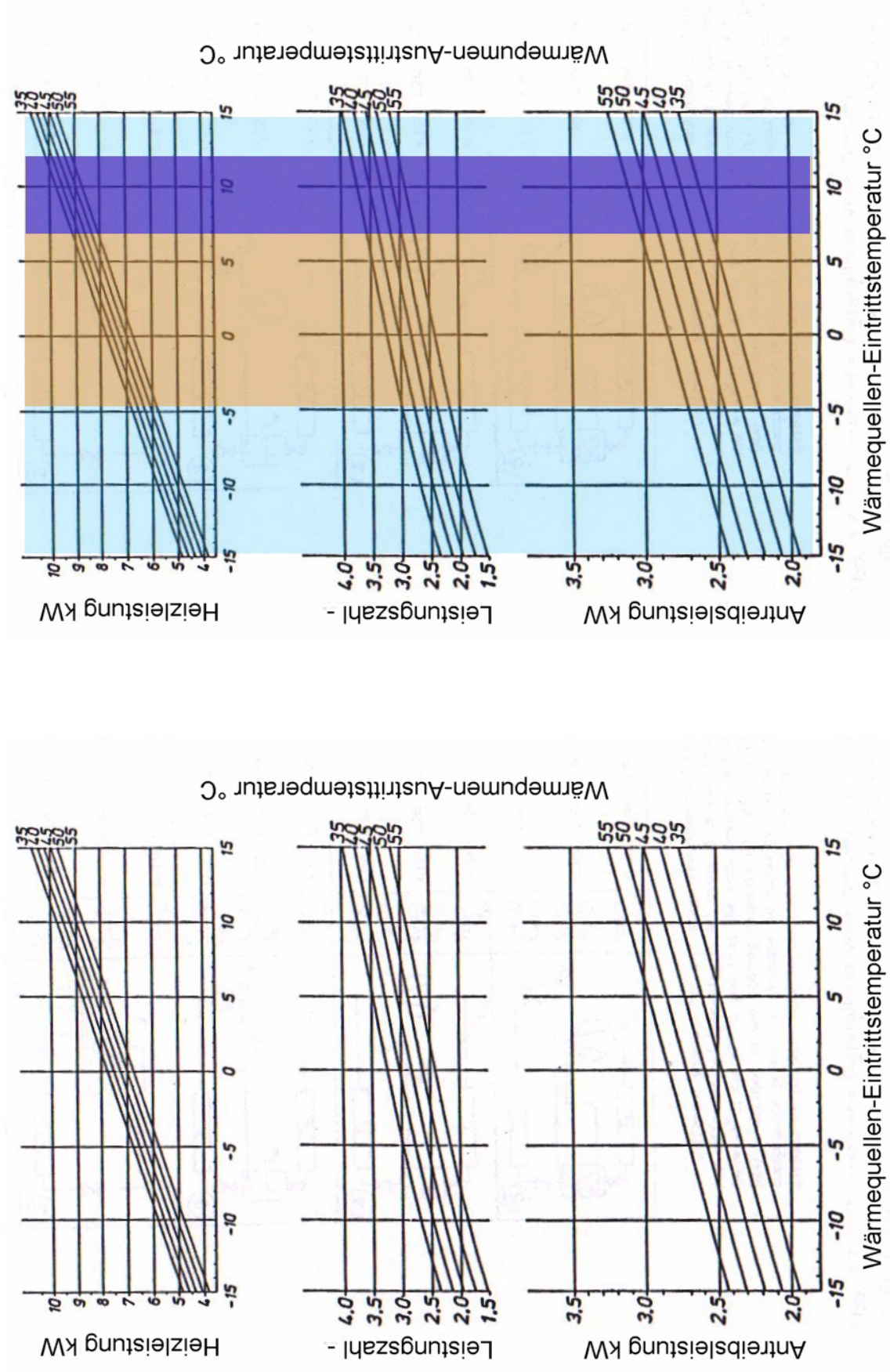
air conditioning systems using the ground and activation of the building structure

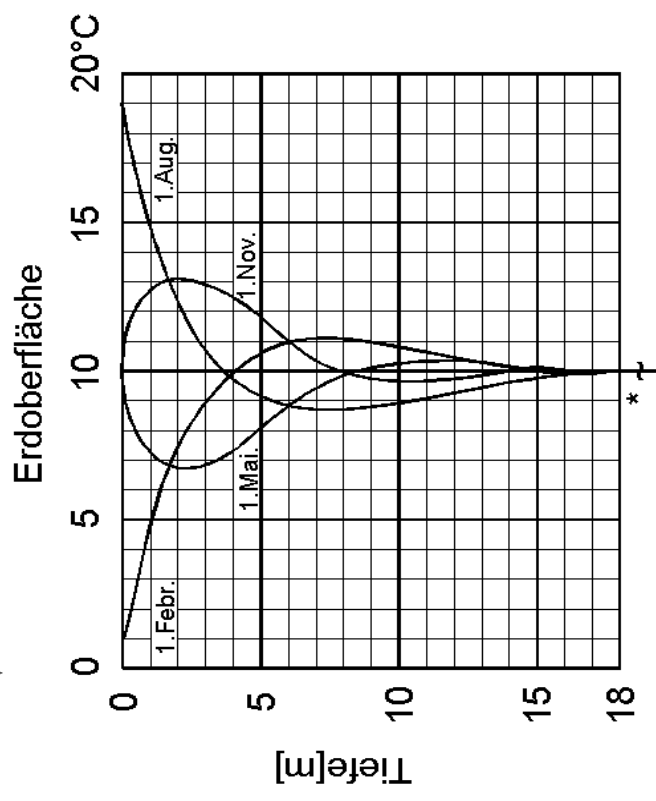
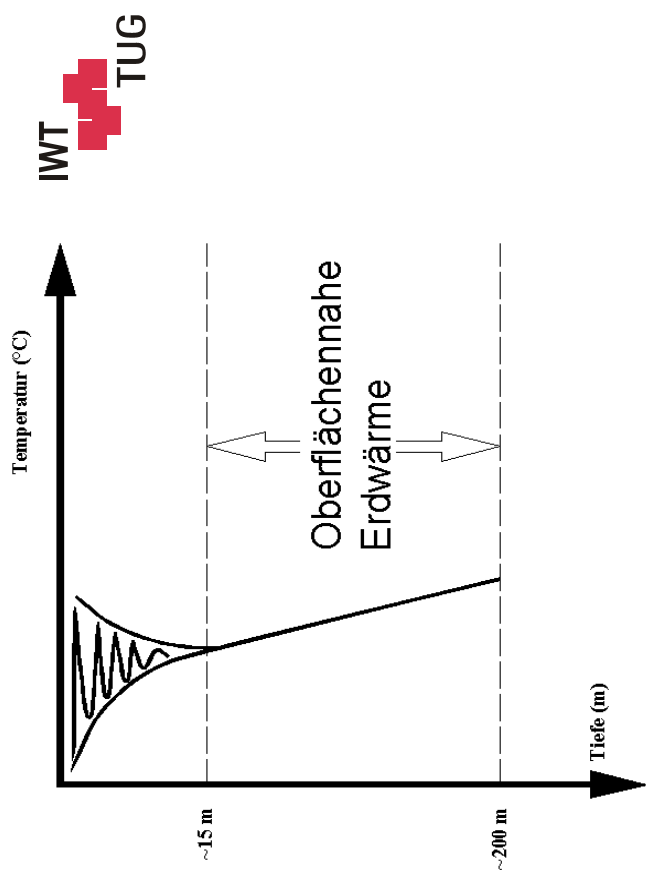
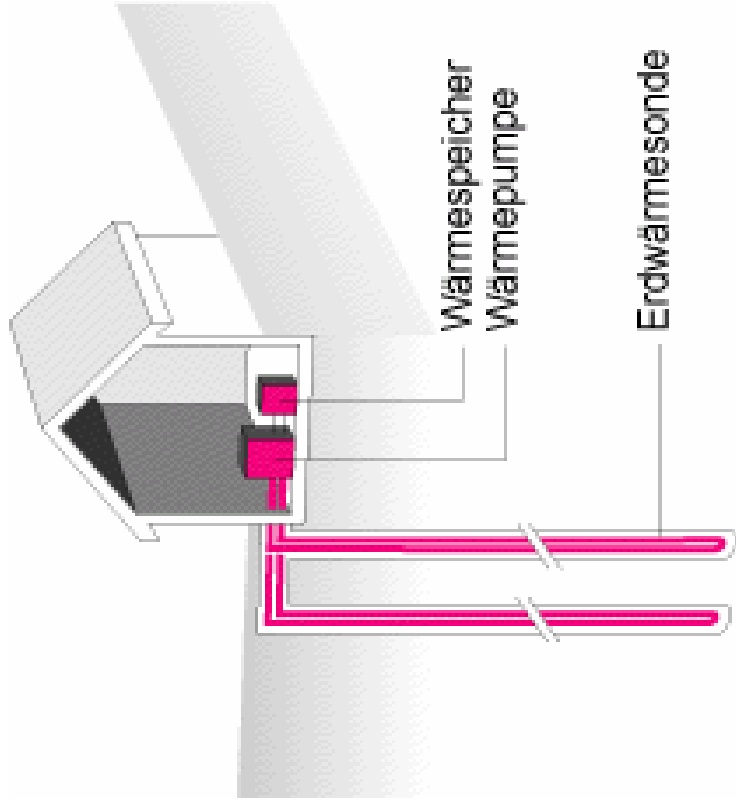
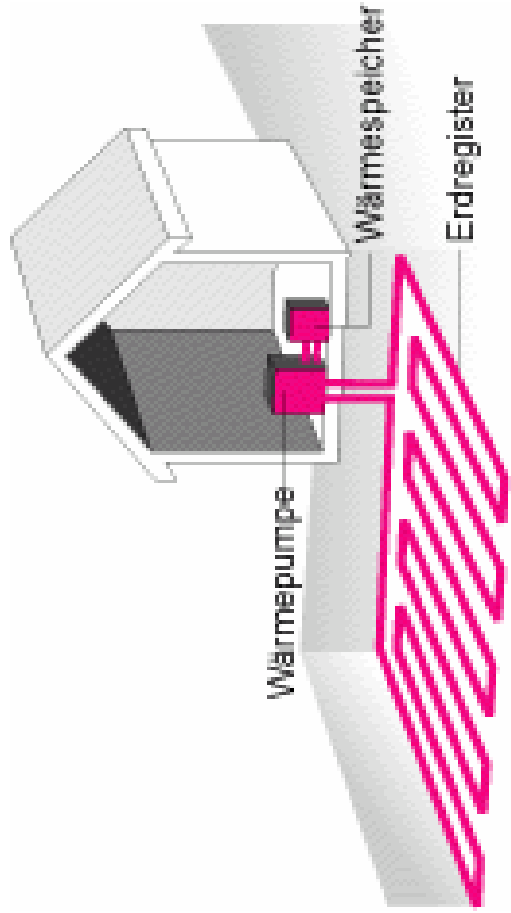
Co-operation with IEA, IIR, EHPA, D-A-CH

- heat pump quality label

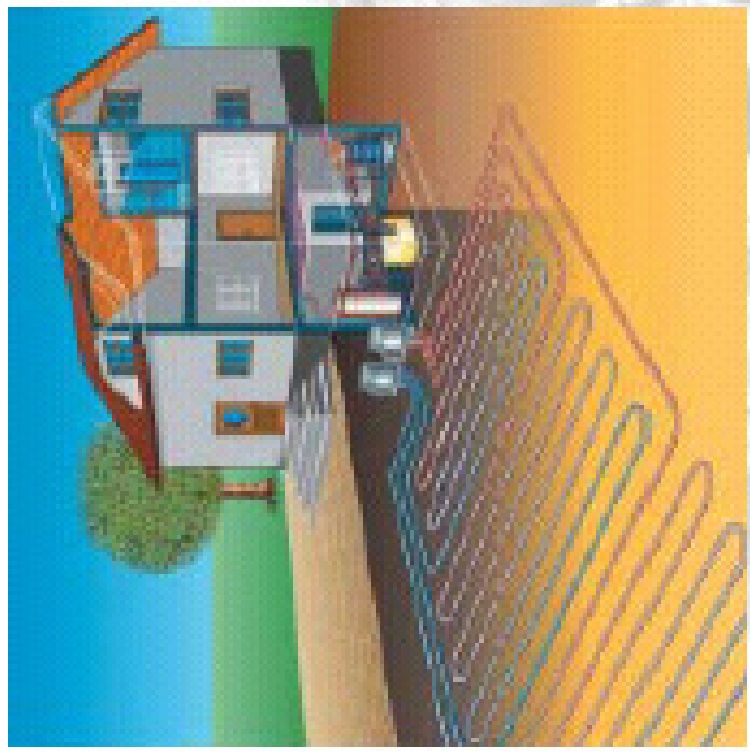
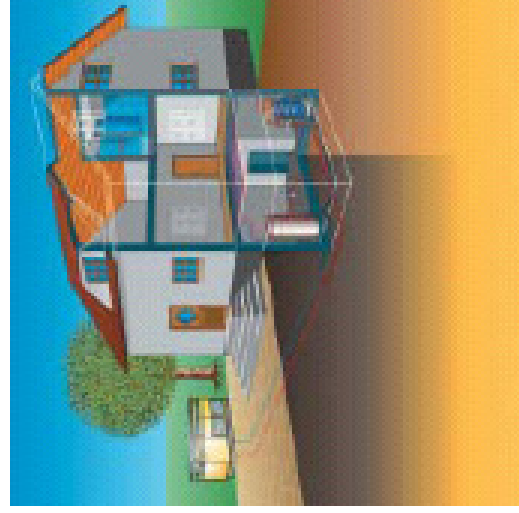
- certification of heat pump installers

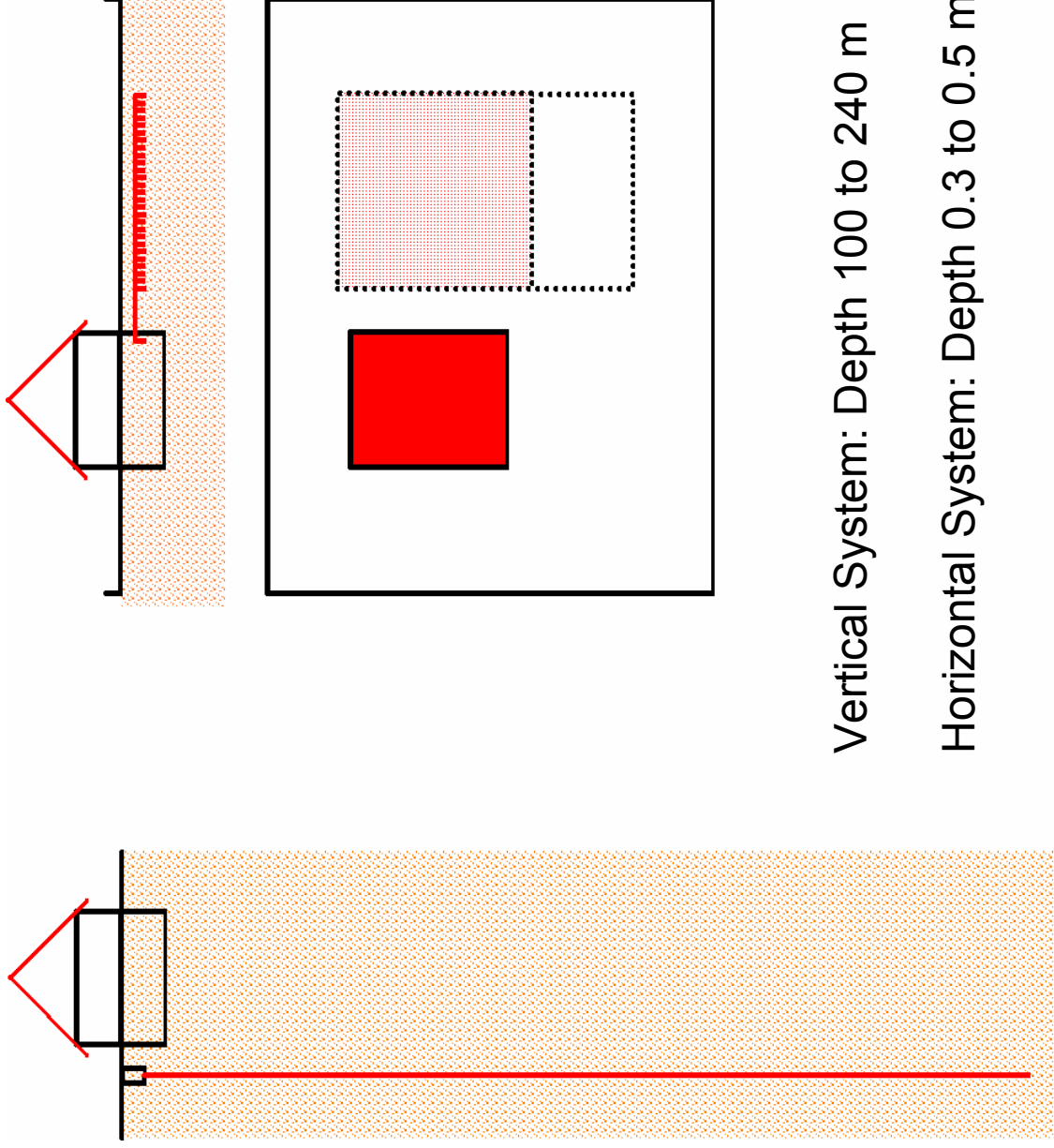
Performance Characteristic of a Heat Pump





*alle 33m +1°C Temperaturanstieg





Vertical System: Depth 100 to 240 m

Horizontal System: Depth 0.3 to 0.5 m below frosting depth

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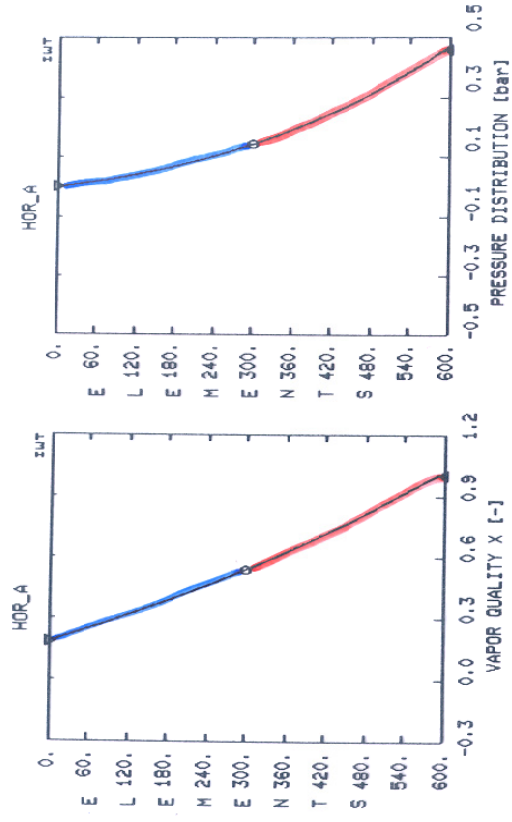
integrated systems

air conditioning systems using the ground and activation of the building structure

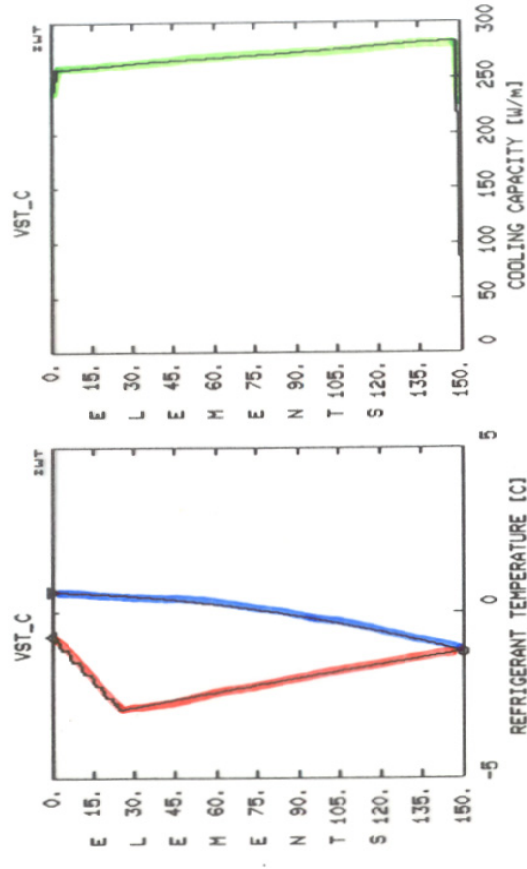
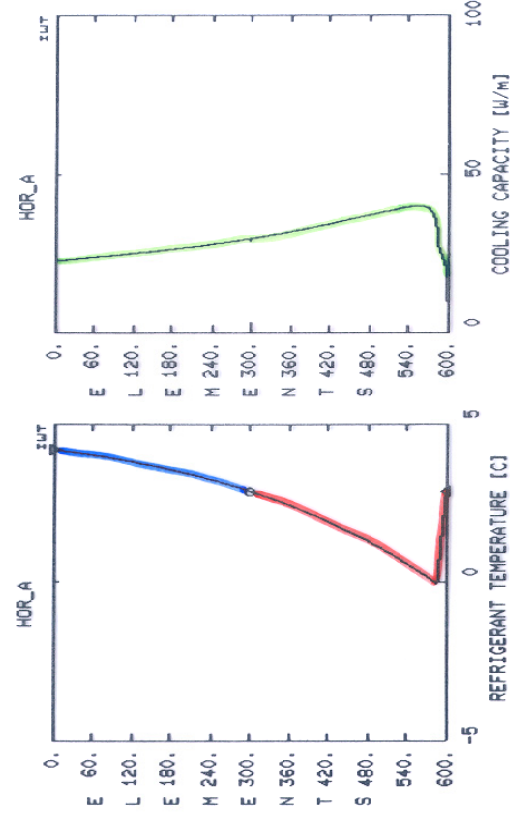
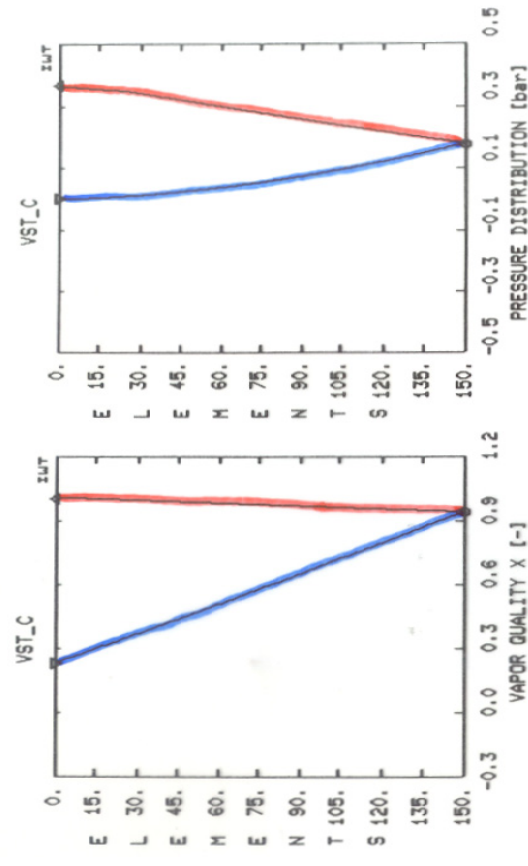
Co-operation with IEA, IIR, EHPA, D-A-CH

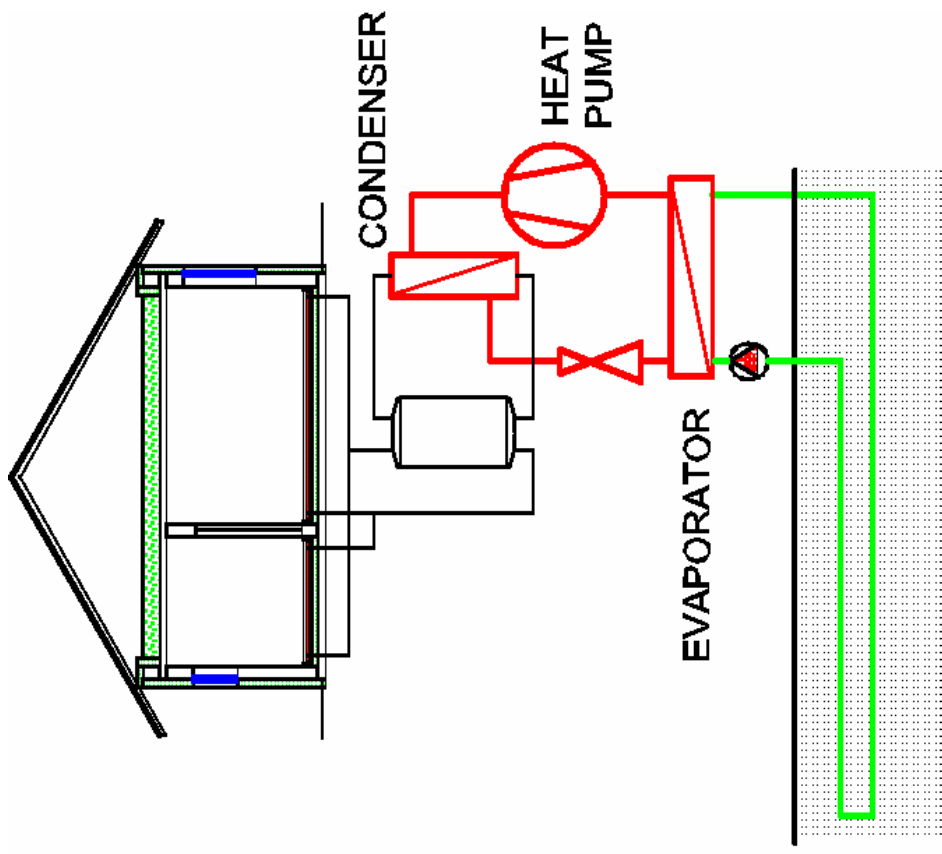
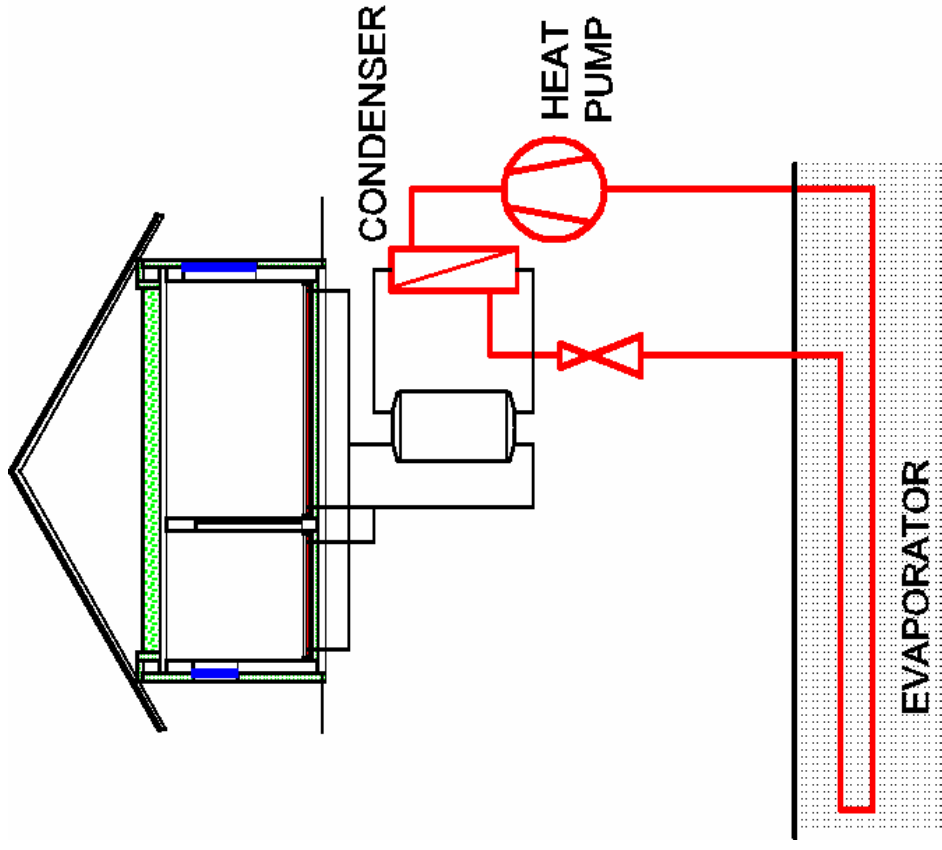
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Horizontales DX-System



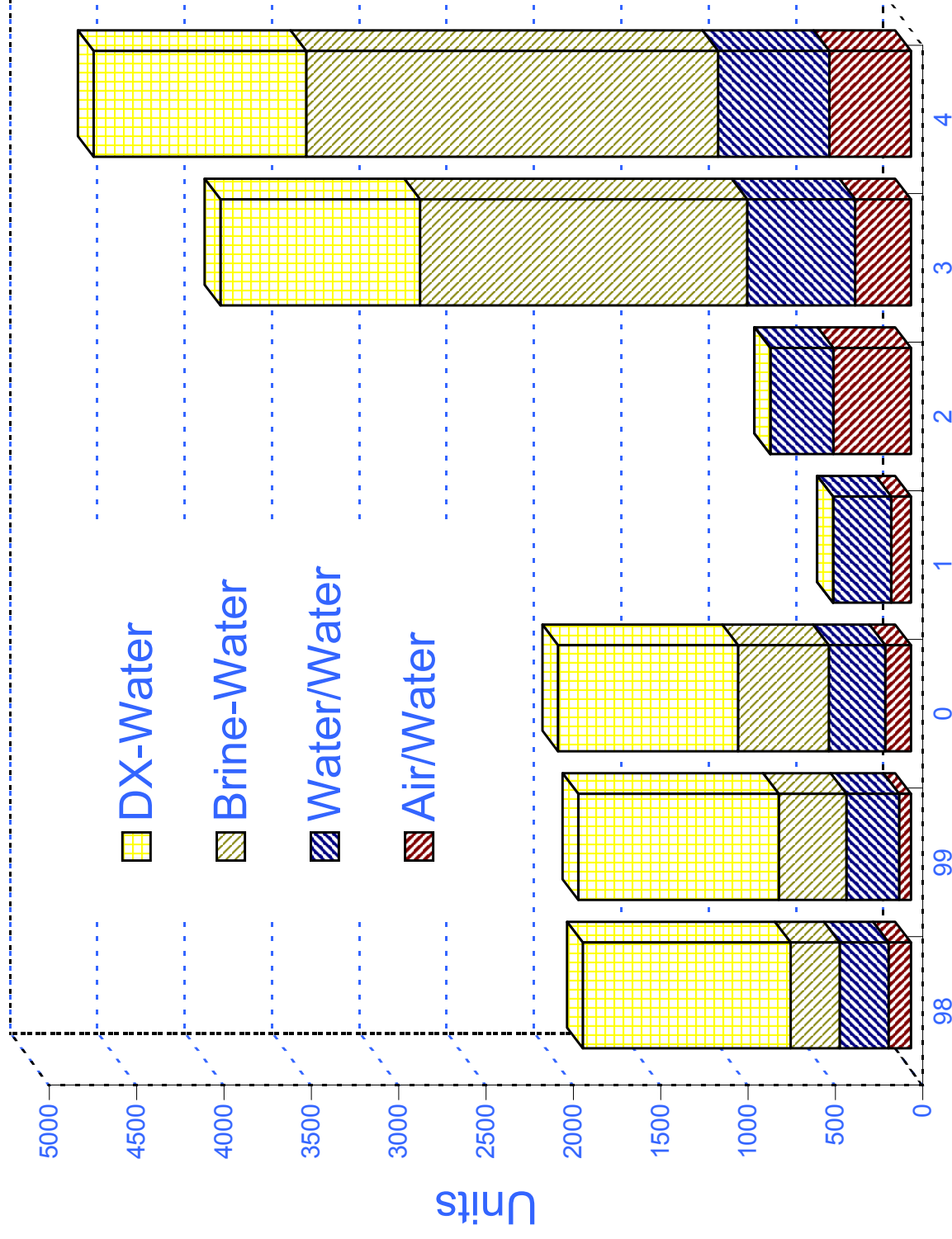
Vertikales DX-System



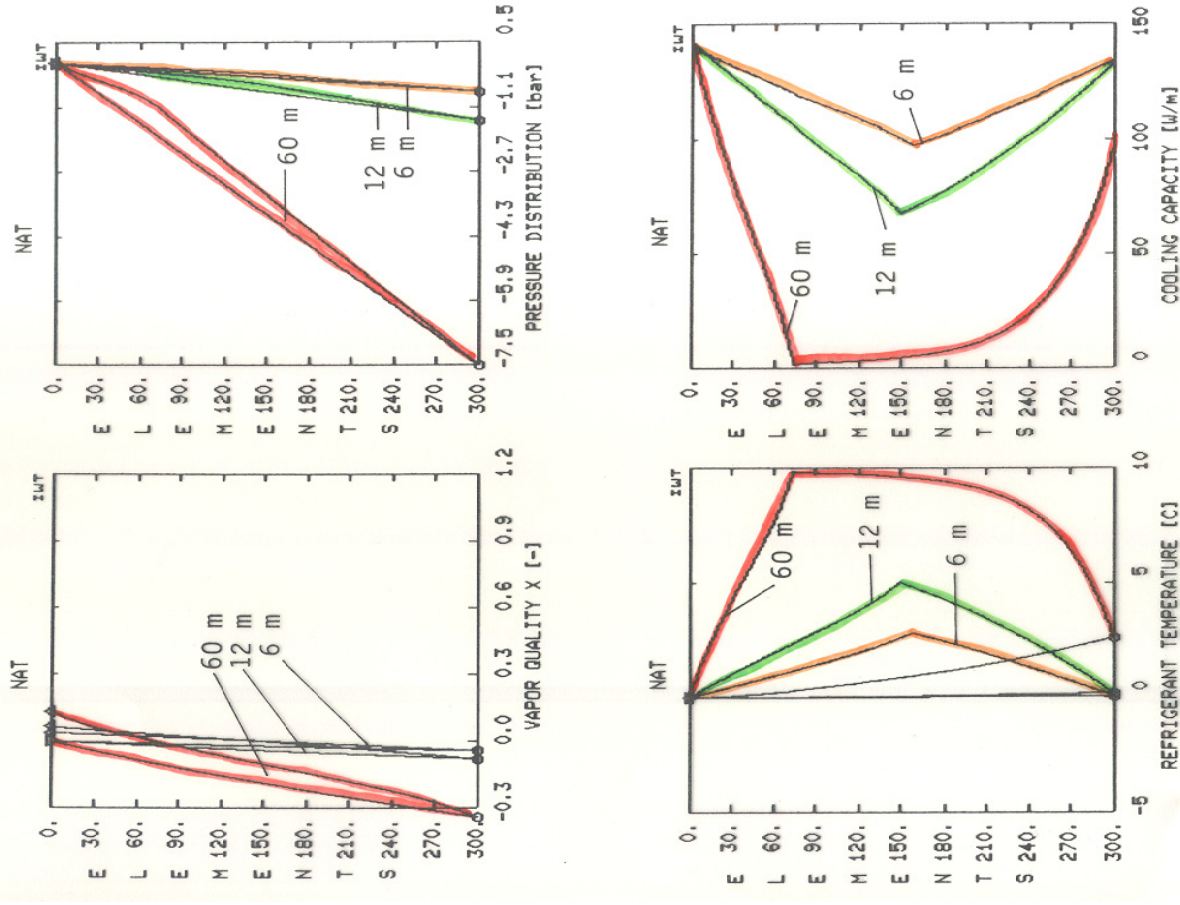




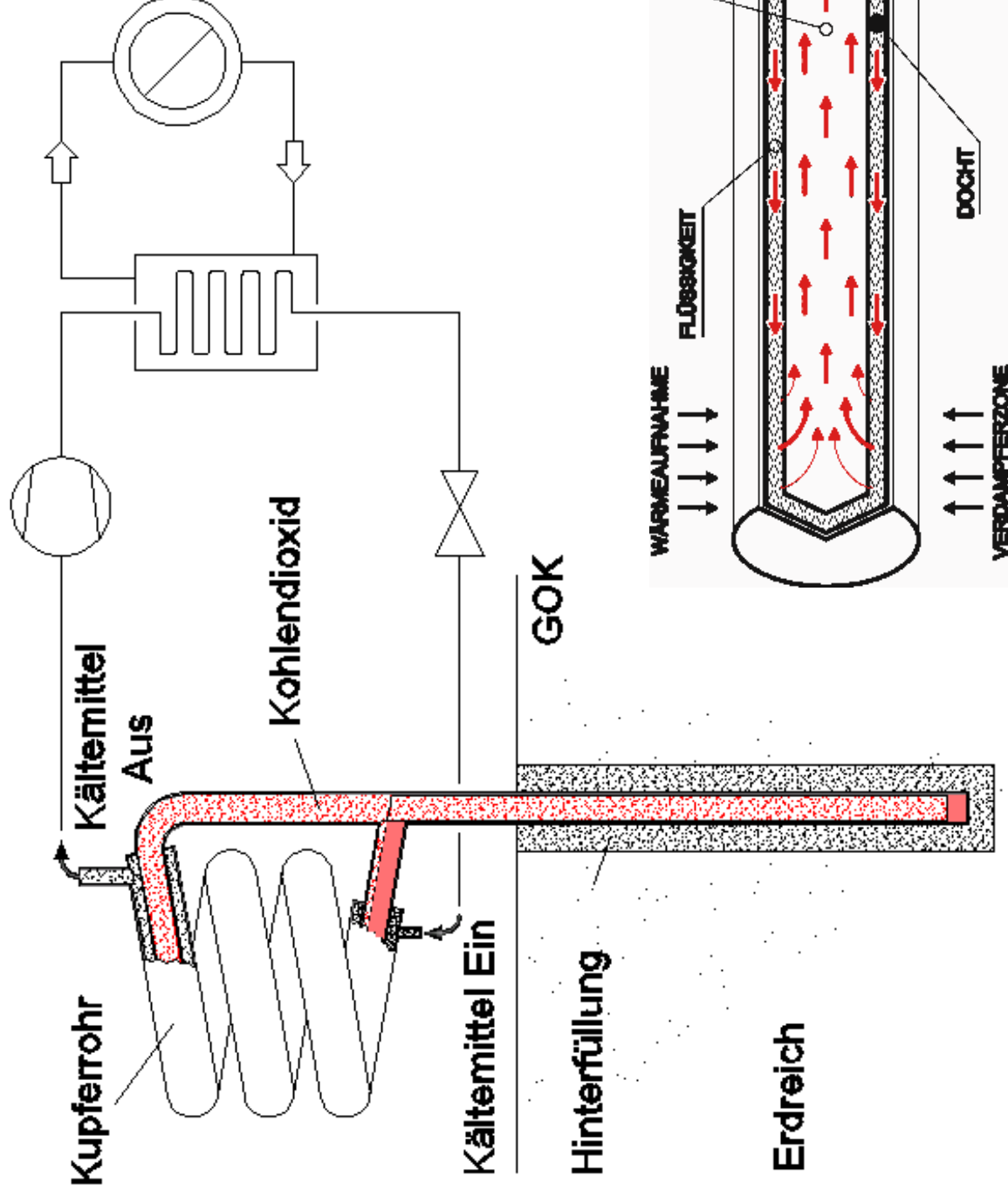


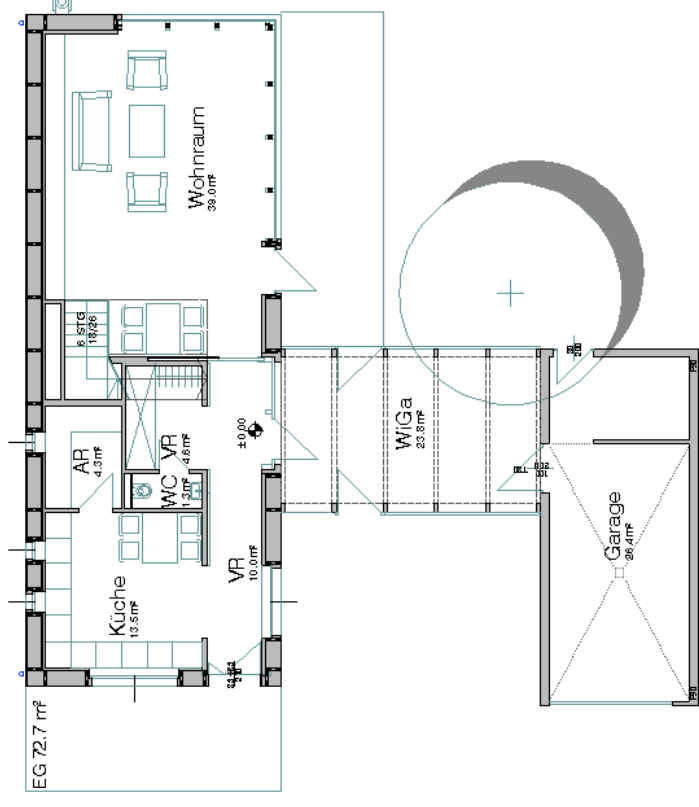


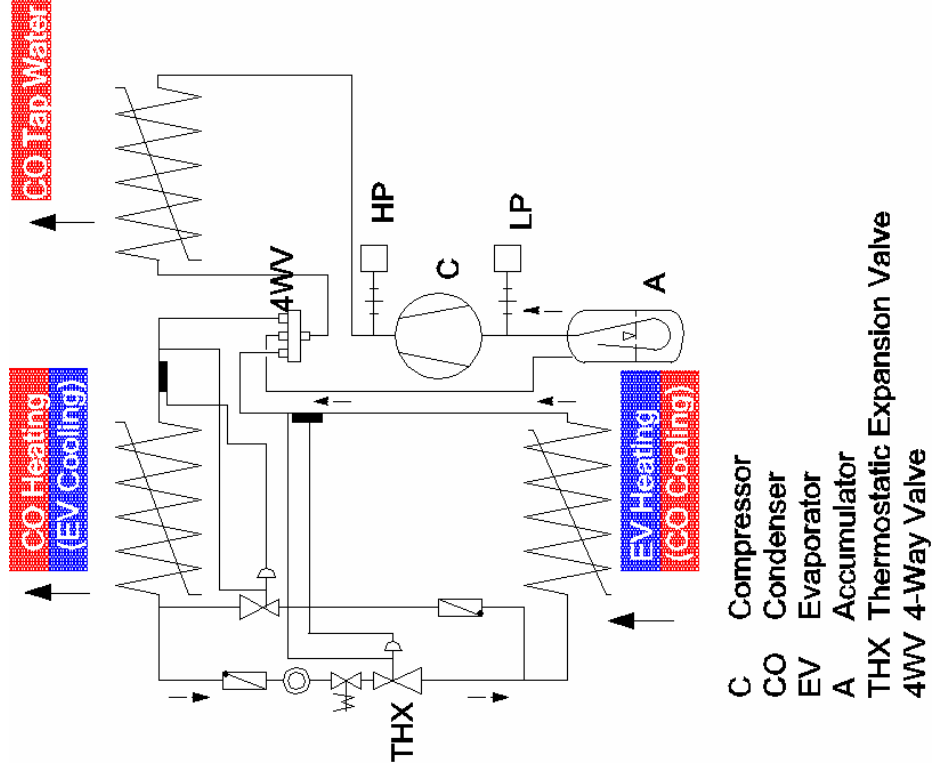
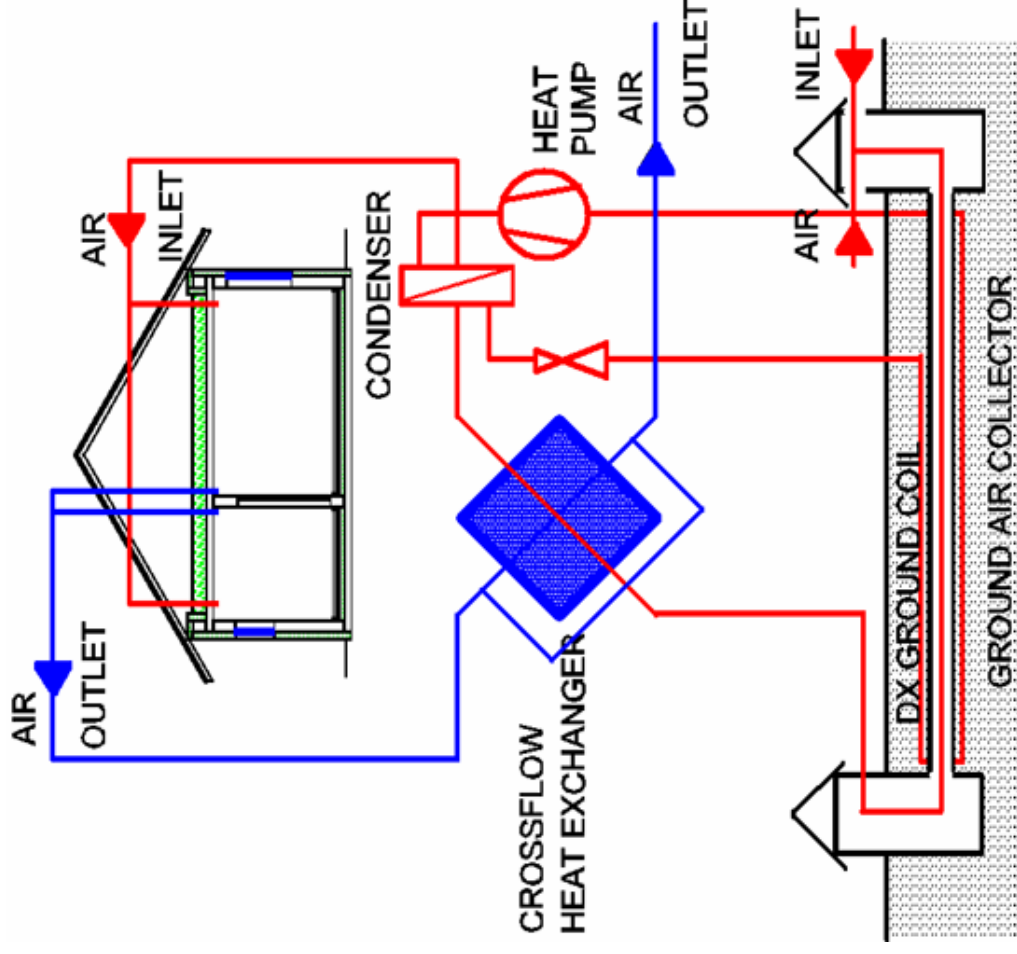
Vertically Installed DX-System with Natural Circulation



Wärmequellen-, Wärmepumpen-, Wärmennutzungs-kreislauf







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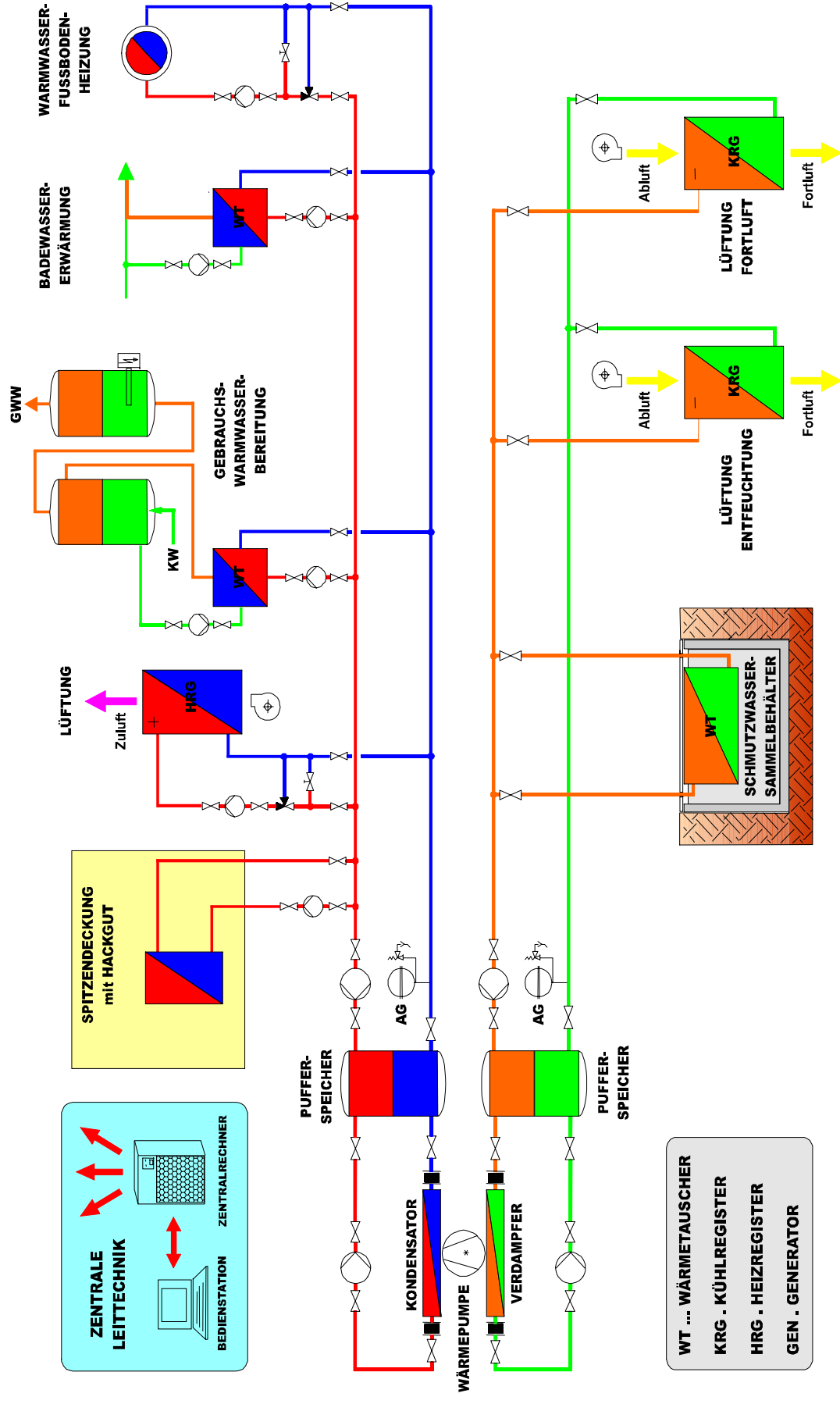
integrated systems

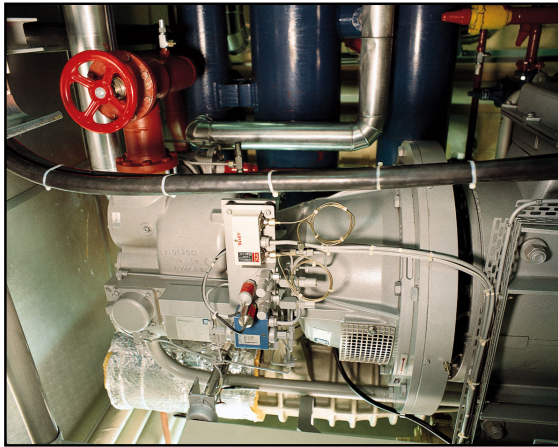
air conditioning systems using the ground and activation of the building structure

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Integriertes Energiesystem - Schaltschema





Projekt Bad Hofgastein

Nahwärme Aschach/Hartkirchen



Nutzung der Generatoren- und Transformatorabwärme
mit einer Wärmepumpe [$1 \text{ MW}_{\text{thermisch}}$]
Verbrennung des Schwemmhholzes in Biomassekesseln [$1,5 + 2,5 \text{ MW}$]
Spitzenabdeckung mit einem Gaskessel

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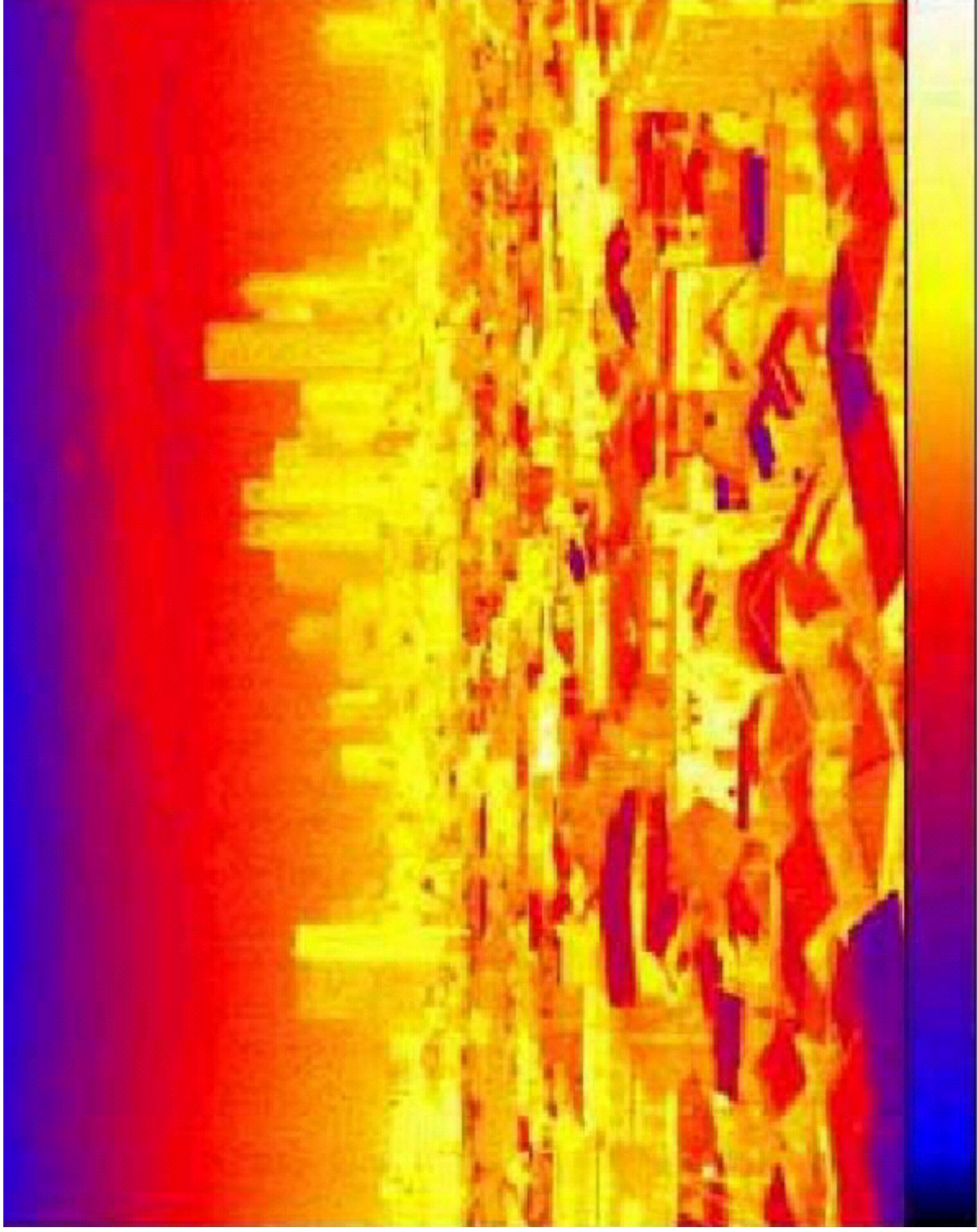
- direct expansion systems (horizontally installed and vertical)
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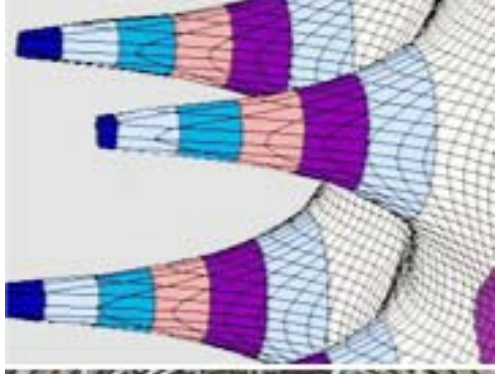
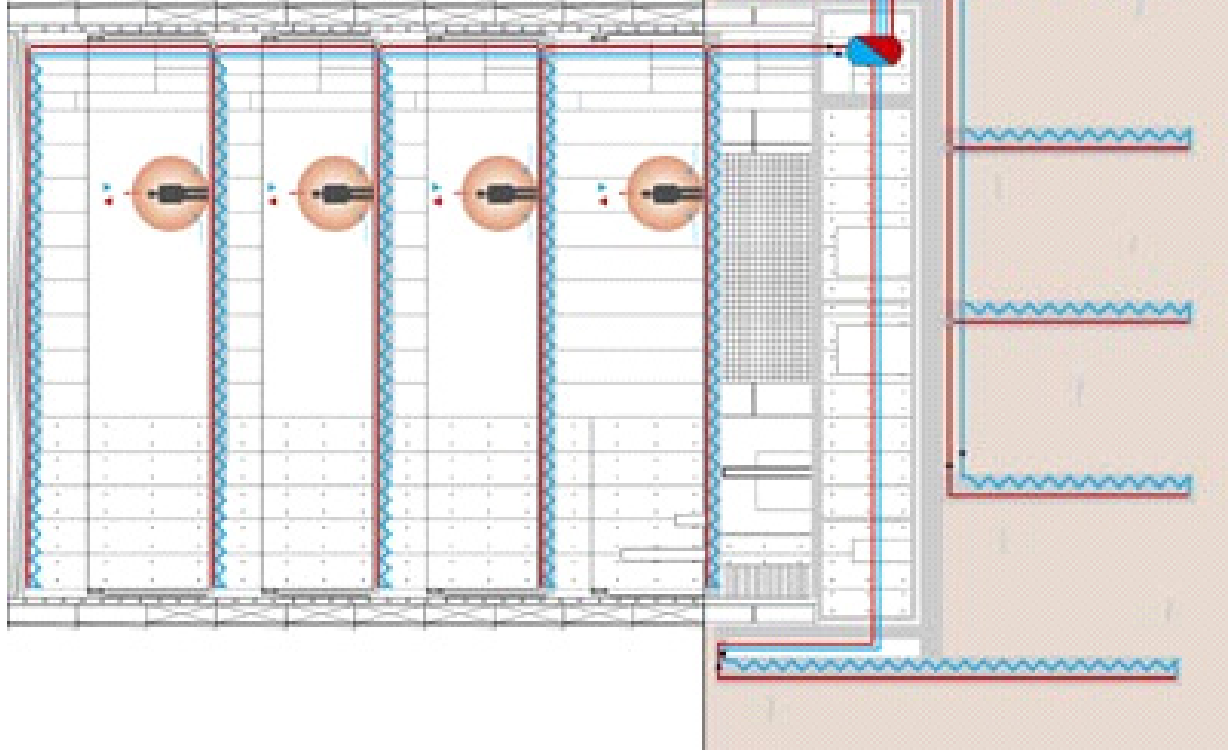
integrated systems

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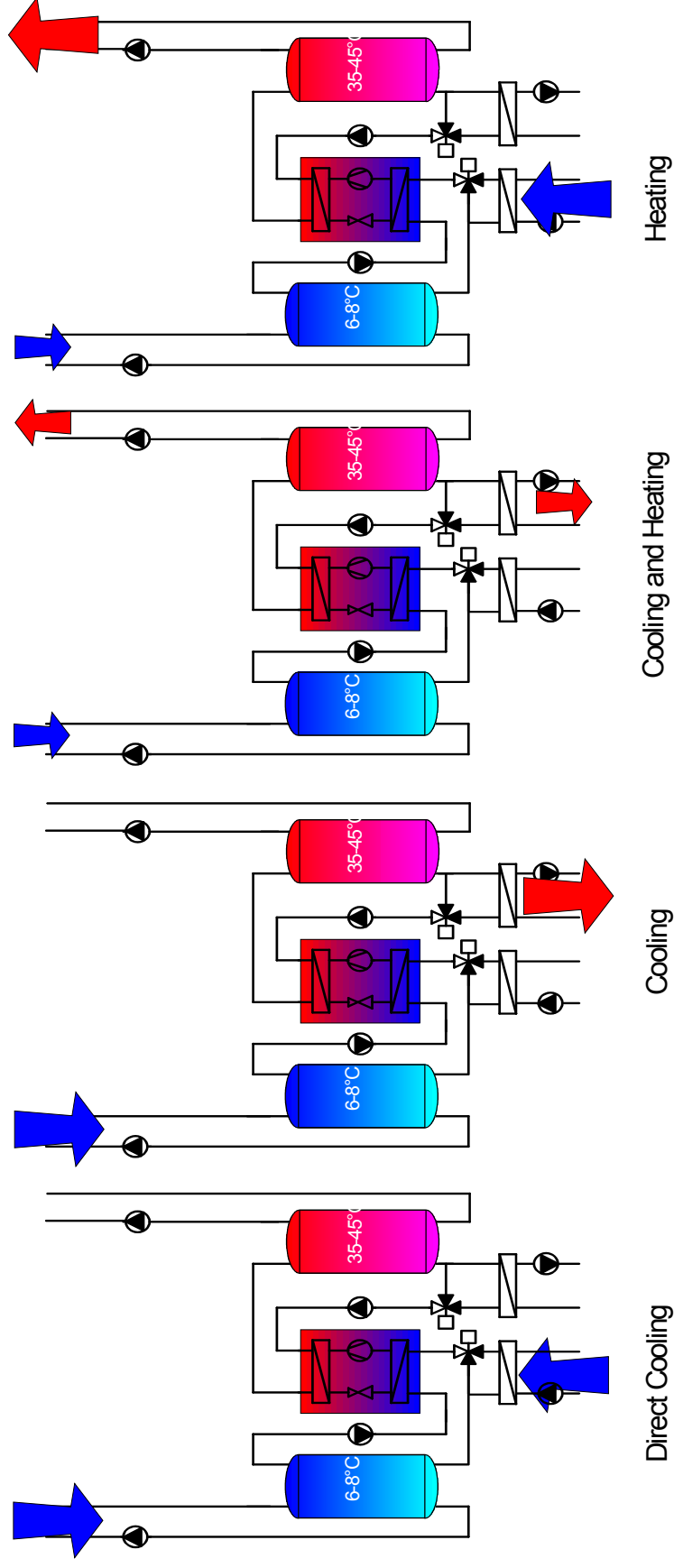
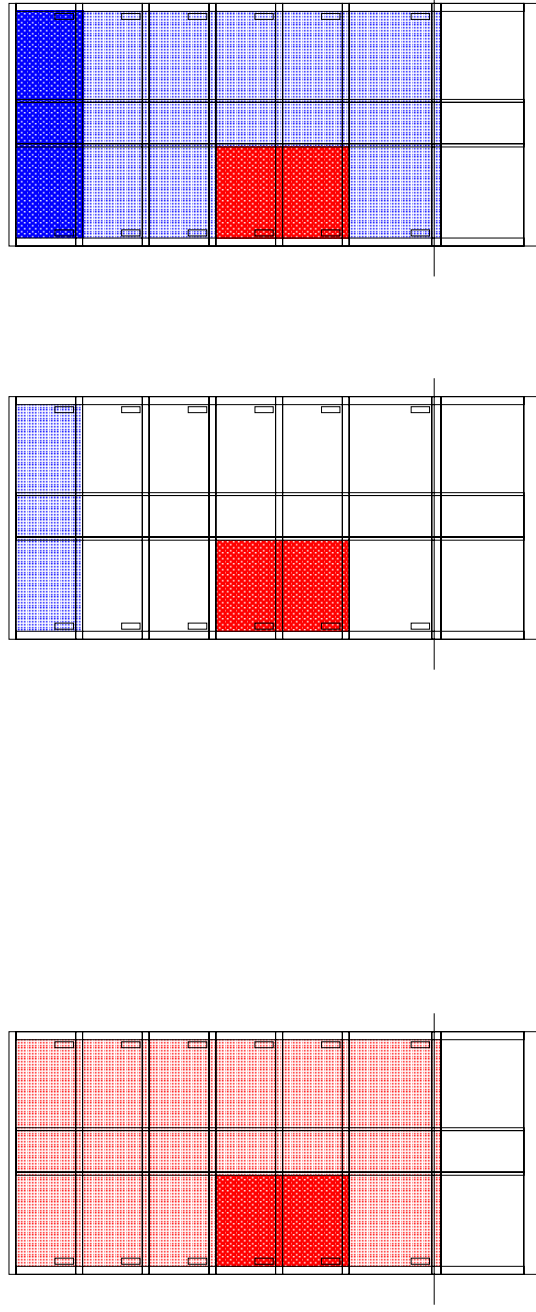
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enercret Pilotensystem





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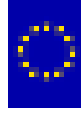

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IEA - International Energy Agency

HPP Member Countries

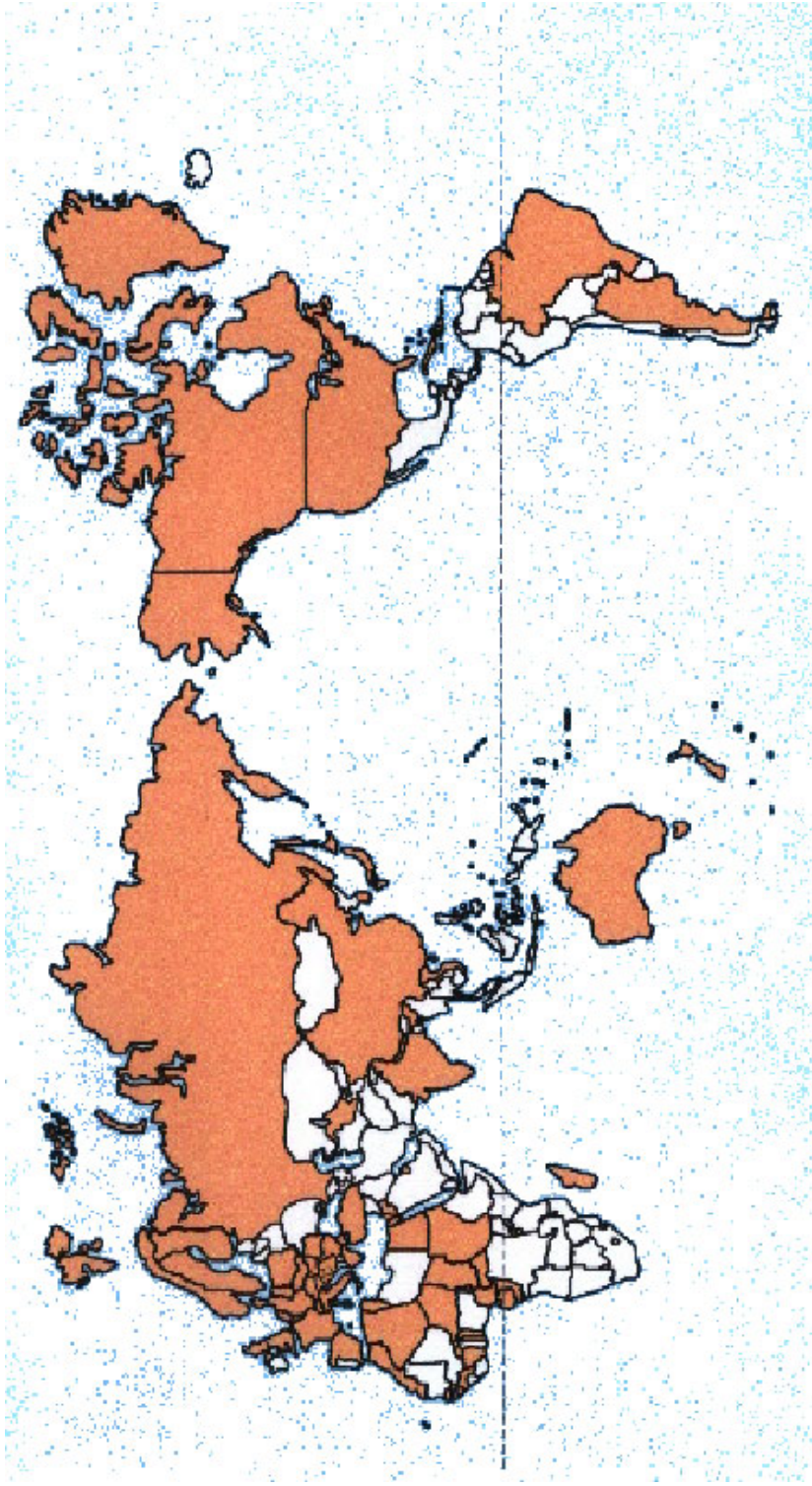


Australia		Hungary	Portugal
	Austria		
	Belgium		
	Canada		
Czech Republic		Korea	Turkey
	Denmark	Luxembourg	
	Finland	Mexico	
	France	The Netherlands	
	Germany	New Zealand	
Greece		Norway	




















Institute International du Froid
International Institute of Refrigeration

Intergovernmental Organisation
61 Member Countries



EHPA - European Heat Pump Association Member Countries



	Austria		Italy a		EU
	Belgium a		The Netherlands		
	Czech Republic		Norway		
	Denmark		Romania		
	Finland		Spain		
	France		Sweden		
	Germany		Switzerland		
	Greece a		United Kingdom		

D-A-CH Wärmepumpen-Gütesiegel



D-A-CH



Deutschland - D

BWP - Bundesverband
Wärmepumpe e.V.



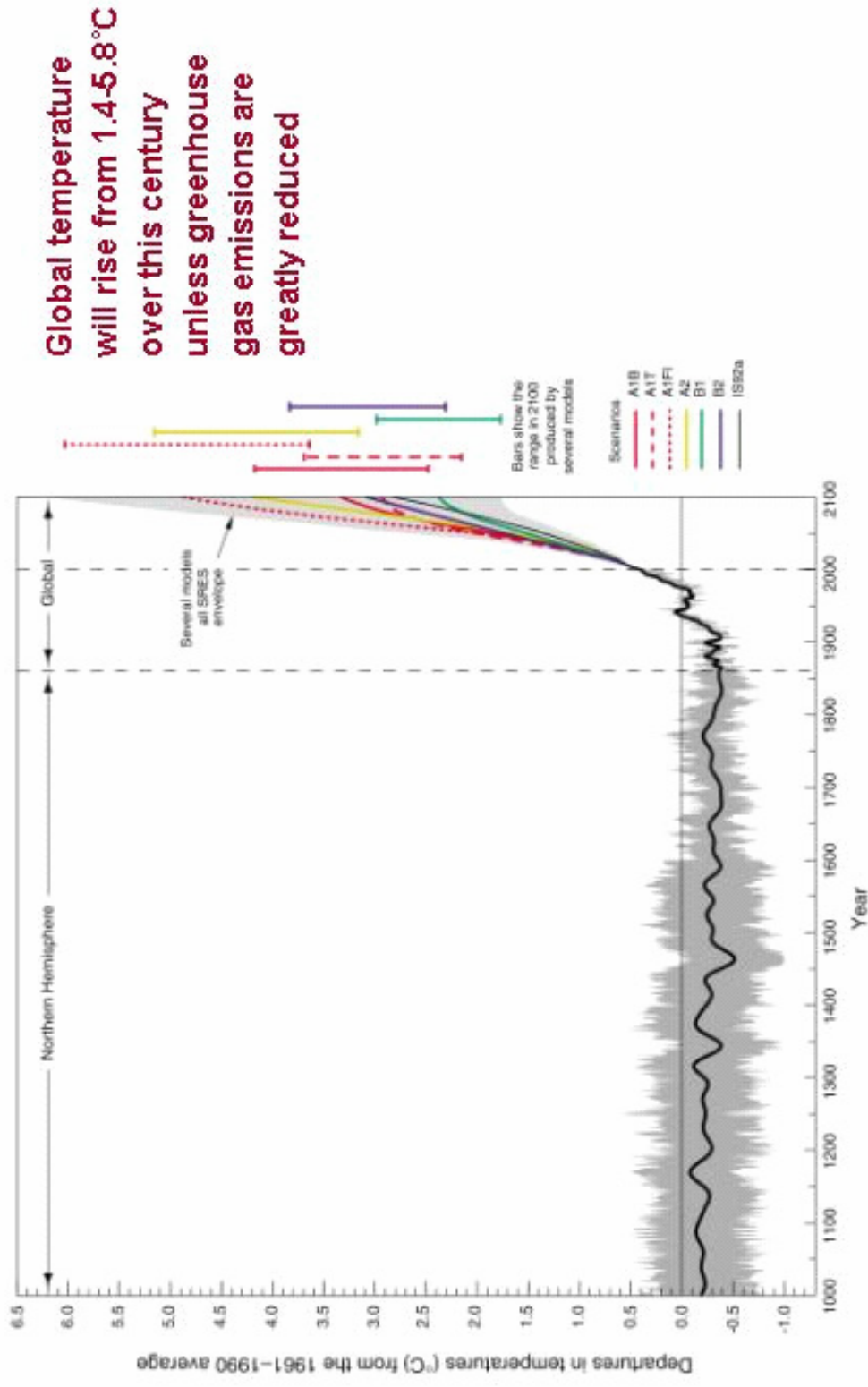
Österreich - A

BWP – Bundesverband
Wärmepumpe Austria
LGW-A - Leistungsgemeinschaft
Wärmepumpe Austria



Schweiz - CH

FWS - Fördergemeinschaft
Wärmepumpe Schweiz



Source: IPCC Third Assessment Report, WG1

Challenges of a Changing Earth — July 2001

