



BlueTerra
Energy Experts

Efficiënt elektrificieren





Inhoud

- Introductie
- Visie verduurzaming
- Praktische invulling
- Conclusies



Introductie Jan Grift

consultancy – hogescholen – beroepsverenigingen



Ir. J.M. Grift rector

Senior consultant
Waste heat valorisation
(pinch)



Rotterdam University
of Applied Sciences





Industrie

Chemie | Procesindustrie | F&B
| Rubber & Kunststoff | Pharma |
Diervoeding | Papier & Karton



Land- en tuinbouw

Ondernemers & clusters |
Glastuinbouw Nederland |
Warmtenetten



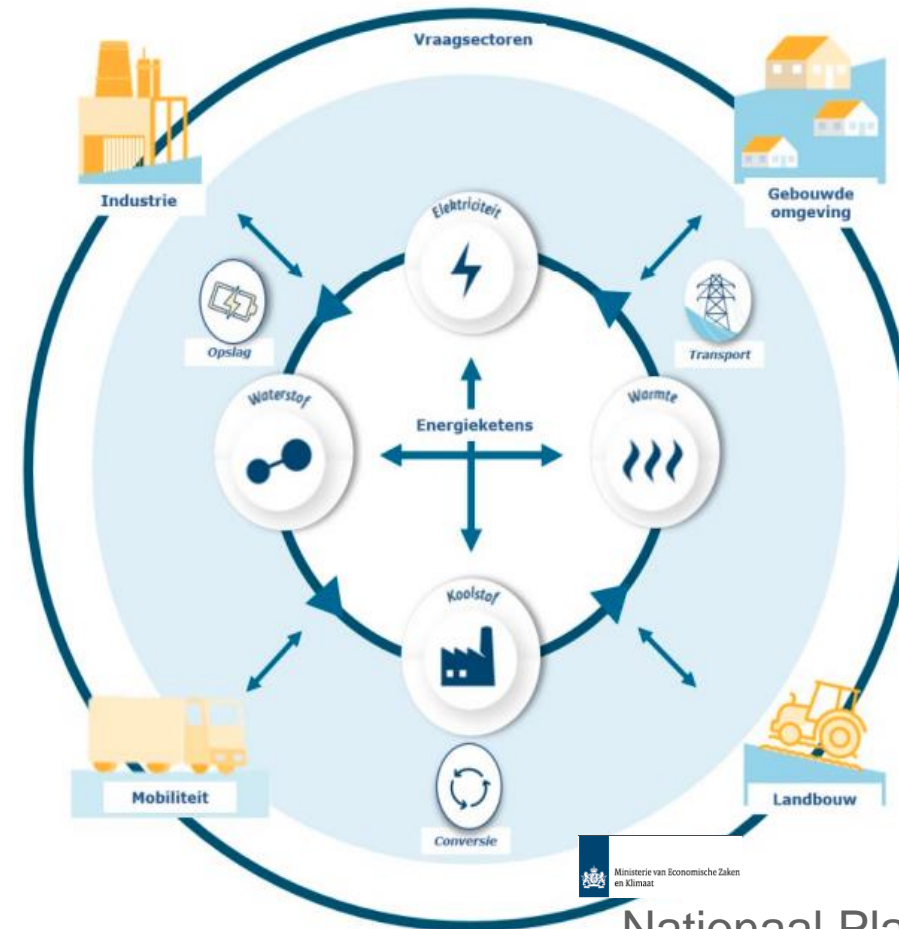
Grootzakelijke markt

Overheid | Woningcorporaties |
Maatschappelijk vastgoed |
Commercieel vastgoed



Visie verduurzaming

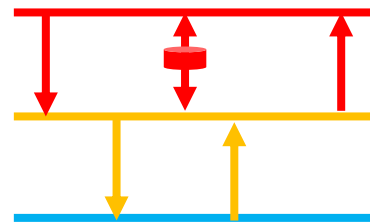
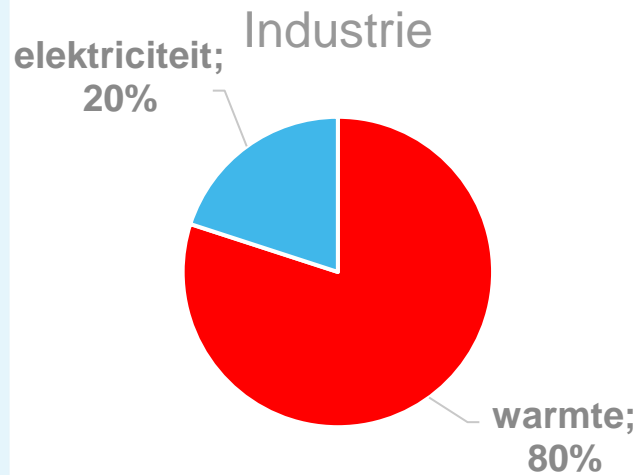
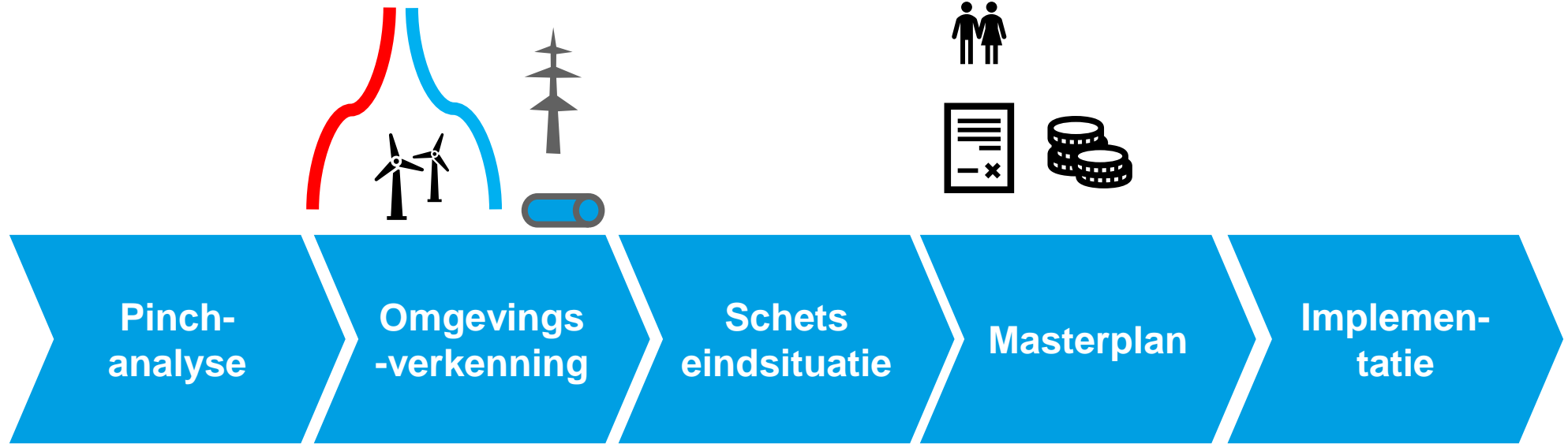
Eerst energiebesparing door slimme elektrificatie,
E-boilers voor balanceren, dan pas waterstof





Praktische invulling

Masterplan noodzakelijk



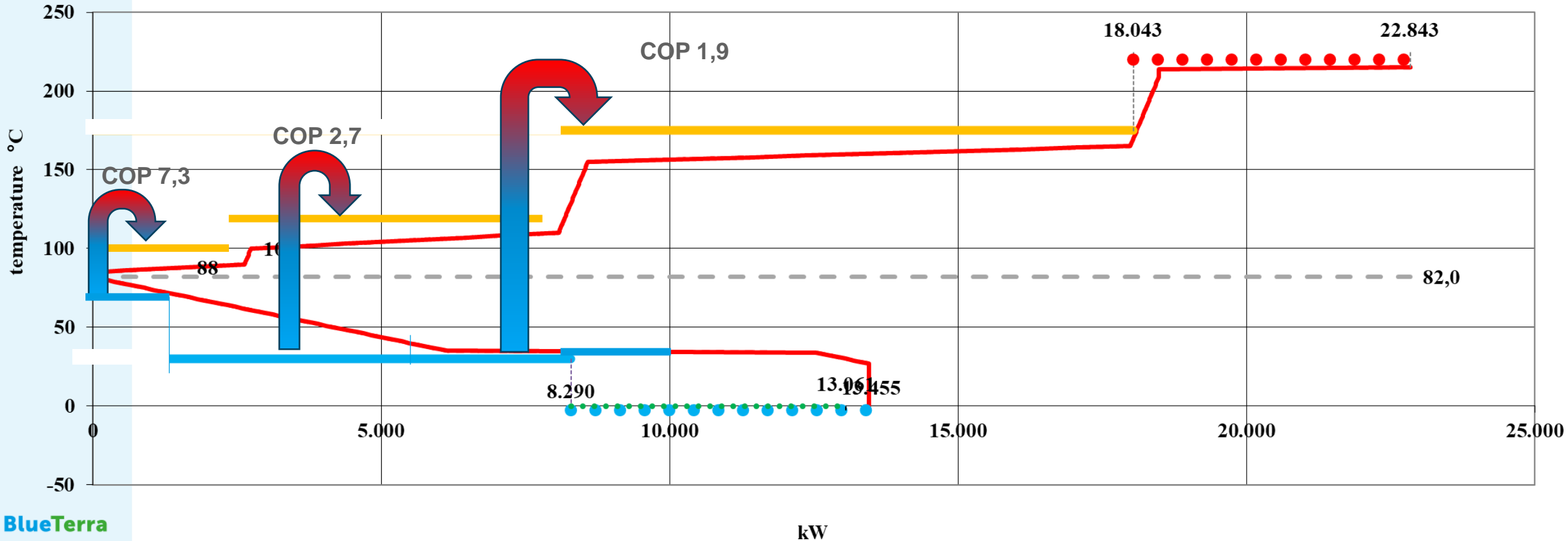


Pinch-analyse

Biedt zicht op potentieel restwarmtebenutting

grand composite curve mean power

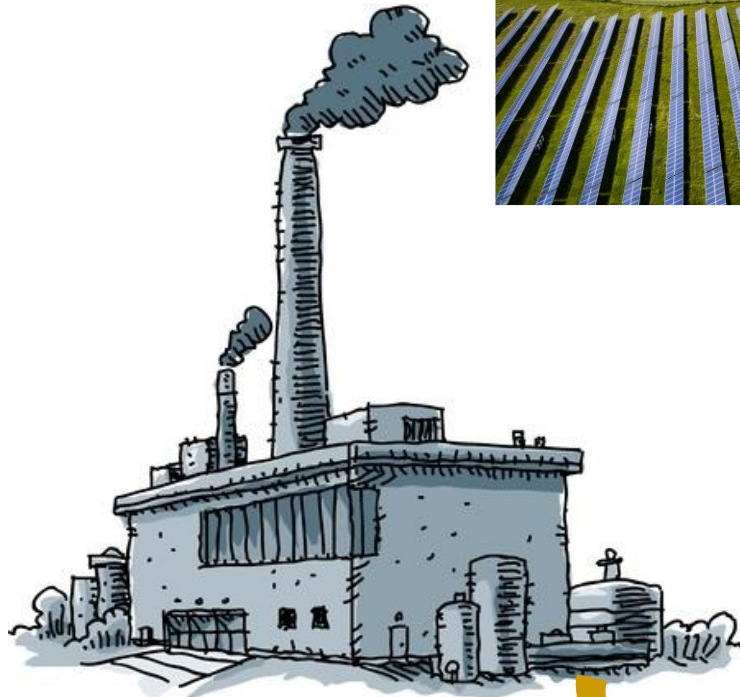
— grand - - - - pinch — hp condensor — hp evaporator ••• heating power ••• cooling power ••• trade — trade vert
T_{pinch}= 82,0 oC; target cold= 5165 kW; target heat= 4800 kW; recovery = 22 kW; heat pump 18043 kW; trade 0 kW; COP = 2,4





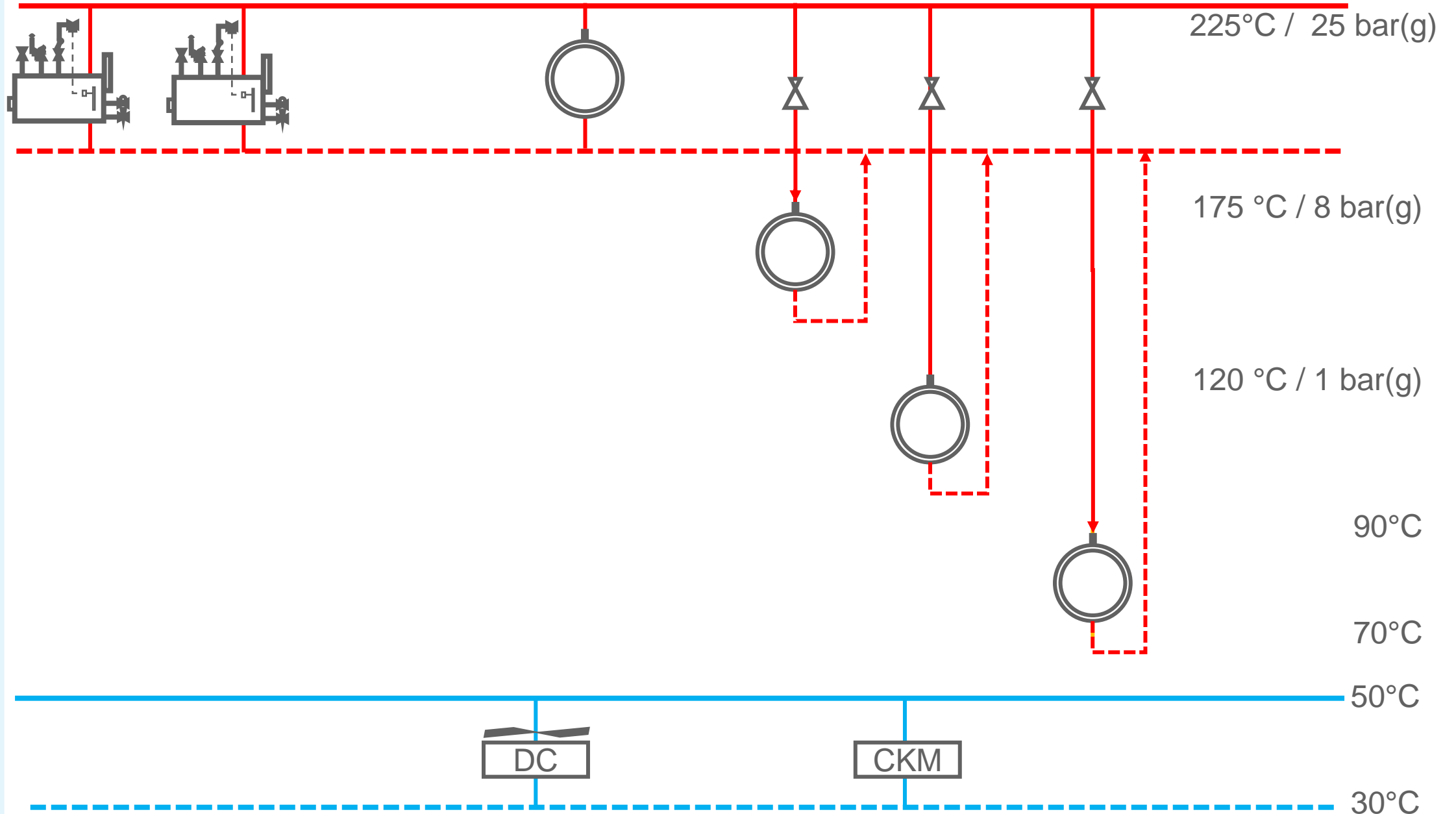
Omgevingsverkenning

Werk samen



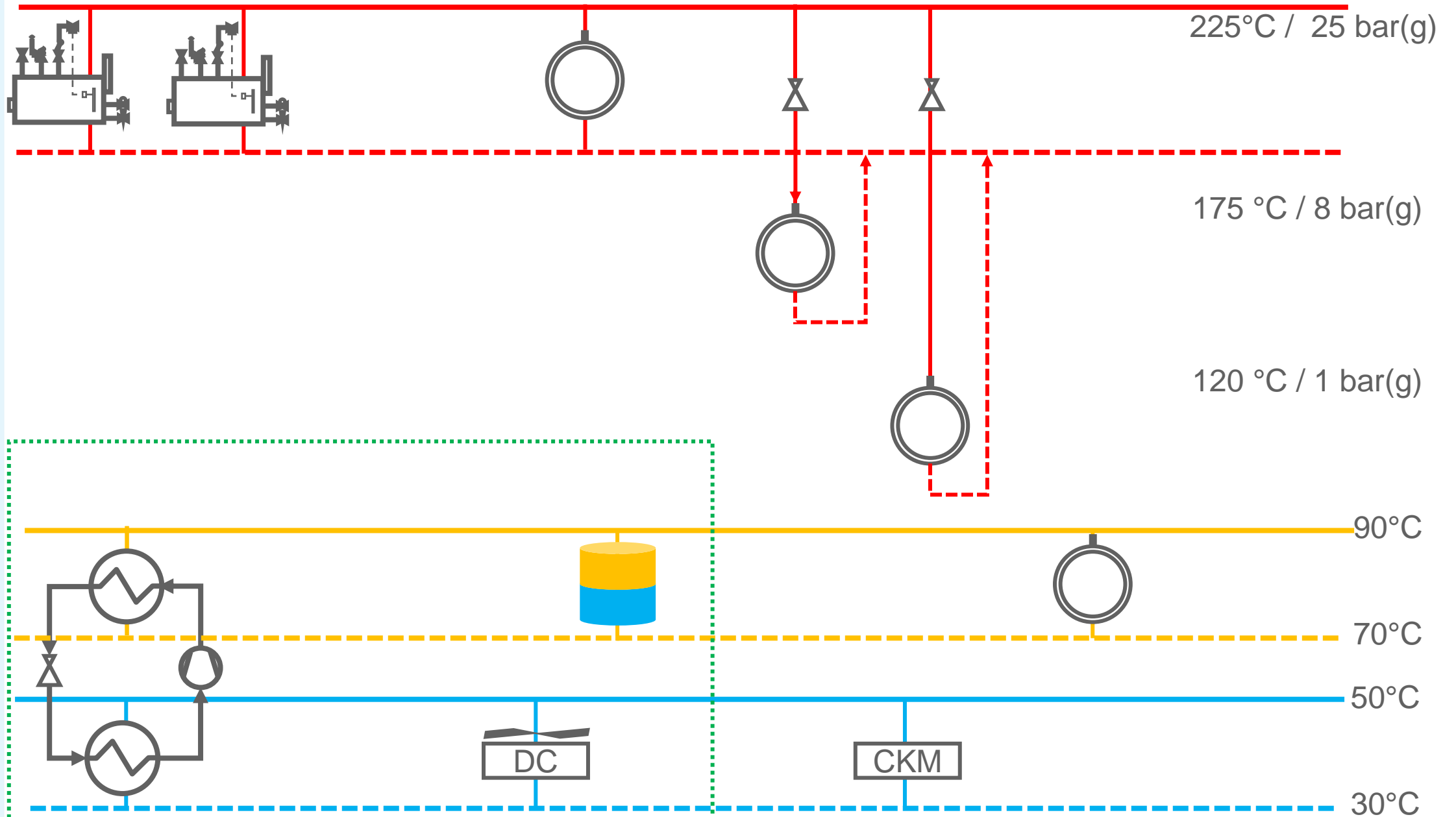


Schets beginsituatie



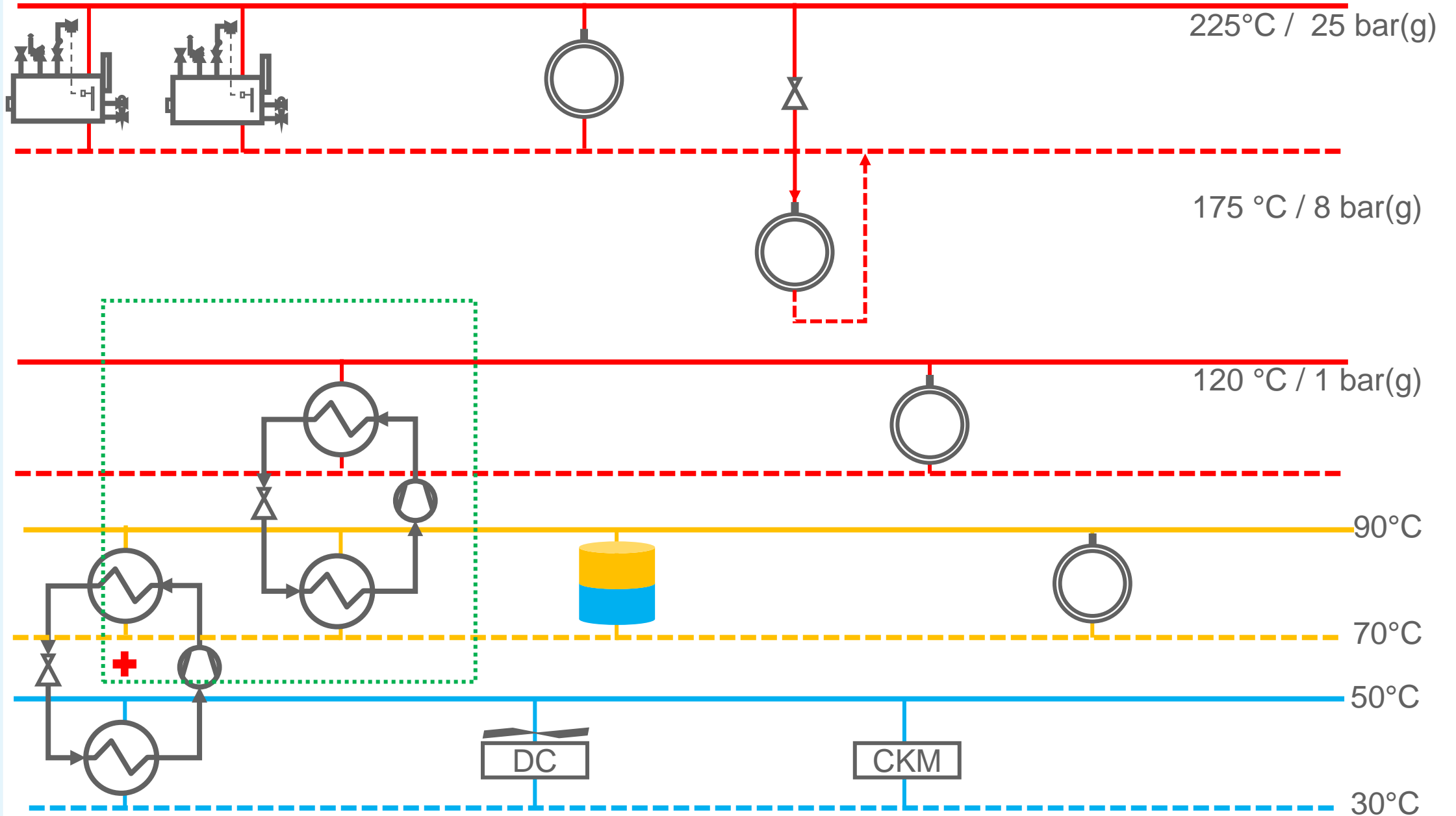


Step 1





Step 2





HT warmtepompen



M Mayekawa

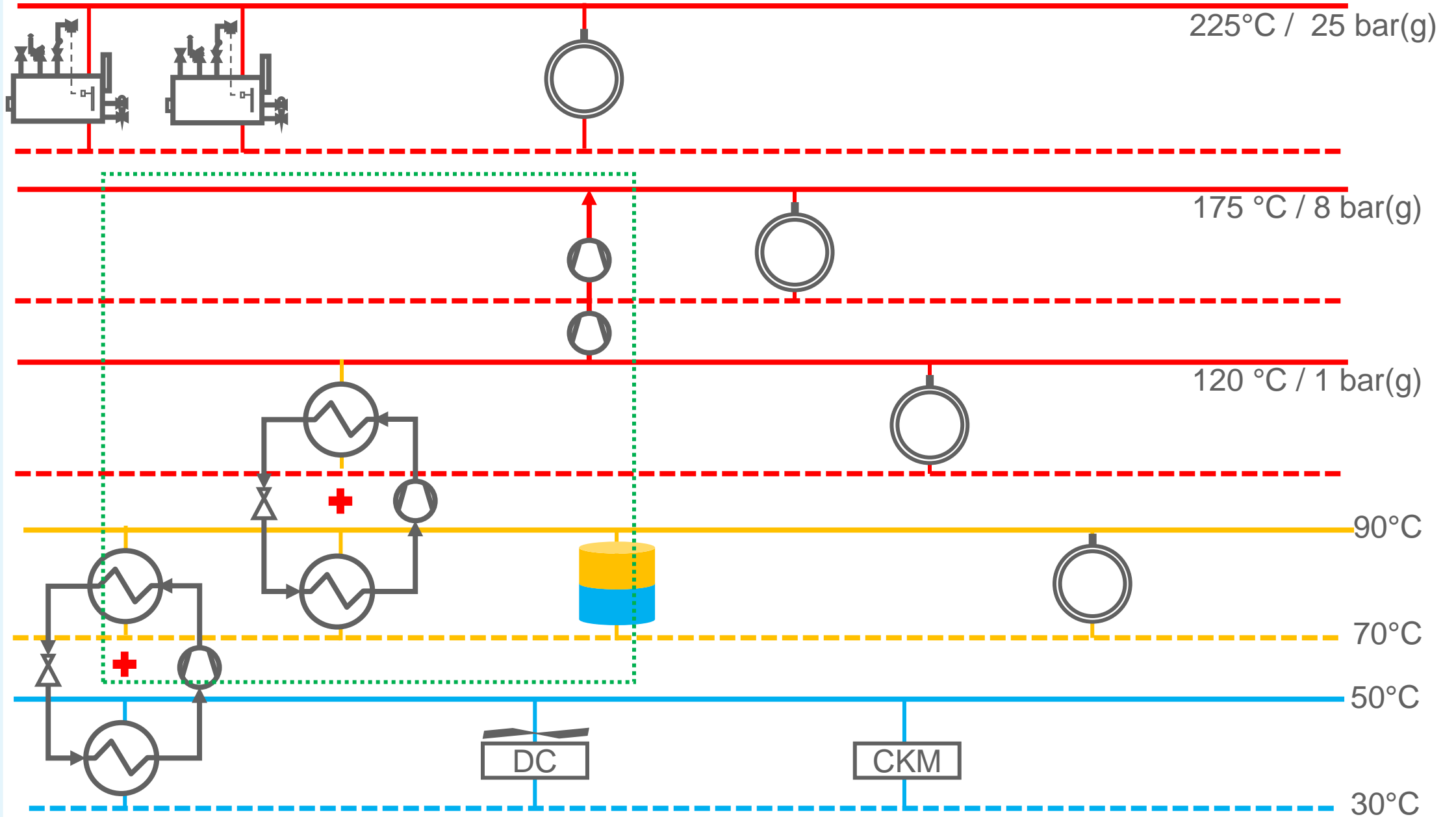


Johnson Controls

OCHSNER
HEAT PUMPS



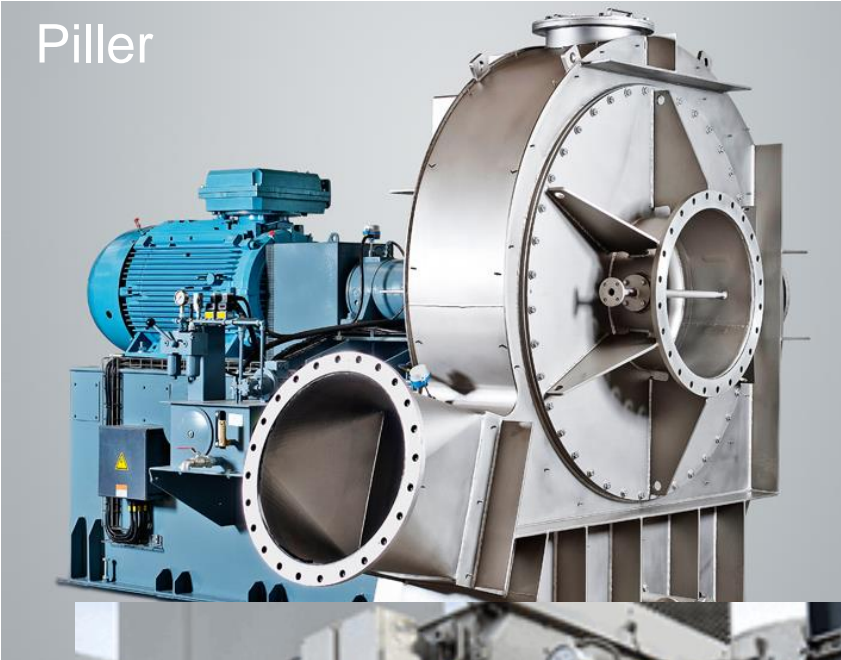
Step 3





Mechanische damprecompressie

Piller

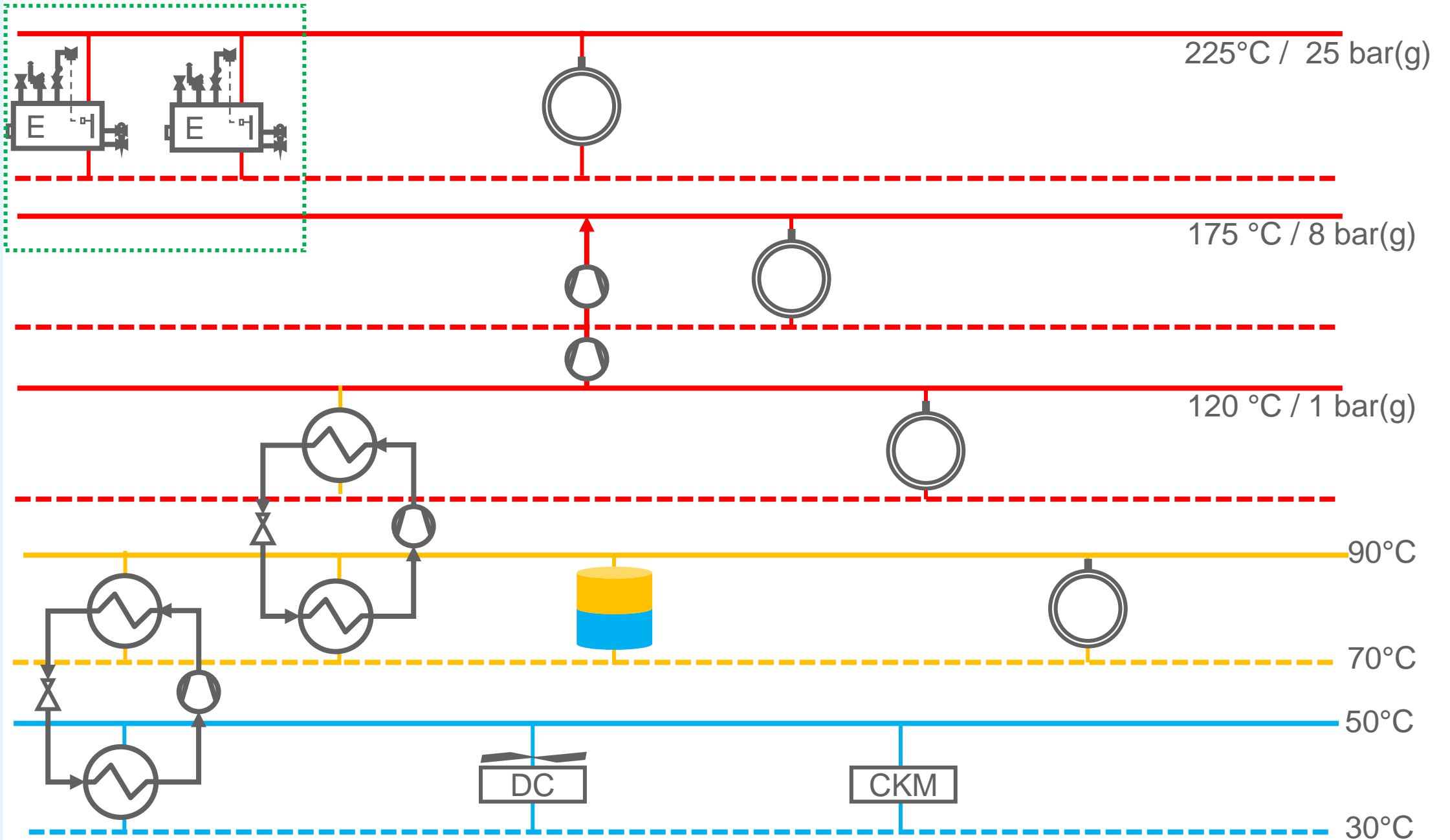


Siemens





Eindsituatie





E-boilers

Snel en zeer grote vermogens





Implementatie

Discipline masterplan

- Reduceren drukken / temperaturen
- Grootte warmtewisselaars
- Hydraulisch / stoomsysteem
- Loadmanagement
- SDE++



Conclusies

Slimme elektrificatie : morgen beginnen

- Benutting restwarmte stap 1
- Aardgas eruit drukken van onder naar boven : push up

PUSHUP

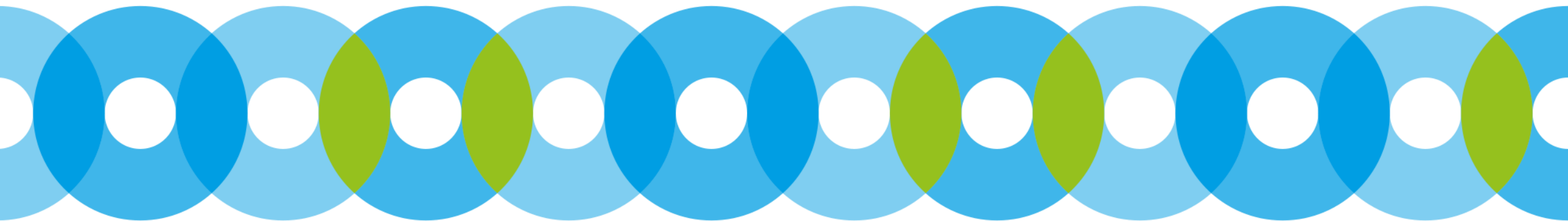




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