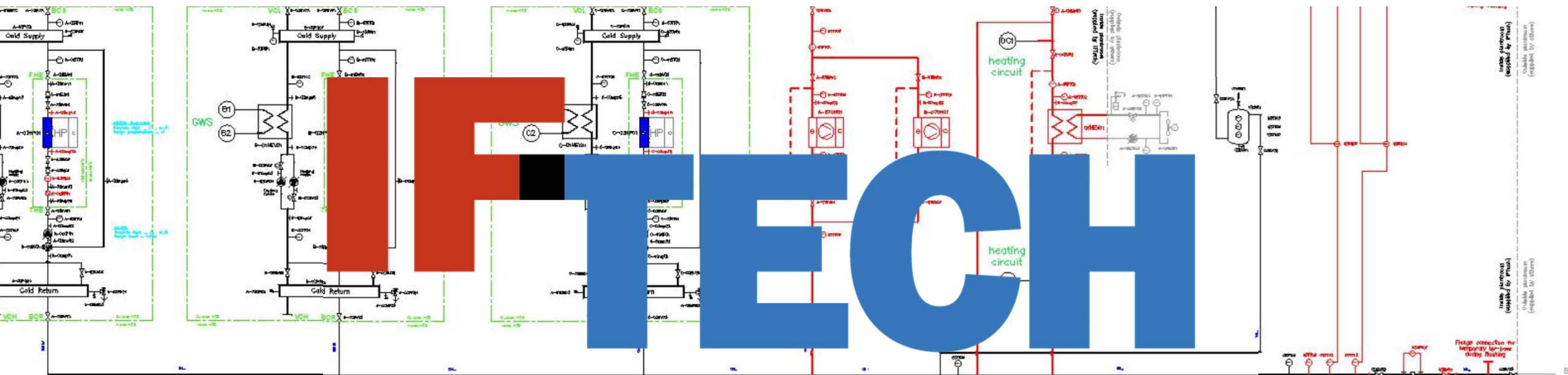
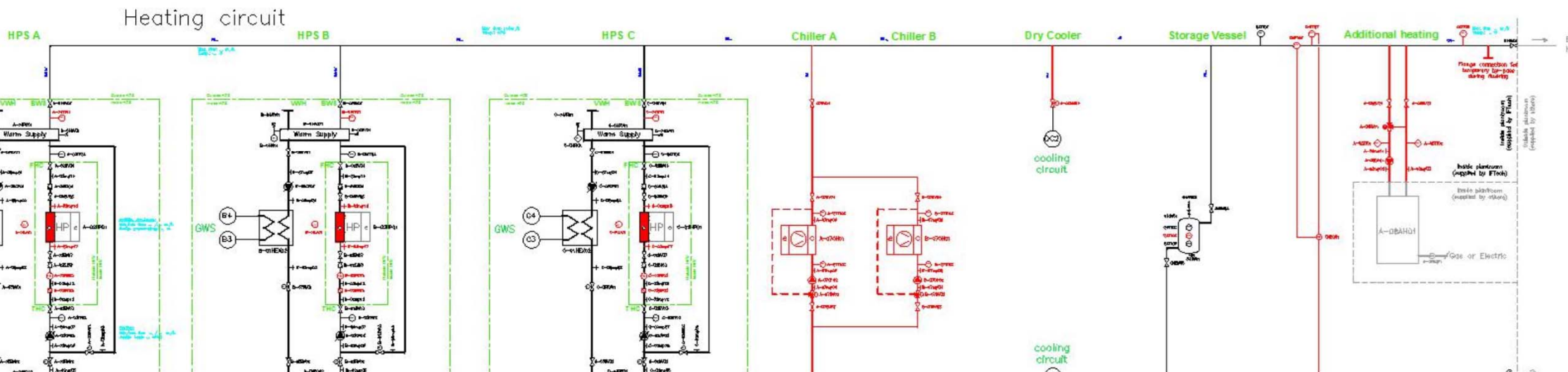
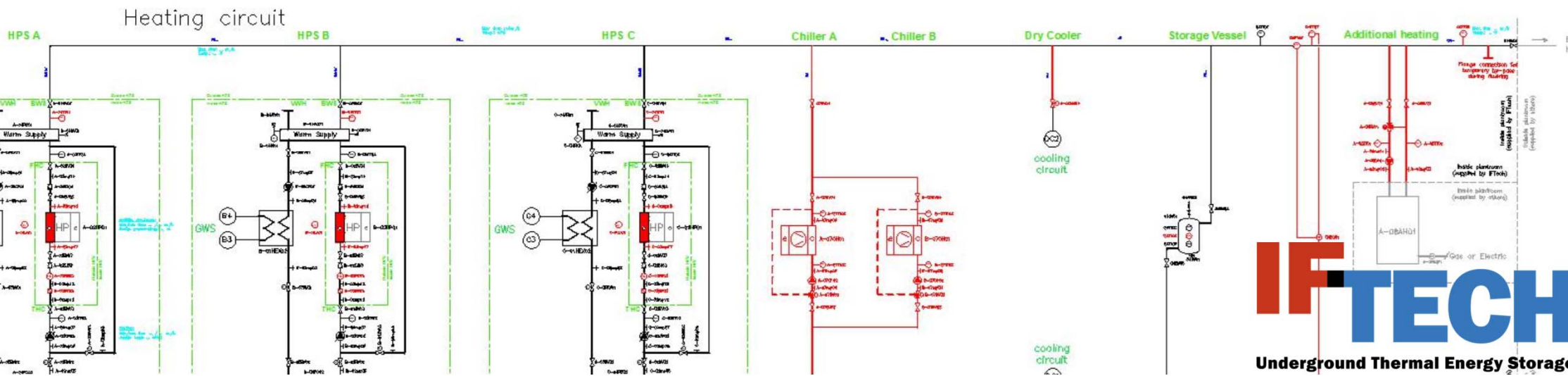
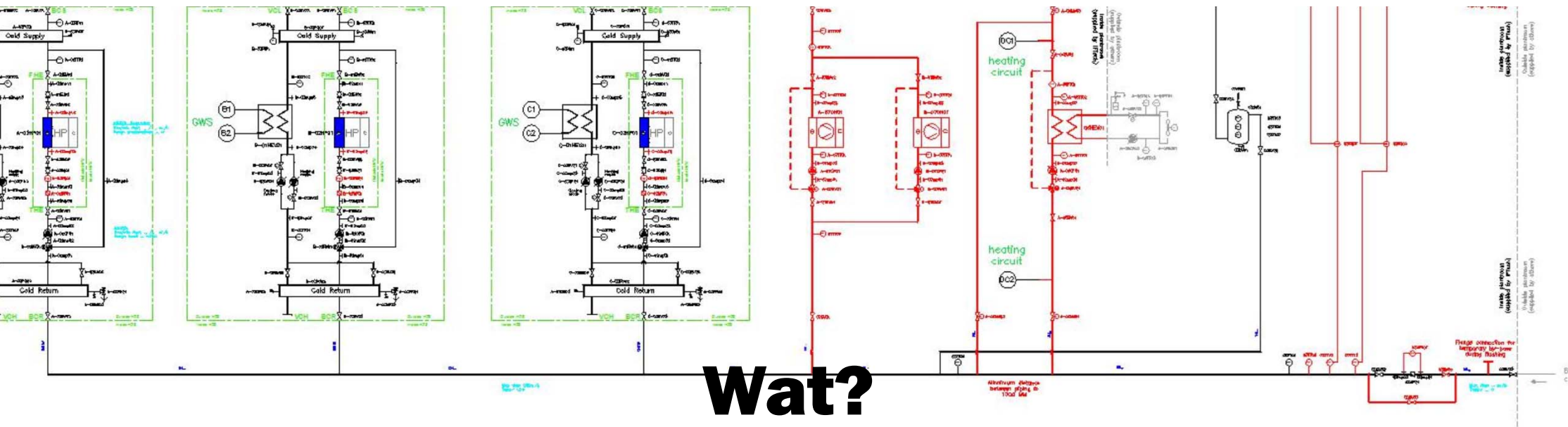




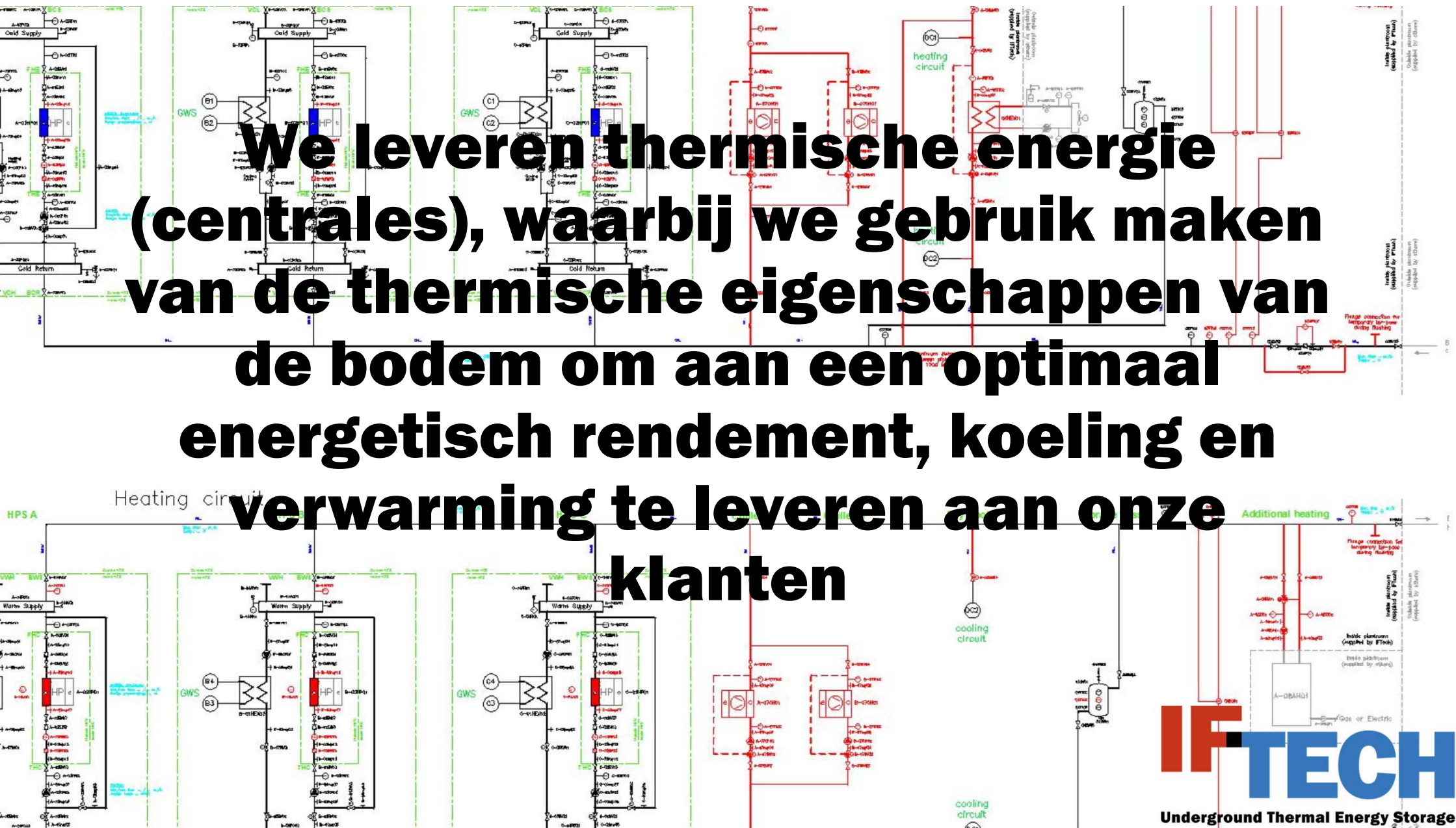
Underground Thermal Energy Storage

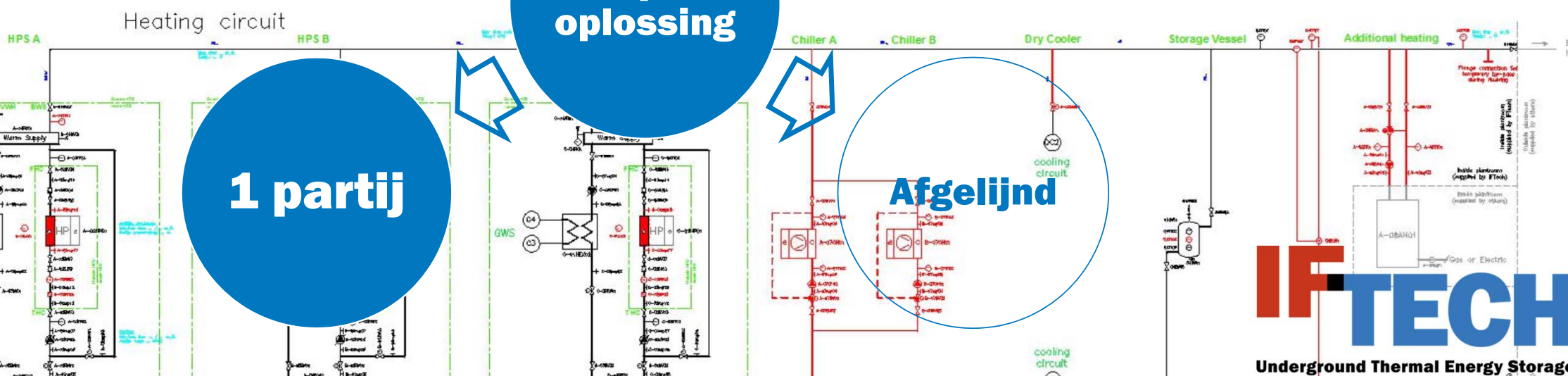
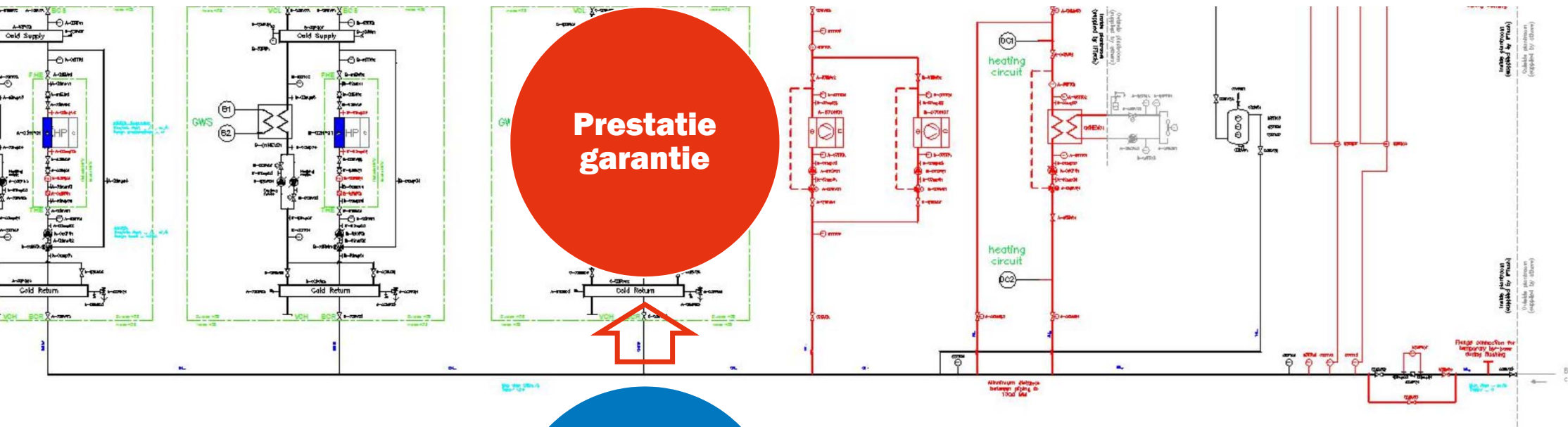
Standaardisatie - prefabricatie

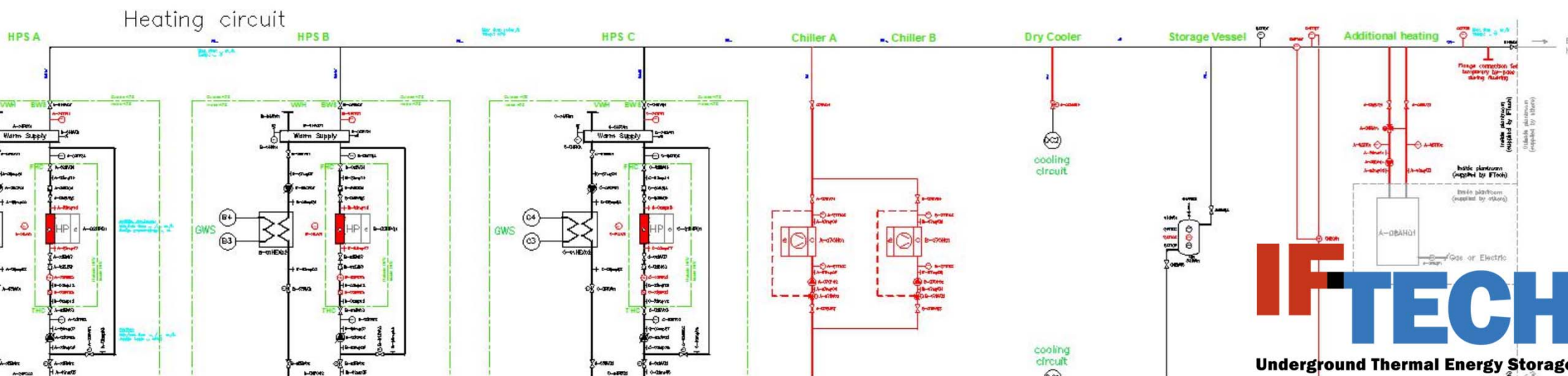
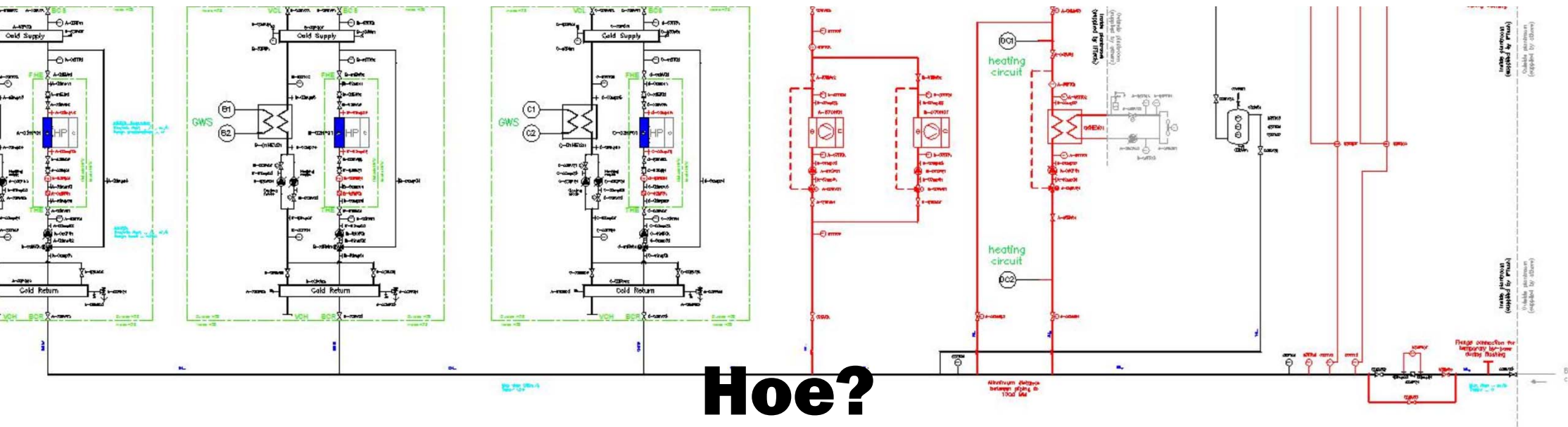


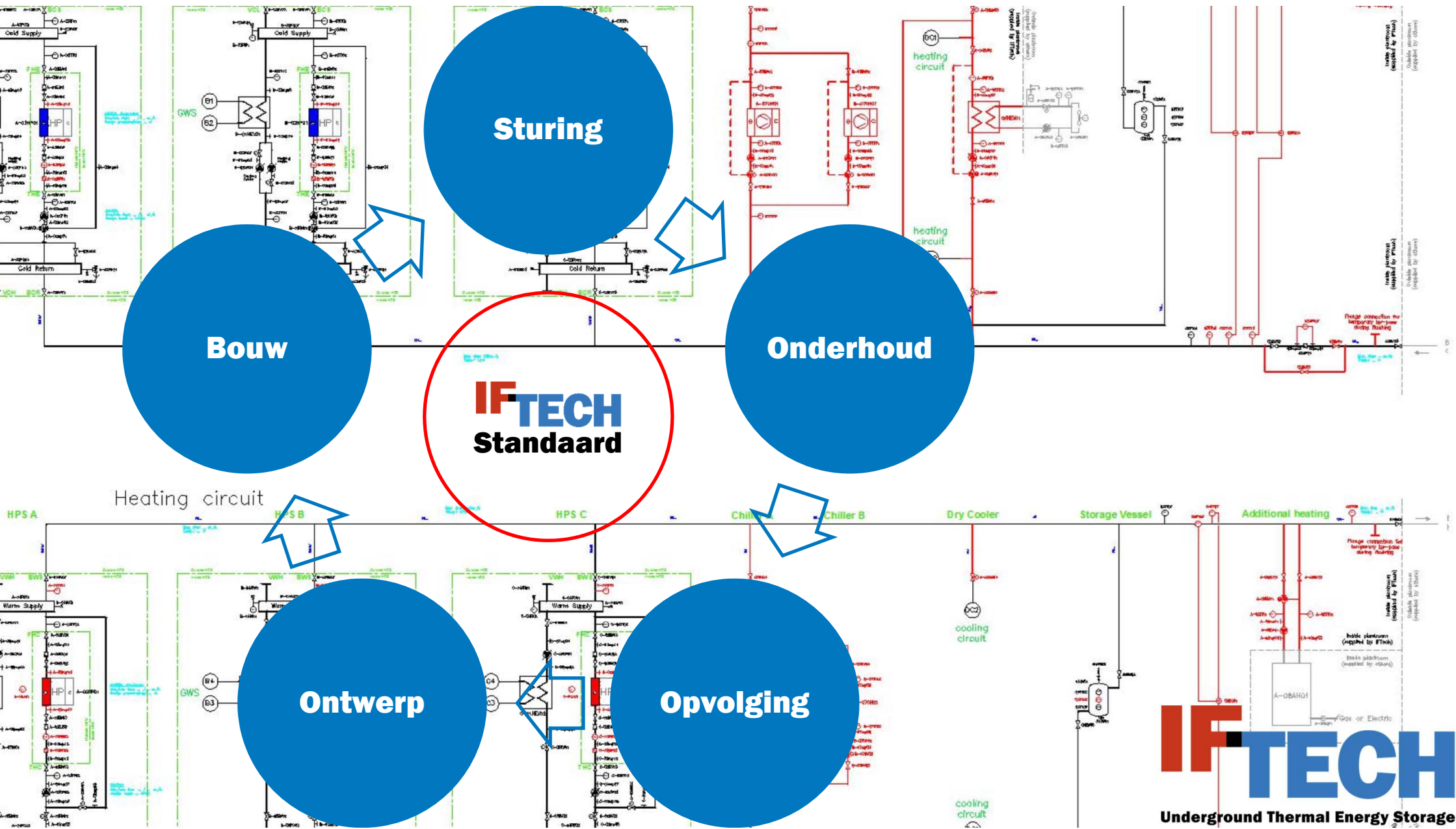


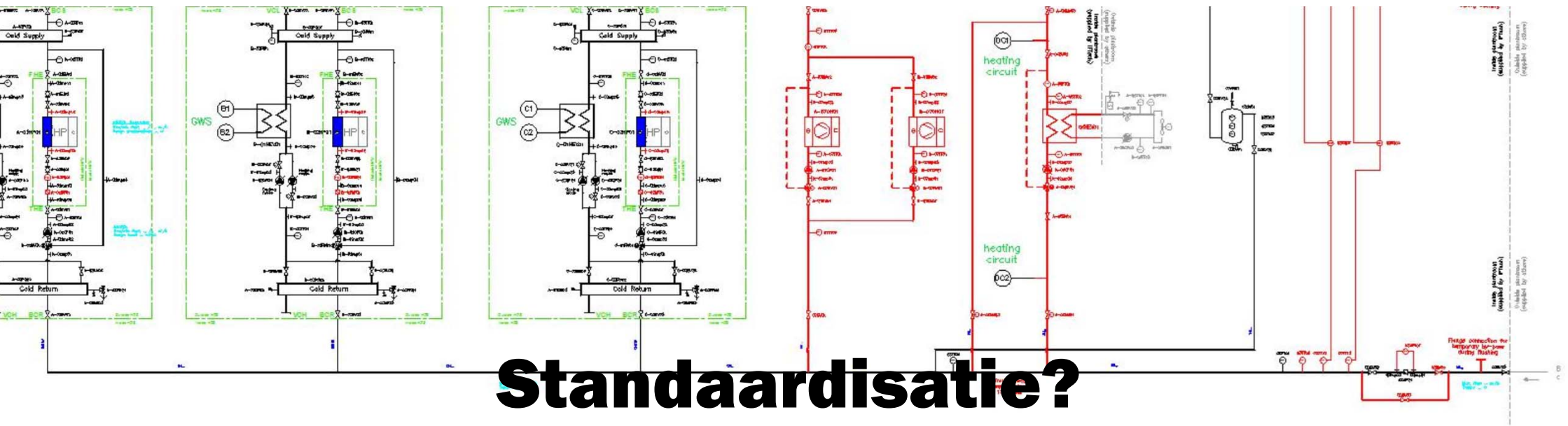
**We leveren thermische energie
(centrales), waarbij we gebruik maken
van de thermische eigenschappen van
de bodem om aan een optimaal
energetisch rendement, koeling en
verwarming te leveren aan onze
klanten**



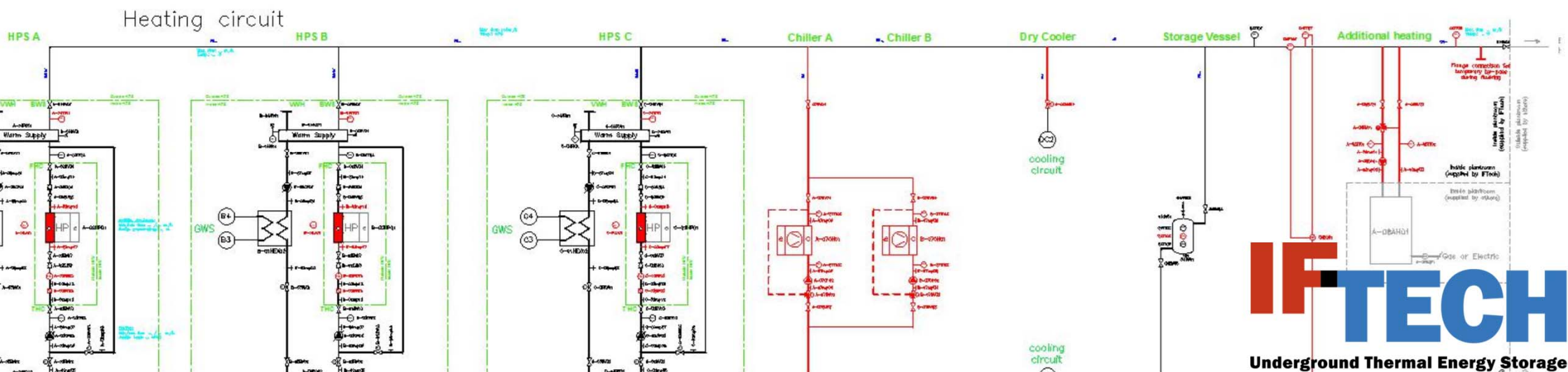








Standaardisatie?



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Prestatie garantie

Installatie tijd

Prijs

Internationaal

Onderhoud

Atelier

Plug & Play op
de werf

Transport

Foutenlast

Software

Maximale
service

Assistentie
vanop afstand

Reserve
onderdelen

Problem
solving

Complexe
installatie

Ideale
condities

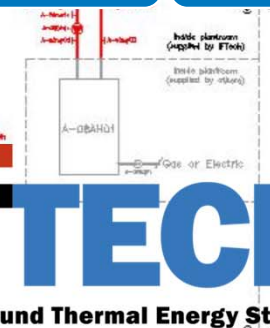
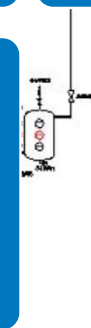
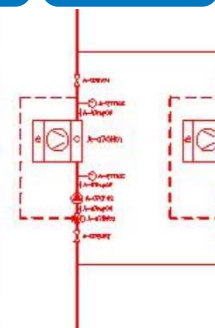
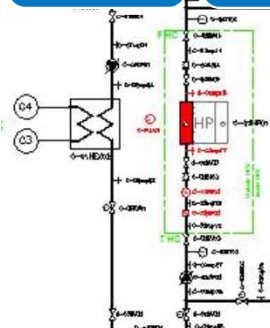
Efficiëntie

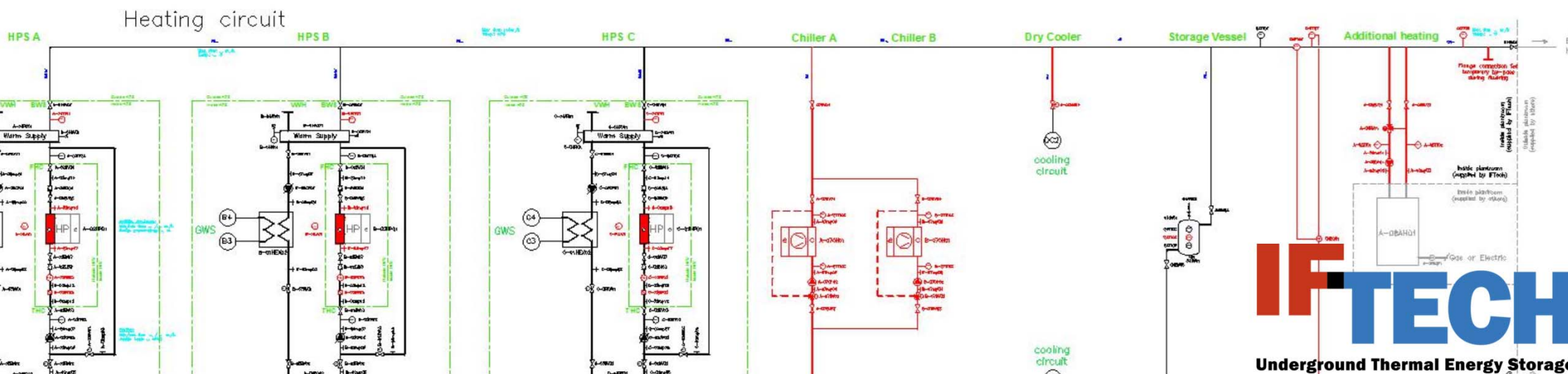
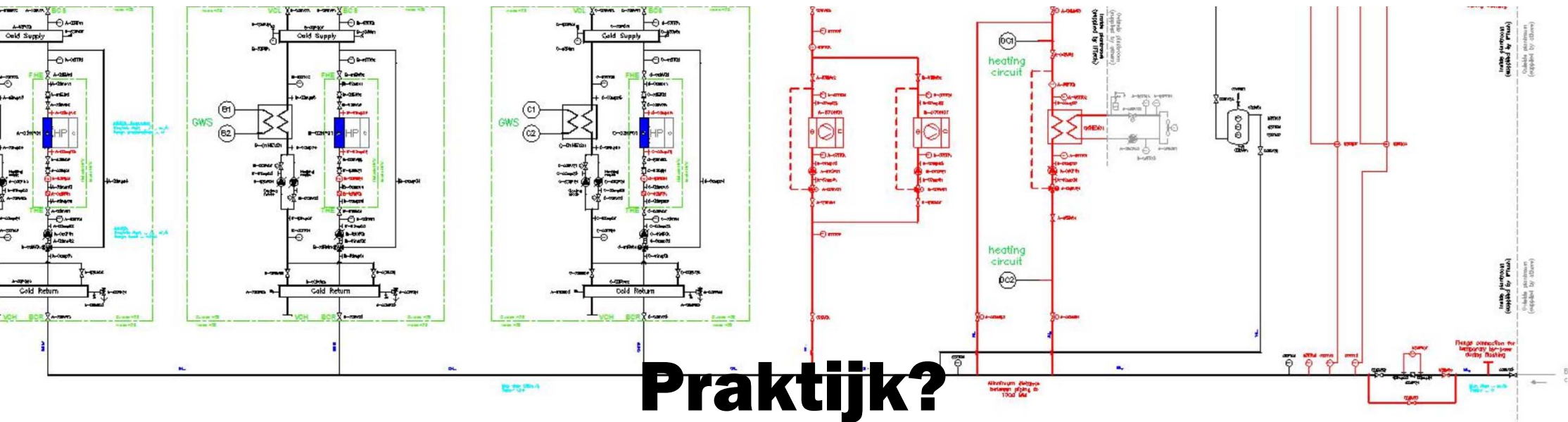
Controle

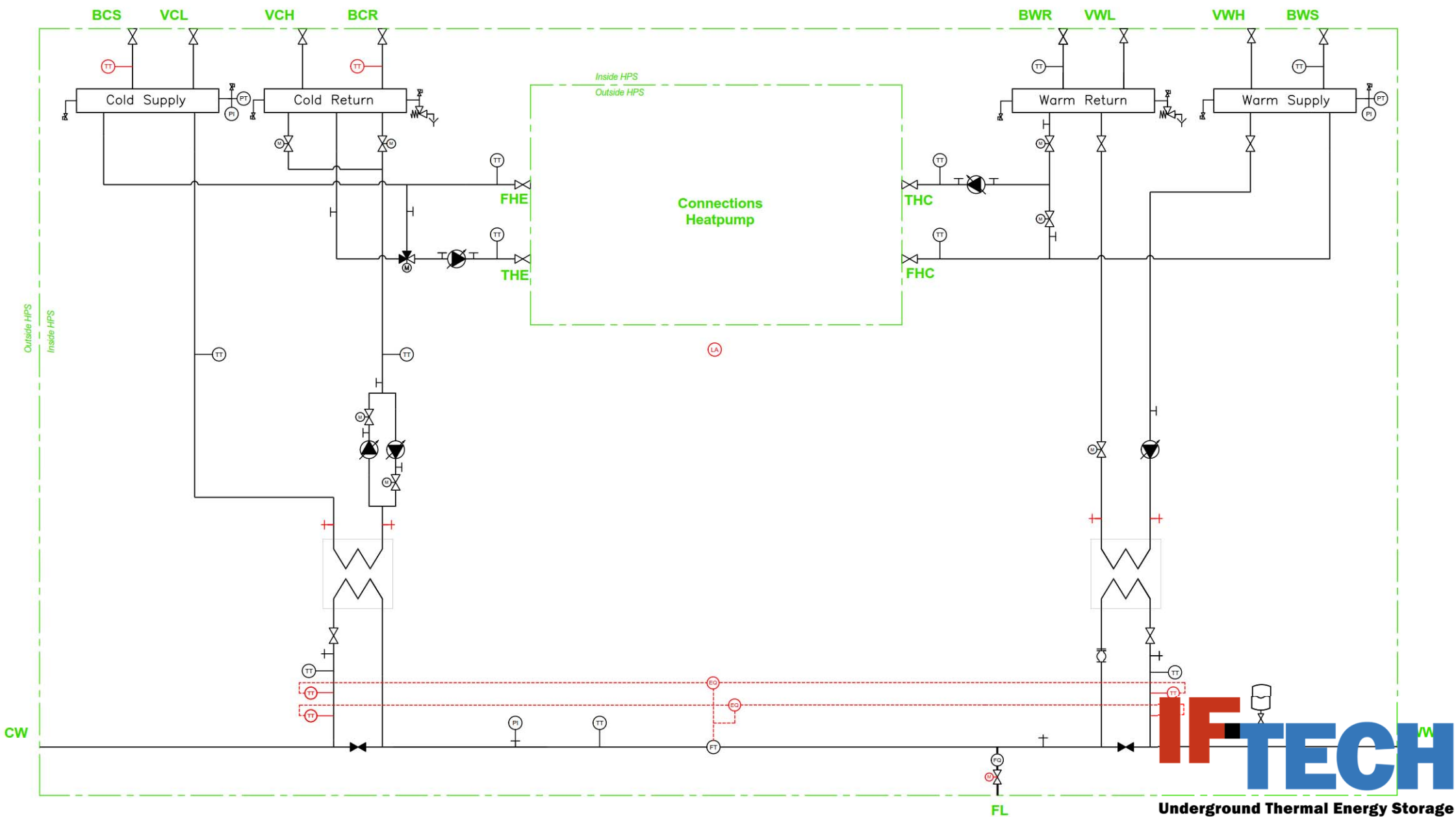
Updates
beschikbaar

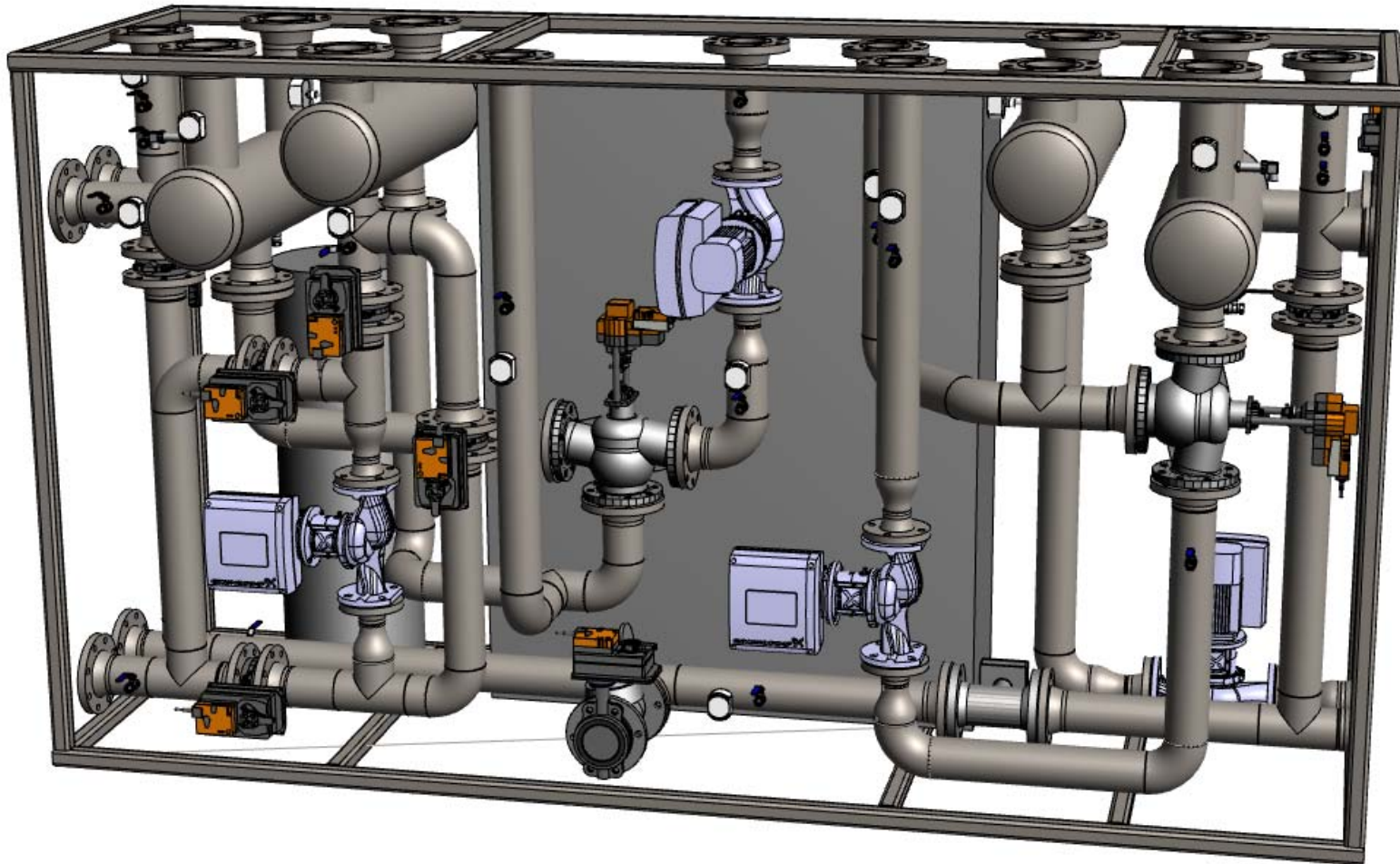
Specifieke
rapportage
(IMJV)

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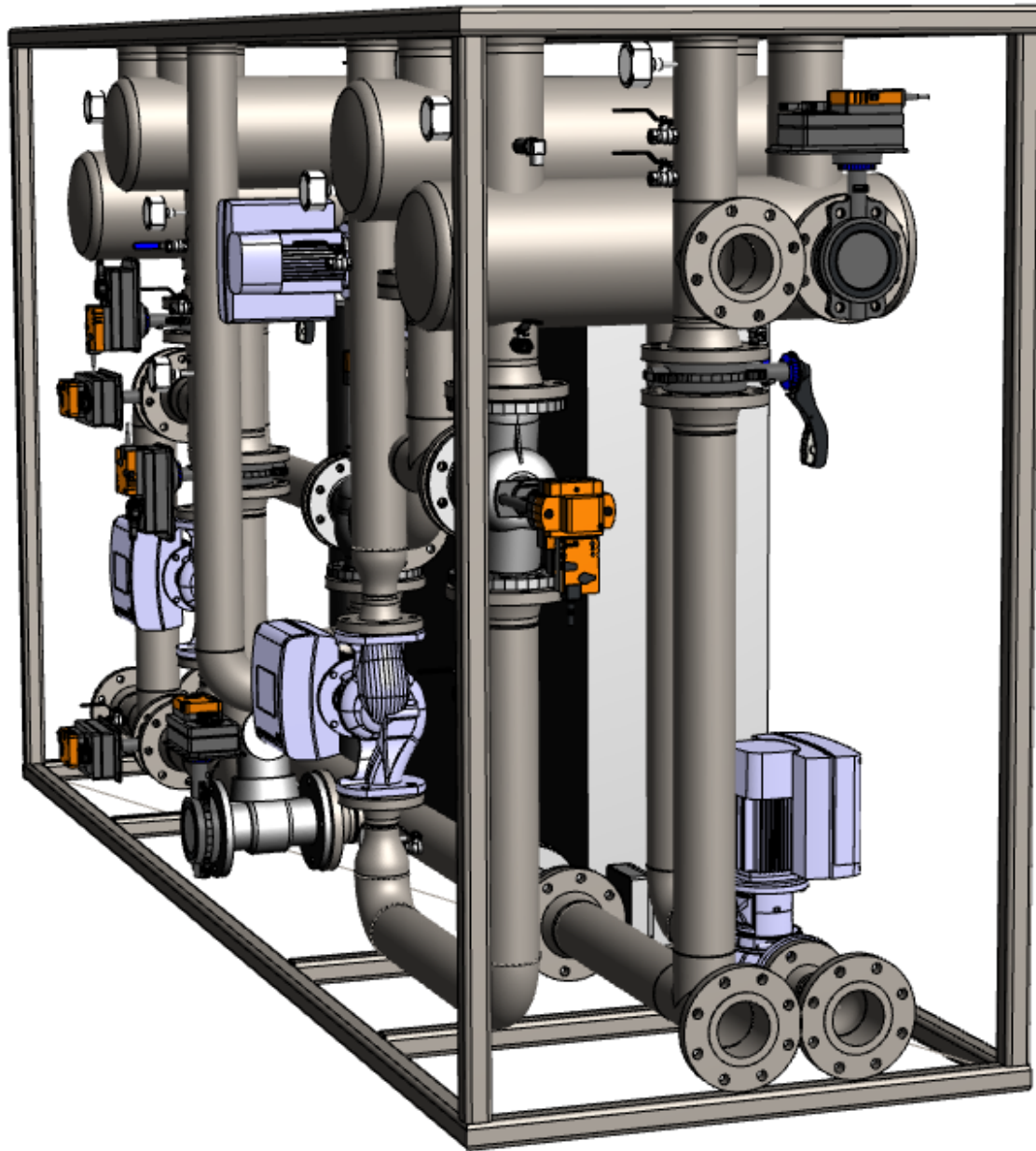






Ontwerp

- **Compacte technische installatie**
- **Werken on site beperken tot leidingwerk**
- **Toegankelijkheid componenten**

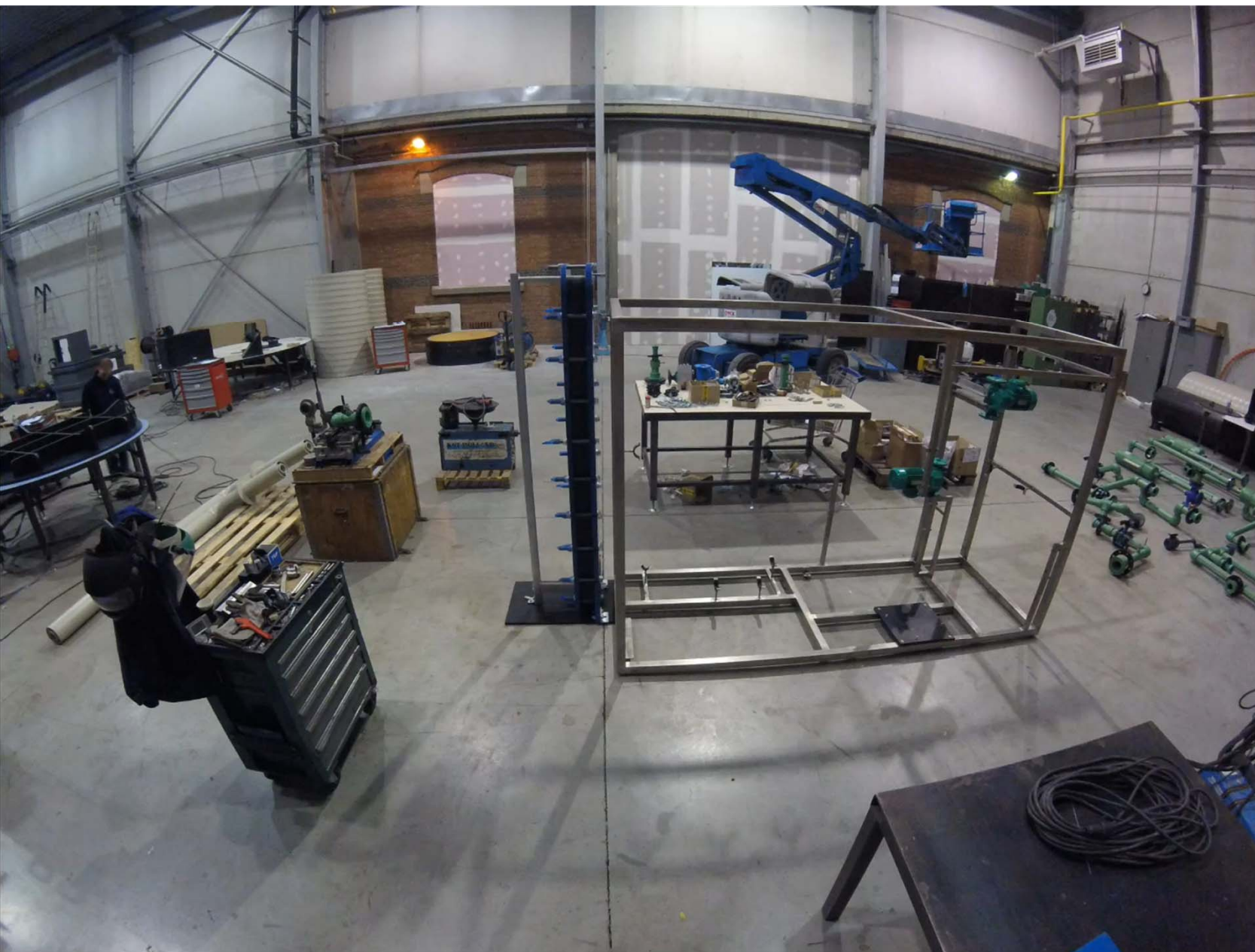


Ontwerp

- Componenten binnenbrengen in technische ruimte

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Atelier

- Ideale werkomstandigheden
- Efficiënt
- Eenvoudige communicatie
- Uitvoering testen

- **> 160 I/O-punten**
- **+/- 200 aders aan te sluiten**
- **Elke I/O dient getest te worden**
- **Pompen / automatische afsluiters / instrumenten dienen geconfigureerd te worden**



Sturing

- Prefabricatie leidt ertoe dat > 80% van de aansluitingen in het atelier kunnen aangesloten / getest worden
- Tijd voor commissioning kan met > 50% beperkt worden

1	1	1	2	A-02CP01	HPS	PumpEvaporator	Run	A-02CP01-S	3UX06	Digital in (1)	AS01-03-POL955	X6	
1	1	1	2	A-02HP01	HPS	Heatpump	Alarm	A-02HP01-A	3UX07	Digital in (1)	AS01-03-POL955	X7	
1	1	1	2	A-02EQ01	HPS	kWhConsumptionHP	Puls	A-02EQ01-Q	3UX08	Digital in (1)	AS01-03-POL955	X8	
1	1	0	2	A-02HP01	HPS	Heatpump	Control	A-02HP01-Y	3AO01	Analogue (0 - 10V)	AS01-03-POL955	Y1	
1	1	1	2	A-02CP02	HPS	PumpCondensor	Control	A-02CP02-Y	3AO02	Analogue (0 - 10V)	AS01-03-POL955	Y2	
									3DO01	Digital out	AS01-03-POL955	Q1	
									3DO02	Digital out	AS01-03-POL955	Q2	
									3DO03	Digital out	AS01-03-POL955	Q3	
									3DO04	Digital out	AS01-03-POL955	Q4	
				Heatpump									1
1	1	1	2	A-02HP01	HPS	HeatpumpCmp 1	Run	A-02CMP01-S	4DI01	Digital in (1)	AS01-04-POL945	X1	
1	1	1	2	A-02HP01	HPS	HeatpumpCmp 2	Run	A-02CMP02-S	4DI02	Digital in (1)	AS01-04-POL945	X2	
0	0	1	2	A-02HP01	HPS	HeatpumpCmp 3	Run	A-02CMP03-S	4DI03	Digital in (1)	AS01-04-POL945	X3	
0	0	1	2	A-02HP01	HPS	HeatpumpCmp 4	Run	A-02CMP04-S	4DI04	Digital in (1)	AS01-04-POL945	X4	
1	1	1	2	A-02HP01	HPS	Heatpump + Cmp 1	Off / On	A-02CMP01-R	4DO01	Digital out	AS01-04-POL945	Q1	
0	0	1	2	A-02HP01	HPS	HeatpumpCmp 2	Off / On	A-02CMP02-R	4DO02	Digital out	AS01-04-POL945	Q2	
0	0	1	2	A-02HP01	HPS	HeatpumpCmp 3	Off / On	A-02CMP03-R	4DO03	Digital out	AS01-04-POL945	Q3	
0	0	1	2	A-02HP01	HPS	HeatpumpCmp 4	Off / On	A-02CMP04-R	4DO04	Digital out	AS01-04-POL945	Q4	
				Heatpump circuit / cooling circuit									1
1	1	1	2	A-02CP02	HPS	PumpCondensor	Alarm	A-02CP02-A	5UX01	Digital in (1)	AS01-05-POL955	X1	
1	1	1	2	A-02CP02	HPS	PumpCondensor	Run	A-02CP02-S	5UX02	Digital in (1)	AS01-05-POL955	X2	
1	1	1	2	A-02RV02	HPS	RegValveCond	Control	A-02RV02-Y	5UX03	0-10V (10)	AS01-05-POL955	X3	
1	1	0	2	A-02RV03	HPS	RegValveCond	Control	A-02RV03-Y	5UX04	0-10V (10)	AS01-05-POL955	X4	
1	1	1	3	A-03CP01	HPS	PumpUnloading	Alarm	A-03CP01-A	5UX05	Digital in (1)	AS01-05-POL955	X5	
1	1	1	3	A-03CP01	HPS	PumpUnloading	Run	A-03CP01-S	5UX06	Digital in (1)	AS01-05-POL955	X6	
1	1	1	3	A-03CP02	HPS	PumpLoading	Alarm	A-03CP02-A	5UX07	Digital in (1)	AS01-05-POL955	X7	
1	1	1	3	A-03CP02	HPS	PumpLoading	Run	A-03CP02-S	5UX08	Digital in (1)	AS01-05-POL955	X8	
1	1	1	3	A-03CP01	HPS	PumpUnloading	Control	A-03CP01-Y	5AO01	Analogue (0 - 10V)	AS01-05-POL955	Y1	
1	1	1	3	A-03RV01	HPS	RegValveUnloading	Control	A-03RV01-Y	5AO02	Analogue (0 - 10V)	AS01-05-POL955	Y2	
0	0	1	2	A-02MV01	HPS	ValveEvaporator	Off / On	A-02MV01-R	5DO01	Digital out	AS01-05-POL955	Q1	
1	1	1	2	A-02CP01	HPS	PumpEvaporator	Release	A-02CP01-R	5DO02	Digital out	AS01-05-POL955	Q2	
1	1	1	2	A-02CP02	HPS	PumpCondensor	Release	A-02CP02-R	5DO03	Digital out	AS01-05-POL955	Q3	
									5DO04	Digital out	AS01-05-POL955	Q4	
				Cooling circuit									1
1	0	1	3	03PT01	General	SystemPressure	Measure	03PT01-M	6UX01	4-20mA(2)	AS01-06-POL955	X1	
1	0	1	3	03TT01	General	SupplyTemp	Measure	03TT01-M	6UX02	PT1000(5)	AS01-06-POL955	X2	
1	0	1	3	03TT02	General	ReturnTemp	Measure	03TT02-M	6UX03	PT1000(5)	AS01-06-POL955	X3	
1	1	1	3	A-03TT03	HPS	WaterTemp	Measure	A-03TT03-M	6UX04	PT1000(5)	AS01-06-POL955	X4	
1	1	1	3	A-03TT04	HPS	WaterTemp	Measure	A-03TT04-M	6UX05	PT1000(5)	AS01-06-POL955	X5	
1	0	1	3	03TT05	General	BufferTempHigh	Measure	03TT05-M	6UX06	PT1000(5)	AS01-06-POL955	X6	
1	0	1	3	03TT06	General	BufferTempMiddle	Measure	03TT06-M	6UX07	PT1000(5)	AS01-06-POL955	X7	
1	0	1	3	03TT07	General	BufferTempLow	Measure	03TT07-M	6UX08	PT1000(5)	AS01-06-POL955	X8	
1	1	1	3	A-03CP02	HPS	PumpLoading	Control	A-03CP02-Y	6AO01	Analogue (0 - 10V)	AS01-06-POL955	Y1	
1	1	1	3	A-03RV02	HPS	RegValveLoading	Control	A-03RV02-Y	6AO02	Analogue (0 - 10V)	AS01-06-POL955	Y2	
1	0	0	3	A-03MV01	HPS	MotorizedValve	Off / On	A-03MV01-R	6DO01	Digital out	AS01-06-POL955	Q1	
1	0	0	3	A-03MV02	HPS	MotorizedValve	Off / On	A-03MV02-R	6DO02	Digital out	AS01-06-POL955	Q2	
1	1	1	3	A-03CP01	HPS	PumpUnloading	Release	A-03CP01-R	6DO03	Digital out	AS01-06-POL955	Q3	
1	1	1	3	A-03CP02	HPS	PumpLoading	Release	A-03CP02-R	6DO04	Digital out	AS01-06-POL955	Q4	



Sturing

- Elektrische montage werken onder gecontroleerde omstandigheden
- Kortere kabellengtes



Klaar voor transport

- **Getest op dichtheid**
- **Componenten zijn gelabeld conform schema**
- **Software is geladen**
- **I/O-testen**
- **Functionele testen van pompen / automatische afsluiters / instrumentatie**
- **...**



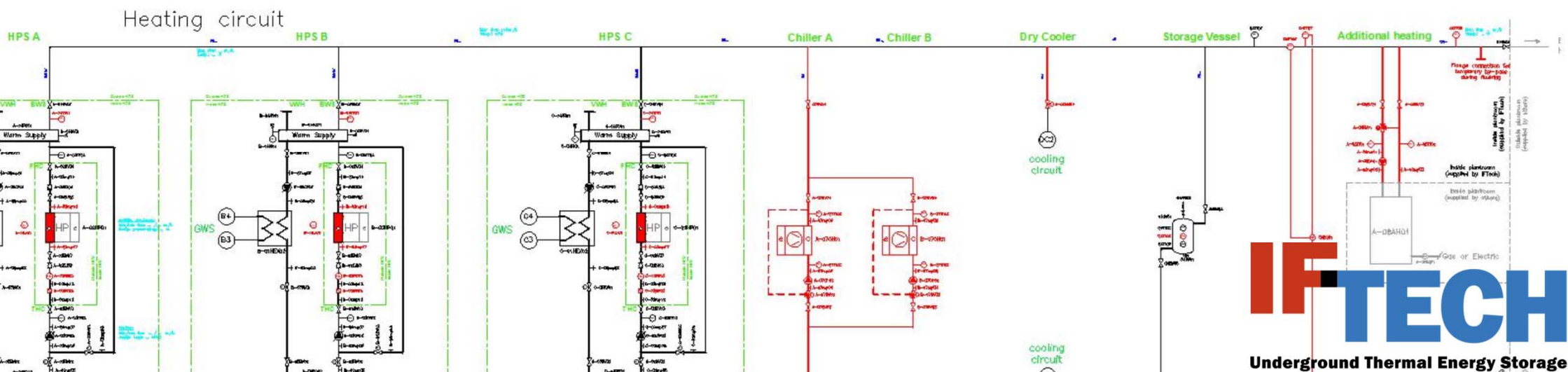
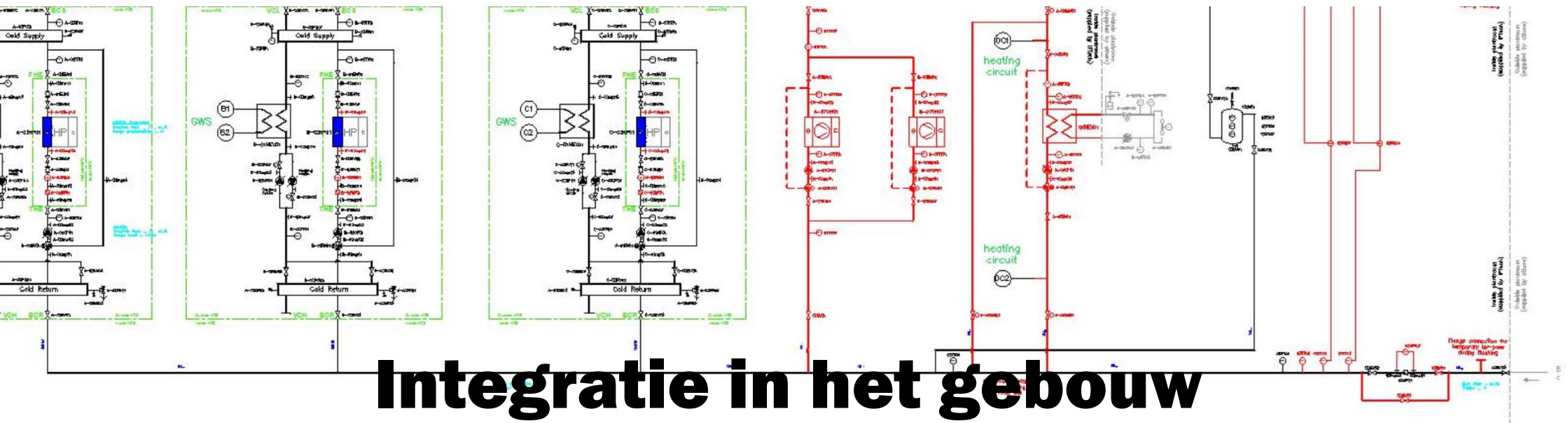
Werf

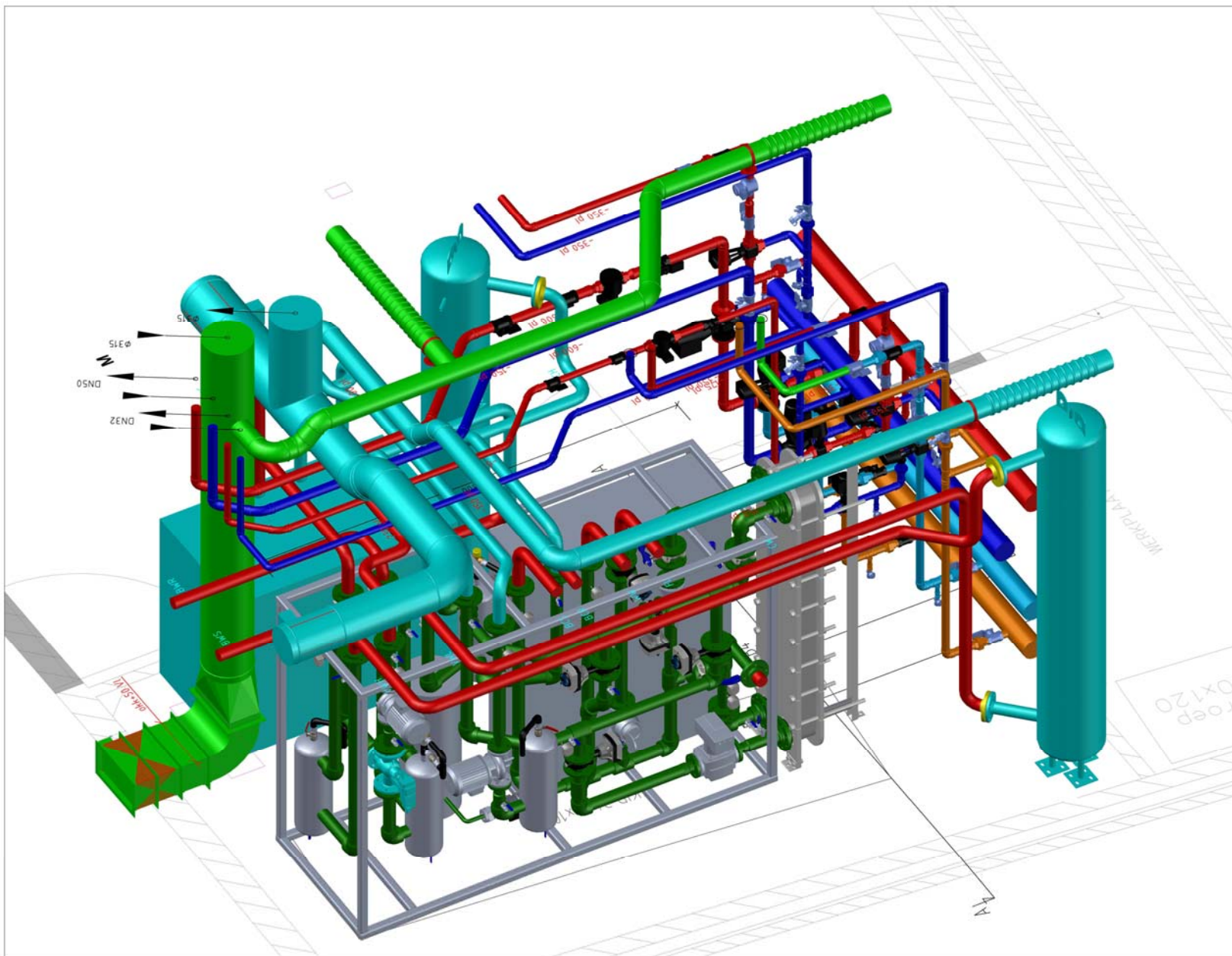
- **Minimale tijd op de werf**
- **Plug & Play**
- **Enkel nog eenvoudige werkzaamheden op de werf**



Werf

- **Internationaal**
- **Snelle opstart**
- **Opstart ingenieur kan focussen op in dienst name bronnen en warmtepomp**
- **Tijd op de werf kan gebruikt worden om specifieke parameters in te stellen**





Voorbereiding

- **Zeer compacte technische ruimte**
- **3D-ontwerp, rekening houdend met:**
 - **Leidingen derde partij**
 - **Toegankelijkheid**
 - **Isolatiwerkzaamheden**
 - **Openen stuurkast**
 - **Vervanging kritische componenten**
 - **Onderhoud**



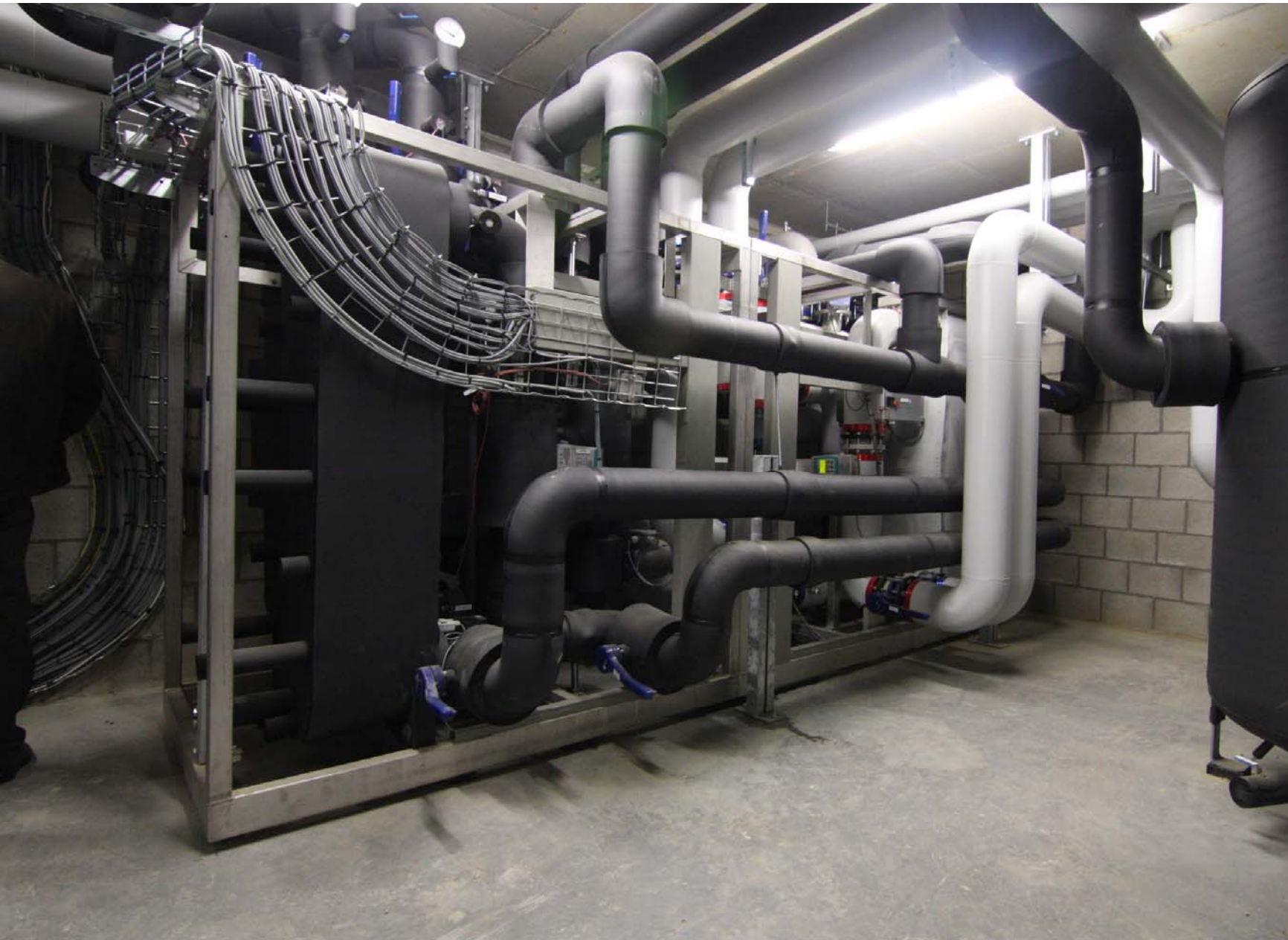
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Bedankt

