INVEST Zuschuss für Wagniskapital FÖRDERFÄHIG www.invest-wagniskapital.de

FACTOR4SOLUTIONS

BOOSTING EFFICIENCY IN COOLING SYSTEMS

START UP berlin

Our conductor for your cooling orchestra!

BPW #wirgründen Winner 2023

KLIMASCHUTZPARTNER BERLIN Preisträger Kategorie B 2024

Stefan Petersen
(CEO)

Who if not us – when, if not now!

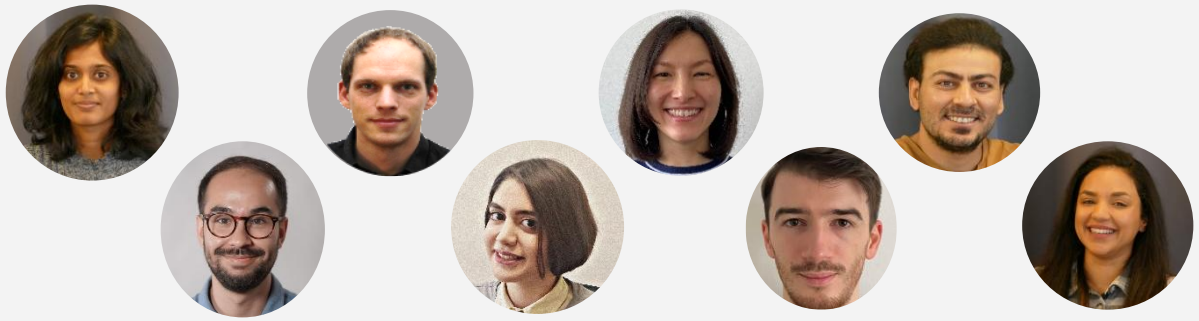
Who we are

Dipl.-Ing. Stefan Petersen
CEO & Sales
- 25a Team and Project management
- R&D hardware and concepts

Walther Hüls, M.Sc.
Produkt Architect
- 10a PLC Soft+Hardware
- 75 pilot installations

Dr.-Ing. Jan Albers
Knowledge Officer
- 25a R&D cooling technology
- model predictive control

- internationally awarded (IEA, 2021)
- members in normative design process (VDI / DIN)
- More than 200 publications



Our Story

Founders History:	> 25 years R&D chiller technology > 75 pilot installations of chillers ↑Uppsala (Sweden) – ↓ Petra (Jordan)
Dez. 2022:	who if not us
June 2023:	Founding F4S
July 2023: … 2024:	BPW I Climate Action Partner Award (Senate & Chamber of C., Berlin) Science & Start-Ups Award DENEFF, Audience Award
Dec. 2024:	first customer report on 42% electrical savings
Mar. 2025:	10 employees

Technical Cooling
(essential for modern life)





Beverage and
Food Industry

Stefan Petersen | Thessaloniki, 2025 | Factor4Solutions GmbH

Technical Cooling
(essential for modern life)

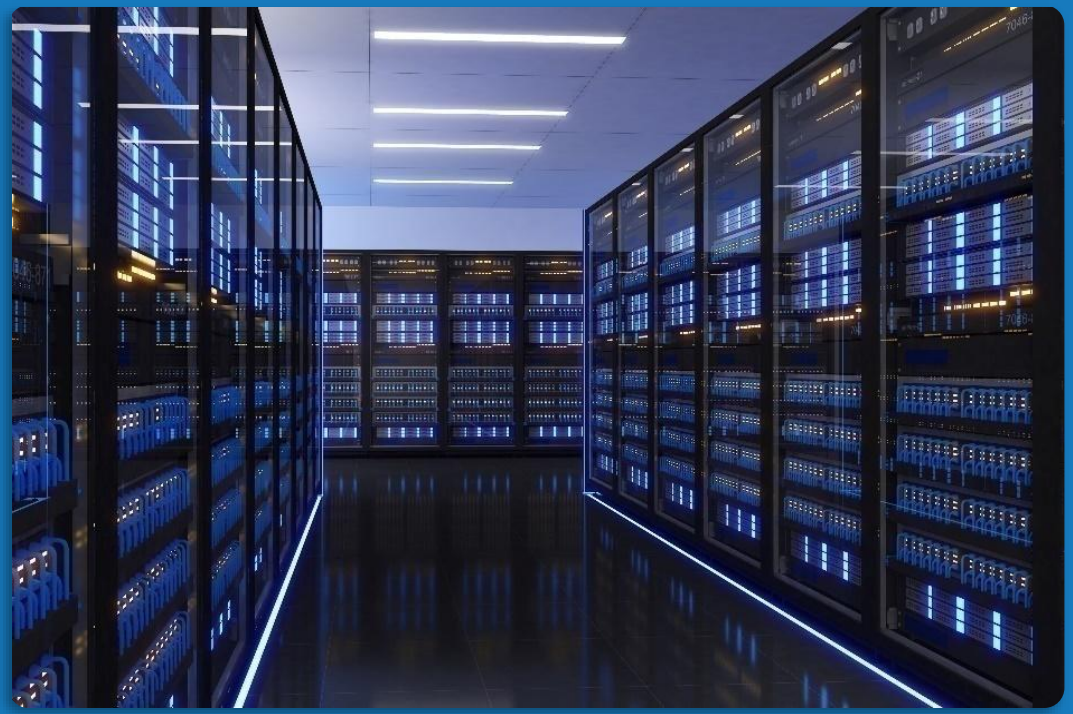




Hospitals

Technical Cooling
(essential for modern life)





Data Centers

Technical Cooling
(essential for modern life)





Venues & Fairs

Technical Cooling
(essential for modern life)

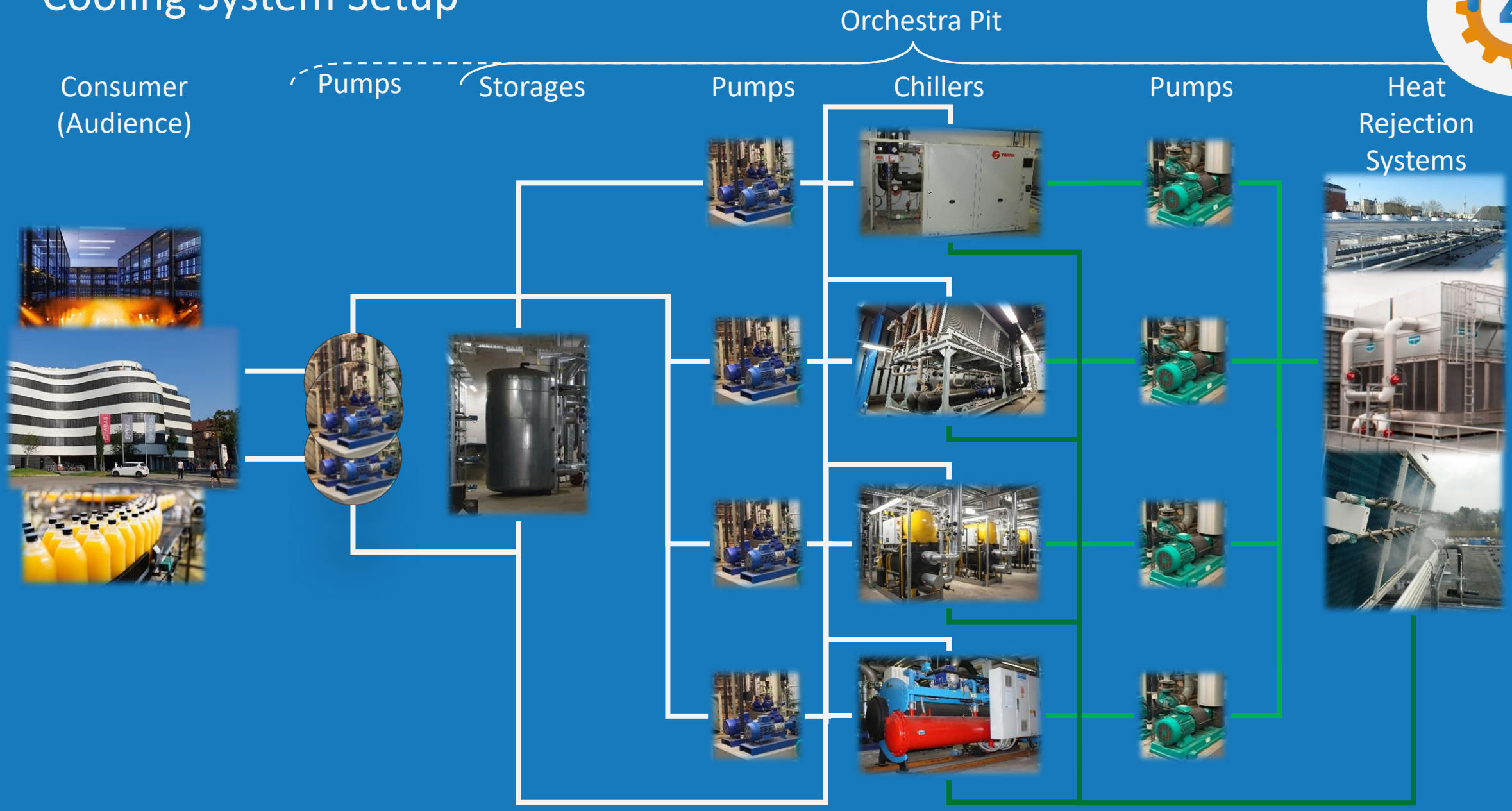




Climatization

Several technologies, several manufacturers, a fantastic amount of instruments to orchestrate

Cooling System Setup



What there is to learn from human teams for technology!

Intelligent Components

Pumps

- Δp
- Δt
- Const. Volume flow
- adaptive control

Nowadays most components contain intelligence:





but

does a component really now,
how it may support the other ?

Solution

Realtime, AI supported simulation based on digital twins

- situative and
- holistic

Component oriented optimal operation was yesterday – it´s TEAmTIME.

≈40%
less
electricity

(less CO_2, less PE,
less costy, …)

20 years of experience in hardware development =>

Pilot Projects

„next level“ system management by F4S

	Venue Center	Mixed used Buildings	Offices	Data Center	Production	Hospitals
Application						
Inst. capacity (nominal)	240 kW	1200 kW	900 kW	80 kW	60 kW	2100 kW
Chillers	 	 	  		 	  
Savings (annual, (el. Energy)	55%	42%*	46%**	52%	60%	>45%**

* 5 month of operation in 2024

**potential analysis result, based on real operation reference data

The digital conductor is simoultainously assistent, copilot, analyst, ….

One Solution, several Advantages

Operational Assistent

- Visualization
- Transparency
- Efforts and Savings

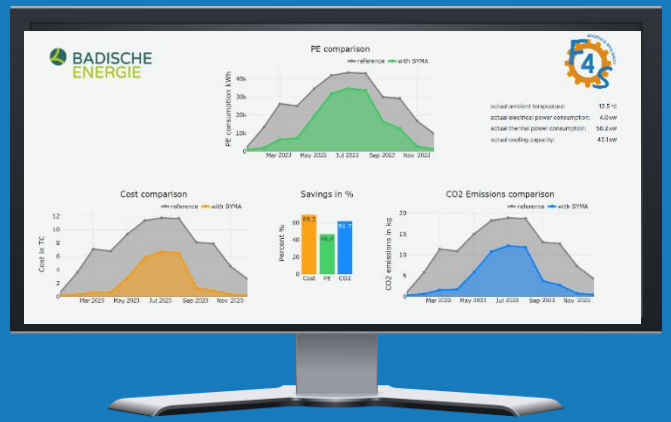
Facilitator O&M

- predicitve maintanence analytics
- Intelligent fallback measures in case of component-level failure

Co – Pilot / Navigator

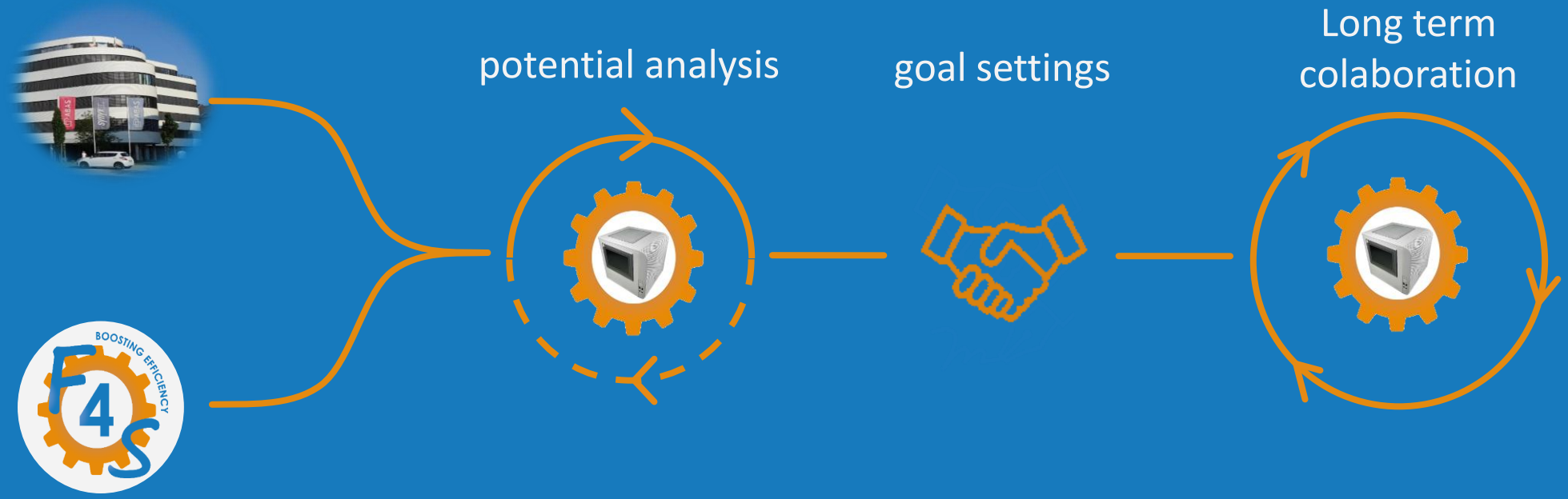
- fully automatised
- adjustable goals
- user interface for manual control
- First-Level-Helpdesk

Sustainability and Effort Reporting



- CSRD
- ESG
- ….

Your travel towards energy efficient system control



Calculation of ROI





Consumer	
Annual Load	5 GWh/a
VC-Chiller Efficiency	3.5 kWh_C / kWh_{el}
Price for Electricity	0.12 € / kWh_{el}

Results	
System Efficiency	2.0 kWh_C / kWh_{el}
Electricity Costs for Cooling	0.06 € / kWh_C
	300 k€/a
Potential of Savings (33%)	100 k€/a

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Initial costs (Potential Analysis + Installation)	80 T€
Subsidies (, …)	30%
F4S Share	0.007 € / kWh_C
	35 T€

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ROI	1,2 years (- subsidies)
CO_2 Reduktion Betriebs-Assistenz Reporting etc.	780 t/a xx T€ xx T€

Traction (2024)

Membership

In close contact with

7 AFFORDABLE AND CLEAN ENERGY

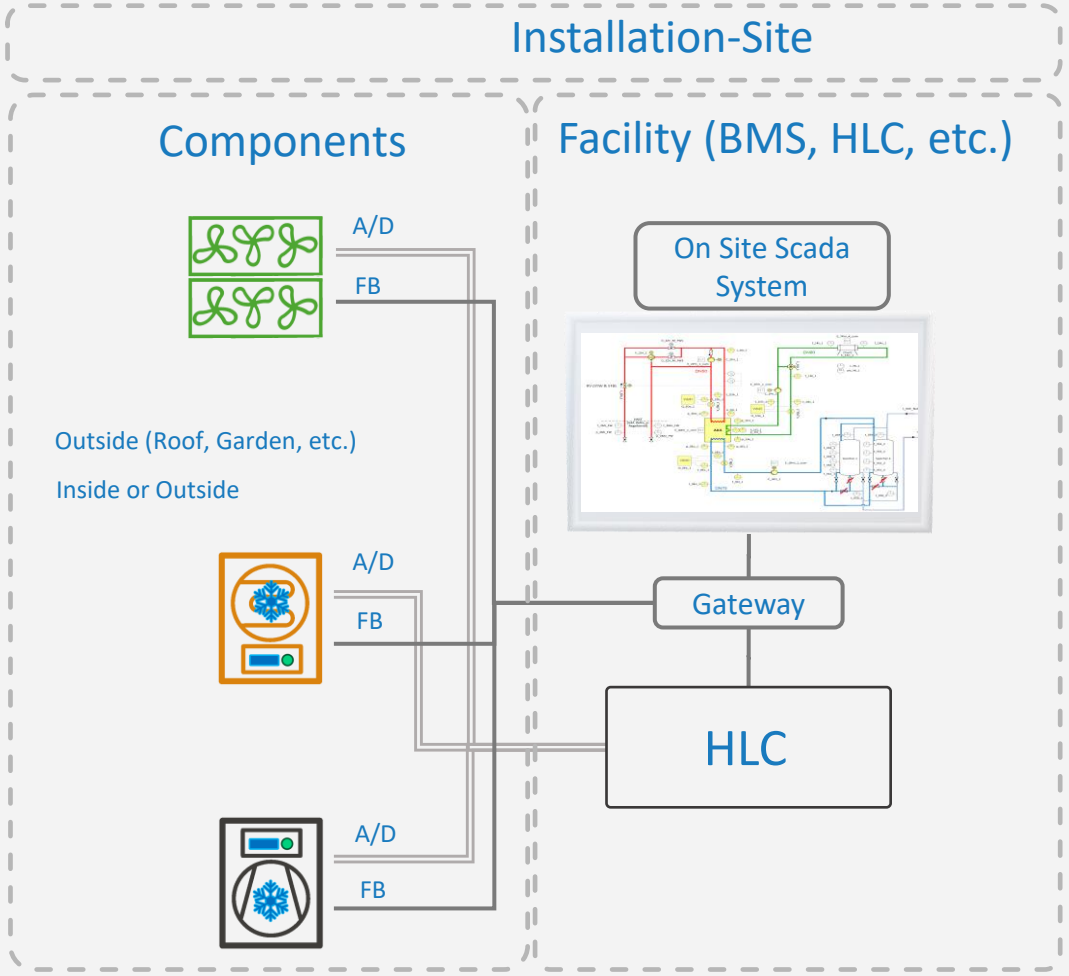
BOOSTING EFFICIENCY

F4S

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

Customers System (CoS)



While approaching to new customers we mostly discover systems existing out of several chillers, reject heat device, pumps, etc. controlled by a “Higher Level Control” (HLC), Maybe visualized by any kind of scada-system or similar.

Can you imagine how easy our **Sy**(stem) **Ma**(nagement) can be integrated…

Glimpse on F4S System Manager logical Integration

CoS + SyMa + Realtime Support