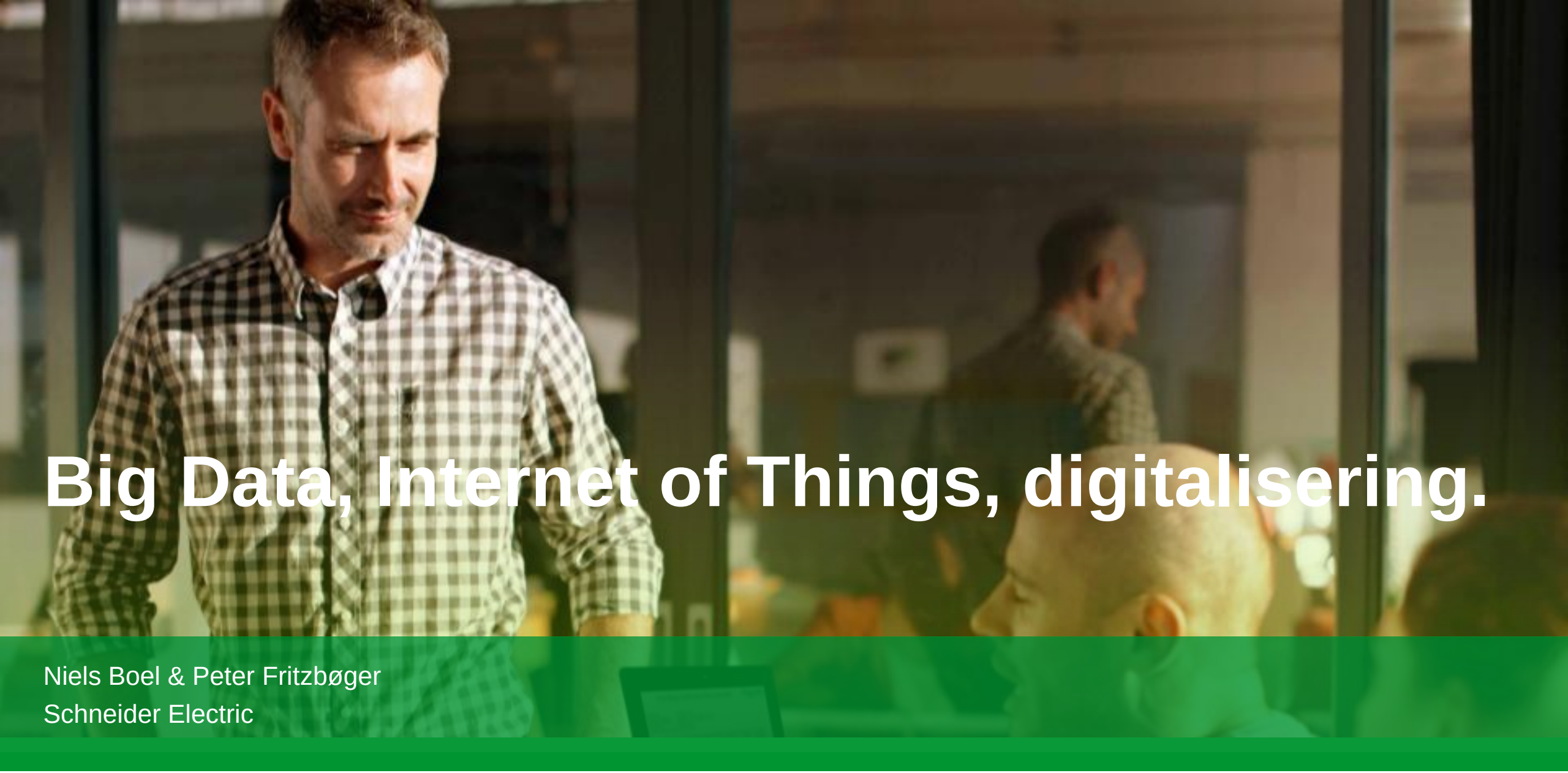


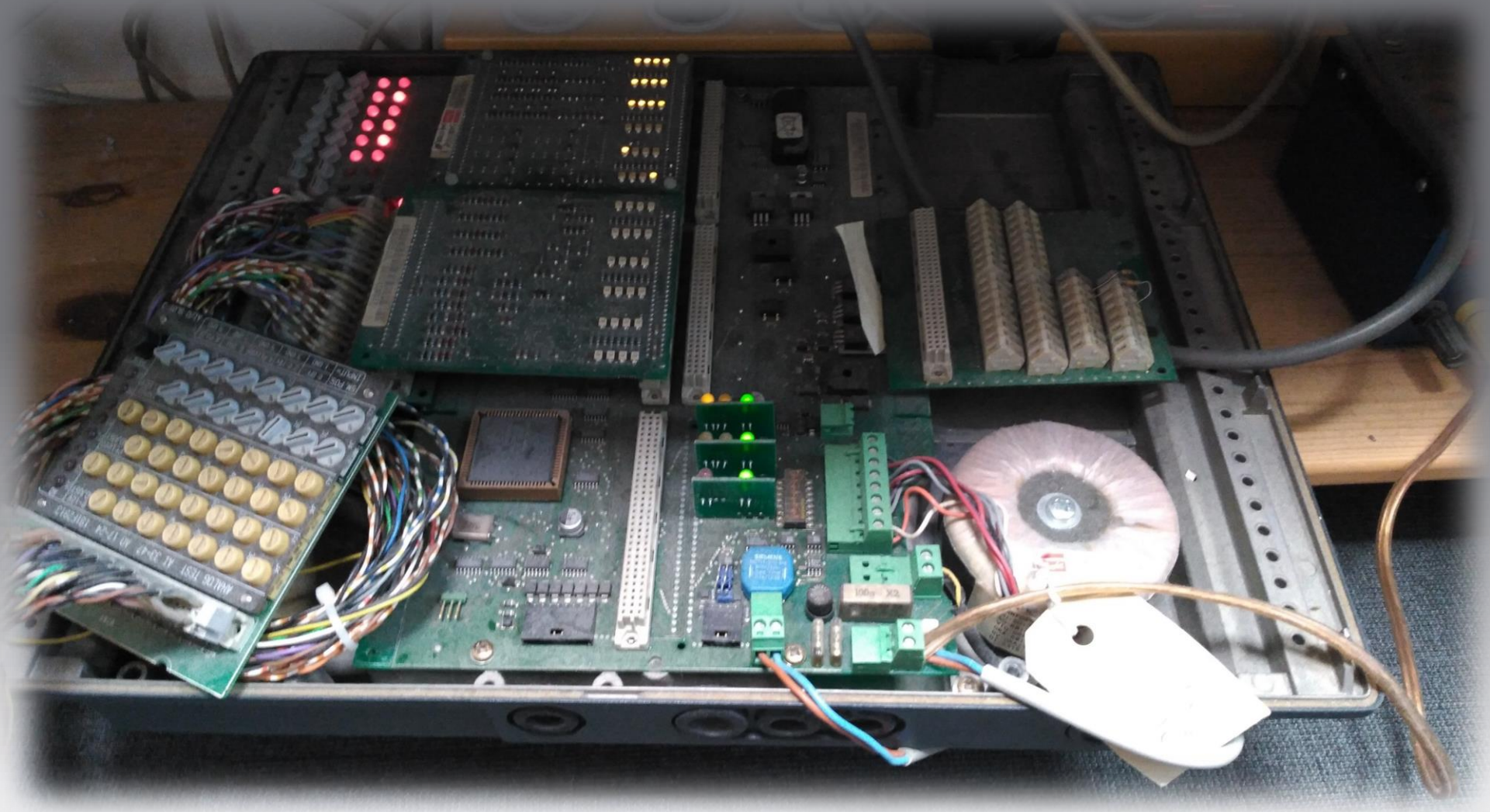
Big Data, Internet of Things, digitalisering.

Niels Boel & Peter Fritzbøger
Schneider Electric

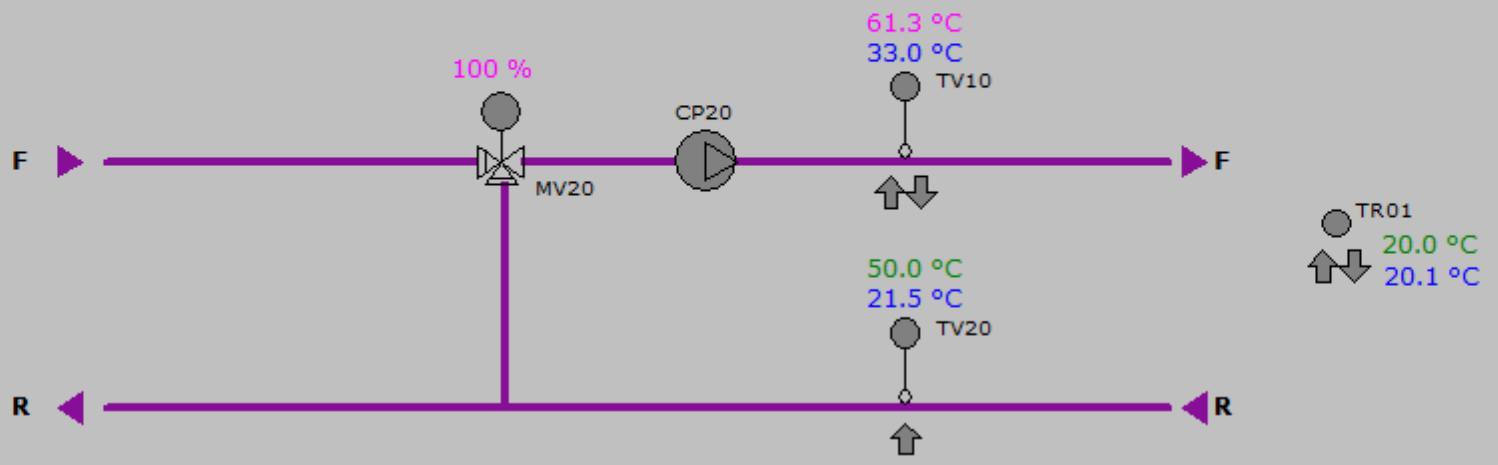
Confidential Property of Schneider Electric

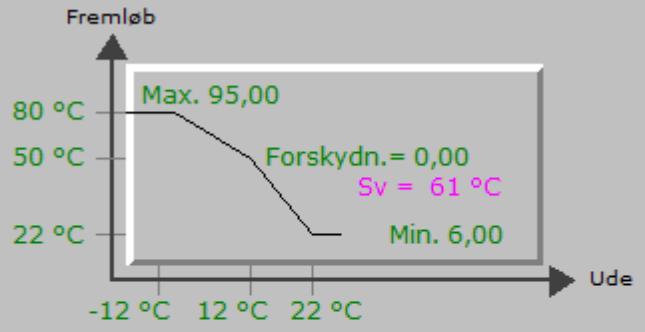
Life Is On Schneider Electric

I de gode gamle dage!



Oversigt



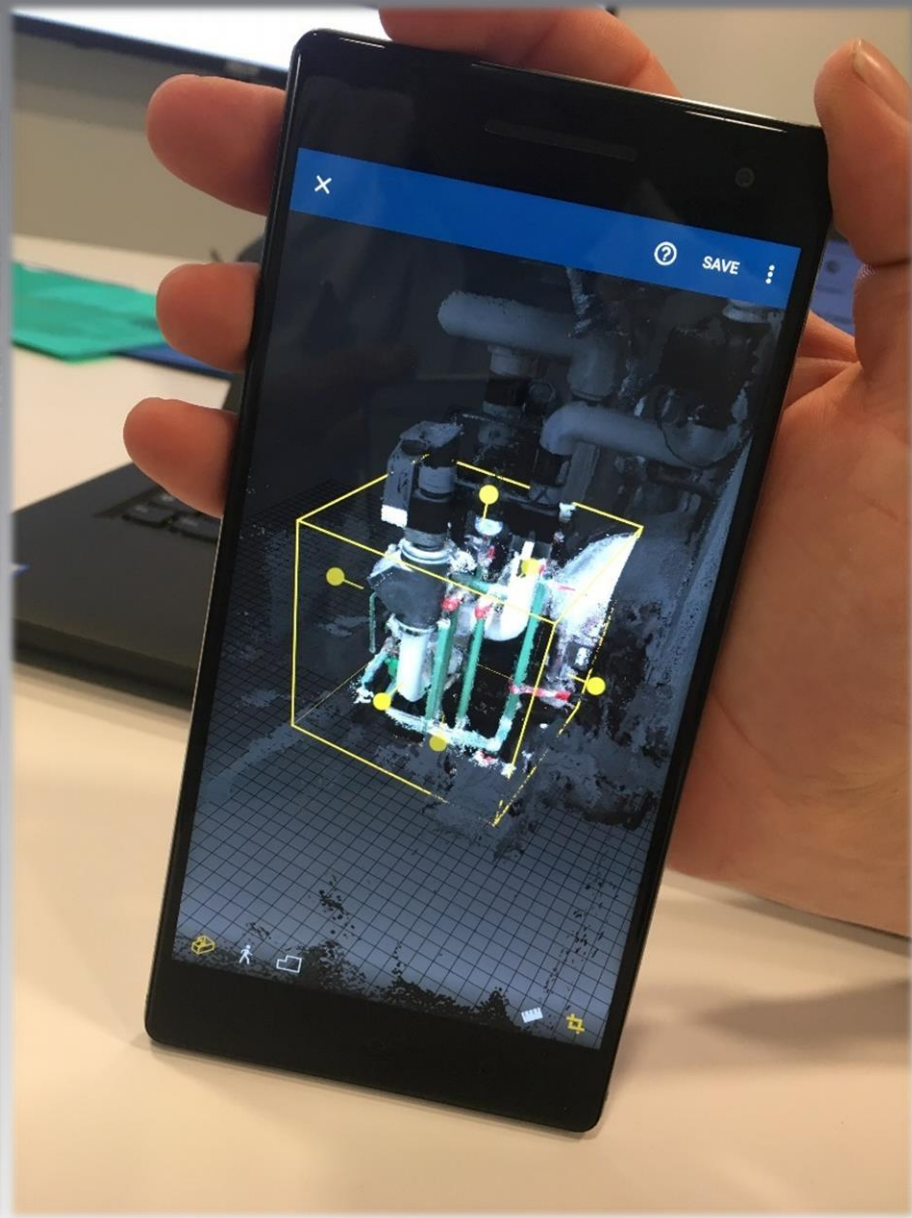


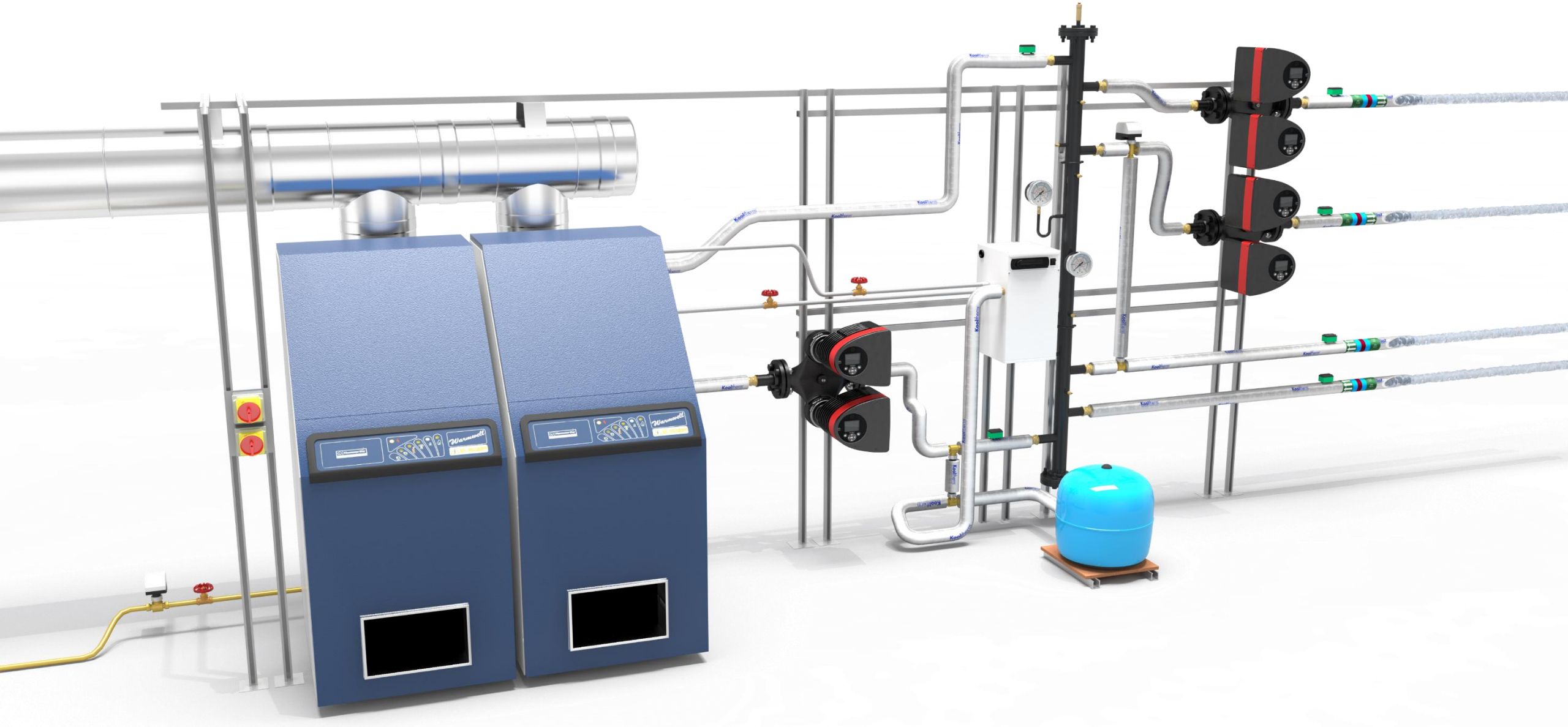
ENERGI-STOP
Ved ønsket fremløb under 25 °C

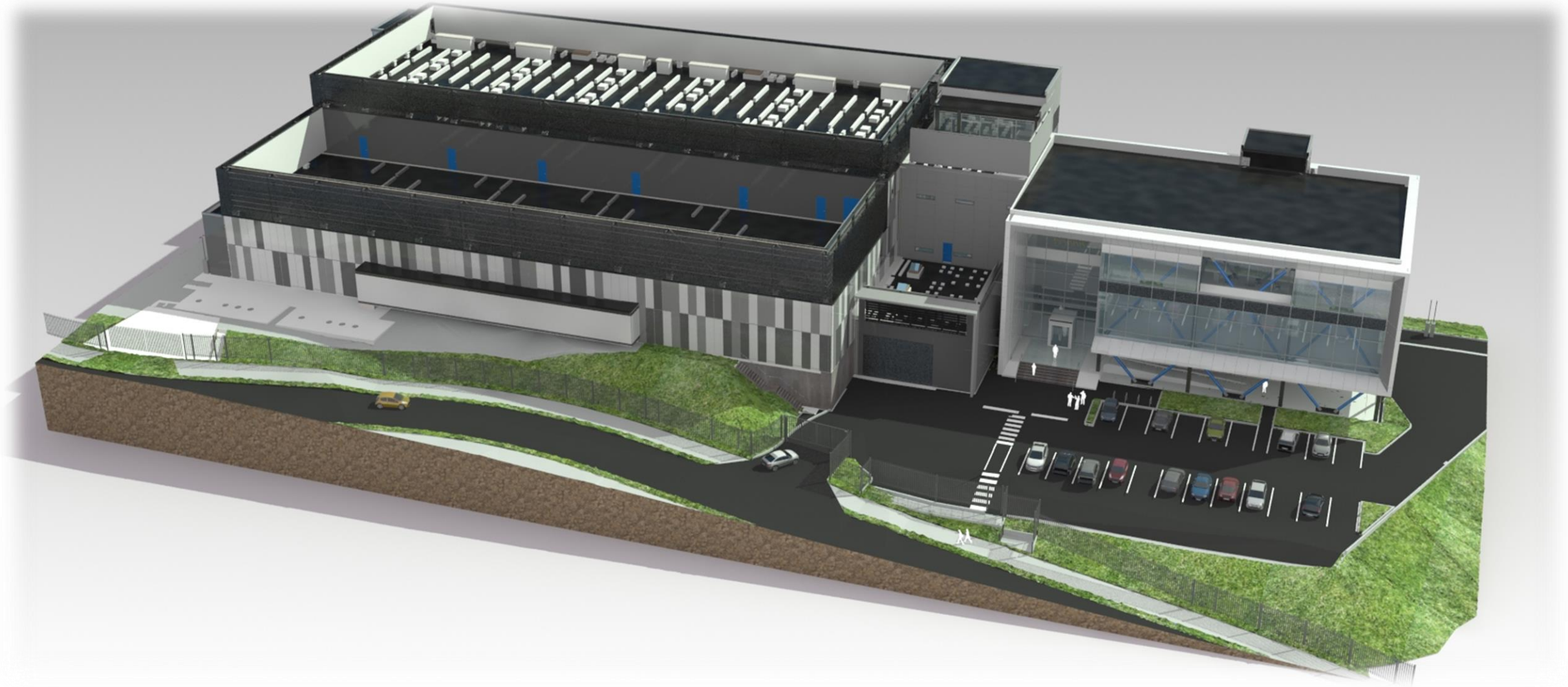
DAG DRIFT

M100 til OPC demo
BLANDEANLÆG SYD

Udetemp. 3 °C
28-02-2017 14:13:30
t.a.c

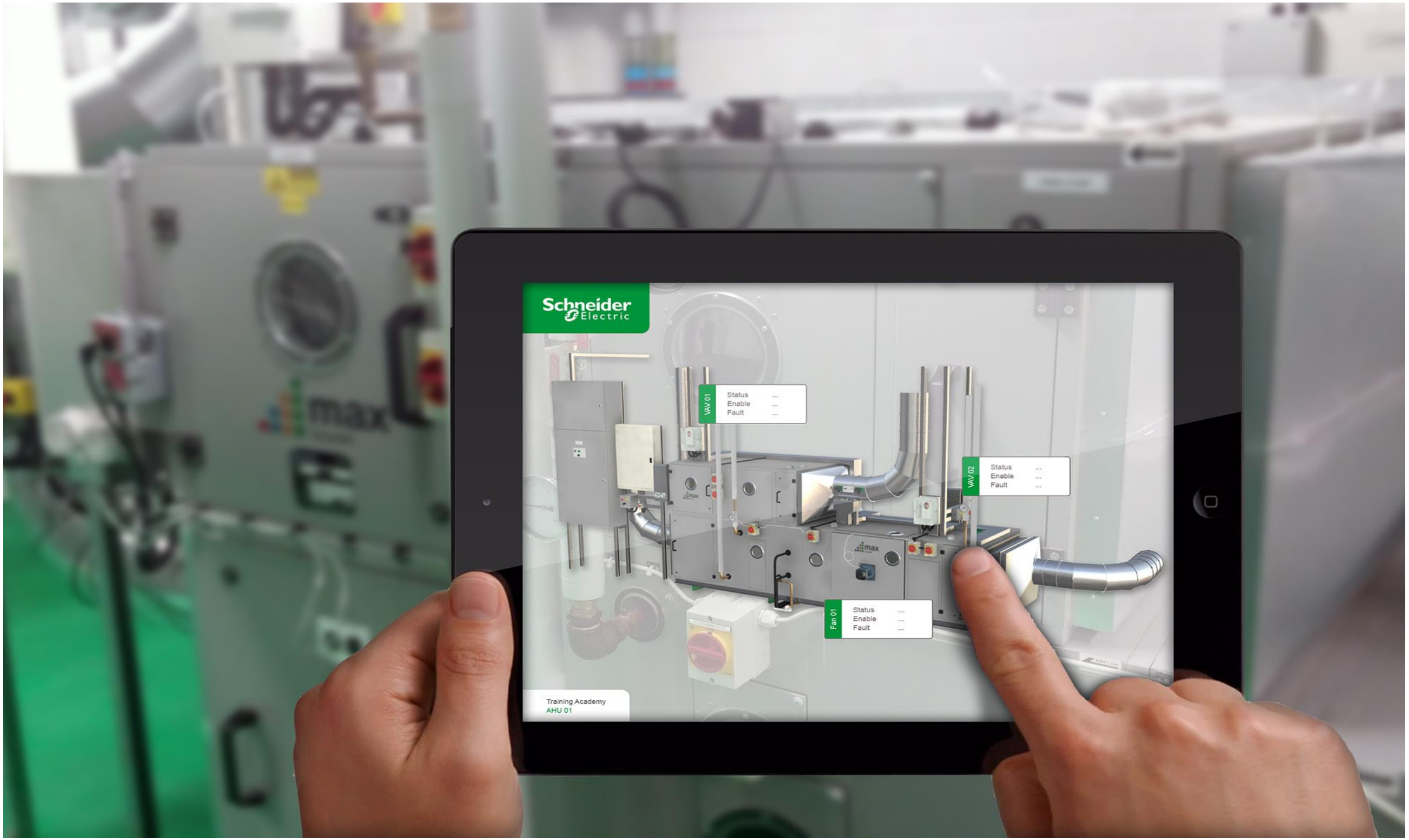

SAVE



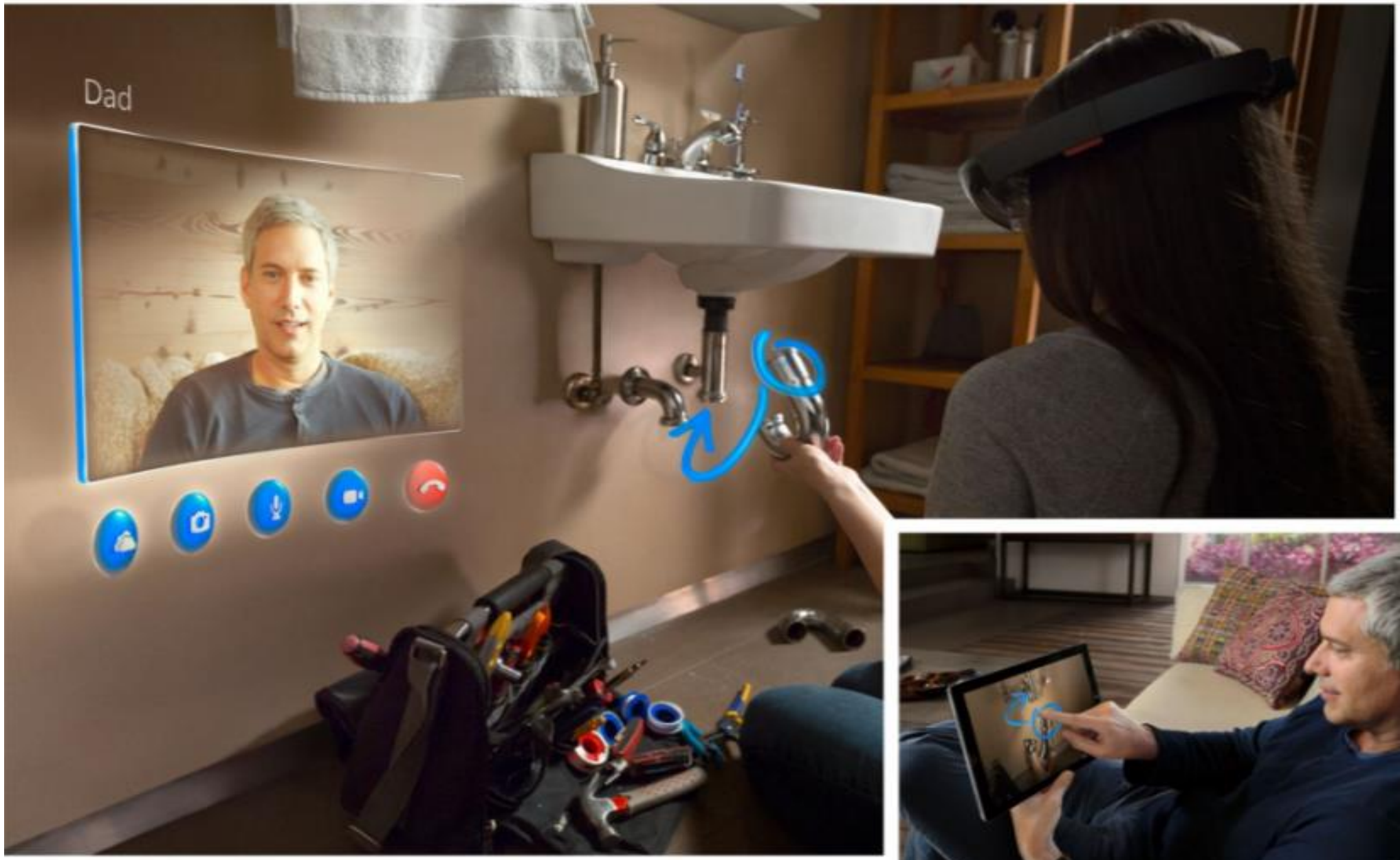


Schneider Electric
Life Is On
Schneider Electric

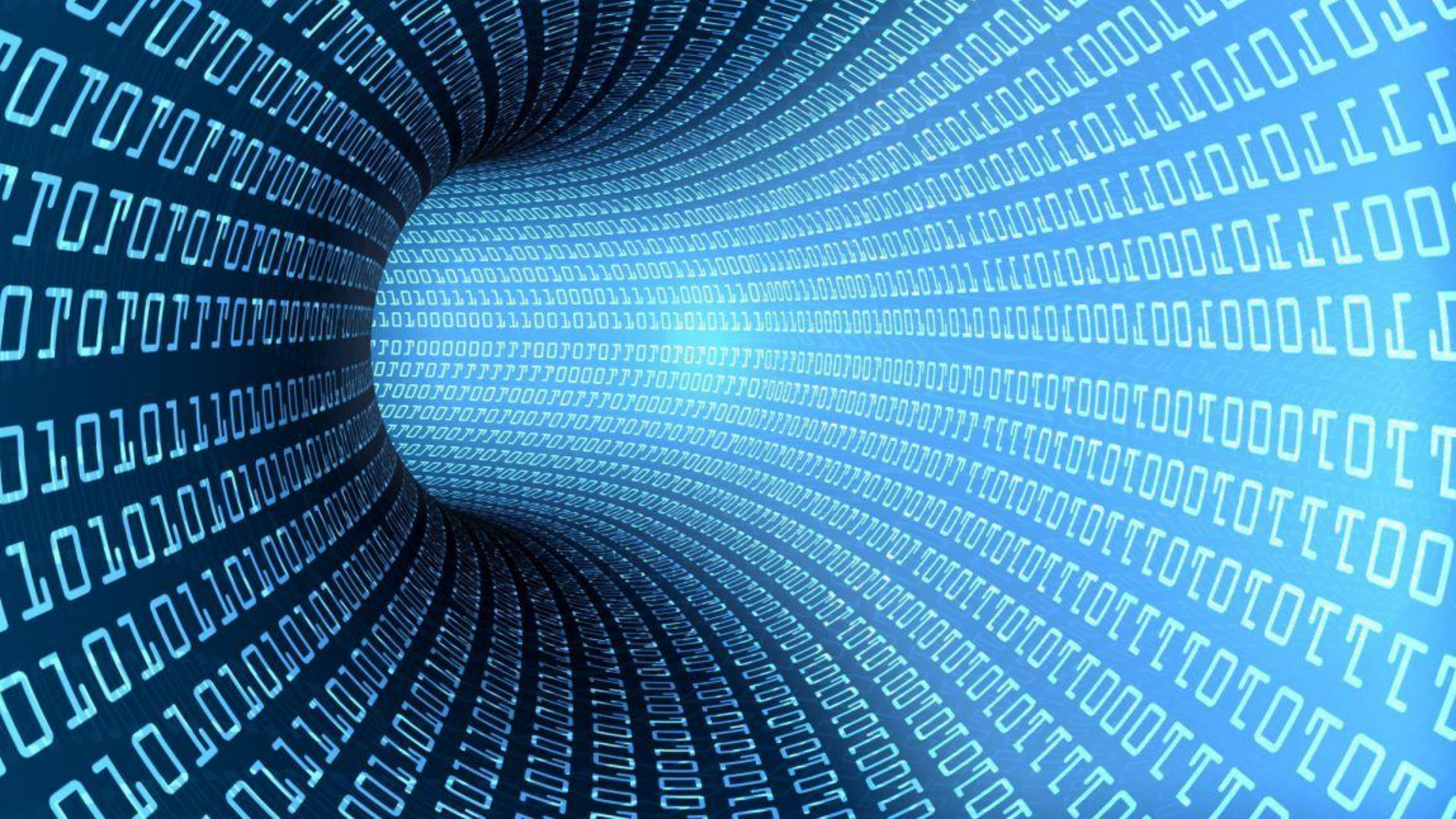
Schneider Electric
Home
Comfort
Lighting
TV
24.0 °C
FAN SPEED
−
+
°C / °F
OFF
Room Temperature
23.5 °C
Room Humidity
50 %


Schneider Electric
VAV 01
Status ...
Enable ...
Fault ...
VAV 02
Status ...
Enable ...
Fault ...
Fan 01
Status ...
Enable ...
Fault ...
Training Academy
AHU 01

HAWAII
New Post
Hotel Beach
Hawaiian Flowers
NETFLIX
ORBUS
onsight


Dad

Schneider RTLS - Real time location systems

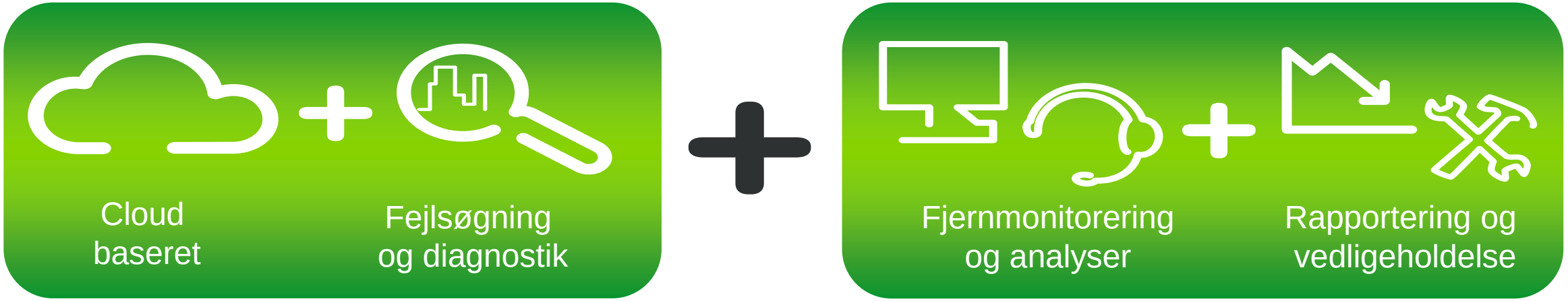


Emergency
Main Entrance
South Garage

Building Advisor

En serviceydelse, der leverer ...

> Prioriterede anbefalinger om anlægsoptimering
> Ekspertvejledning med brugbar information
> Resultater, der forbedrer bygningens komfort, energi og økonomi
> Baseret på statistisk analyse, ekspertgennemgange, historiske data og diagnostik



Software **Service**

Supplerer eksisterende bygningsautomatiksystem

Bygningsautomatiksystem

> Integrerer bygningssystemer
> Reagerer på aktuelle tilstande
> Udfører planlagte styreopgaver
> Underretter om uoverensstemmelser og overskridelser af alarmgrænser

Perfekt til drift og vedligeholdelse
Støtter den daglige bygningsdrift

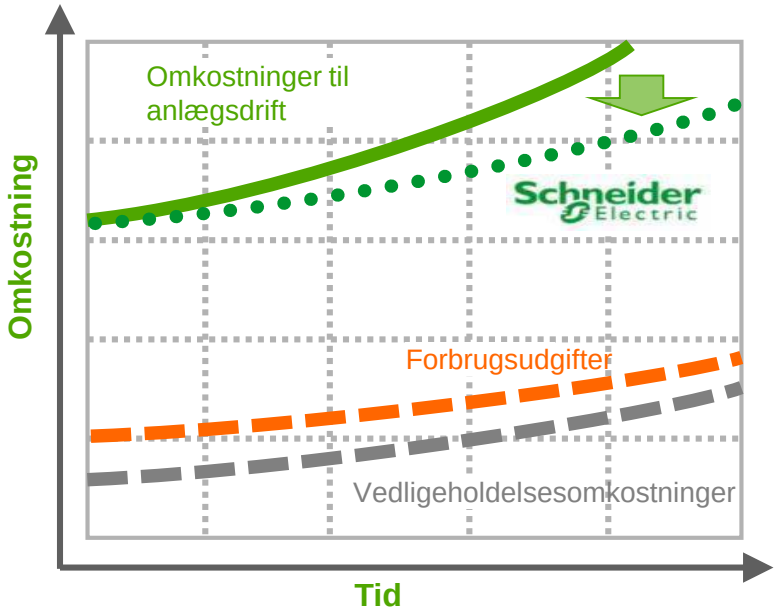
Building Advisor

> Tilføjer dataanalyse i driften
> Udpeger årsagen for tilbagevendende energi spild
> Prioriterer problemerne baseret på investeringsafkast
> Løbende support fra erfarne energi eksperter

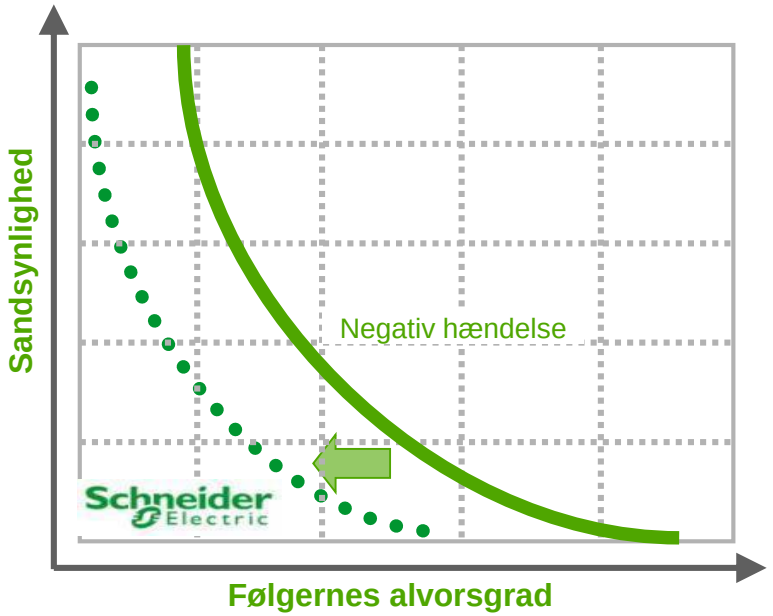
Perfekt til planlægning
Udpeger de primære energi-, vedligeholdelses- og komfortprioriteter (C+E+M), som kan maksimere ressourcer til drift og vedligeholdelse

Muligheder med Building Advisor

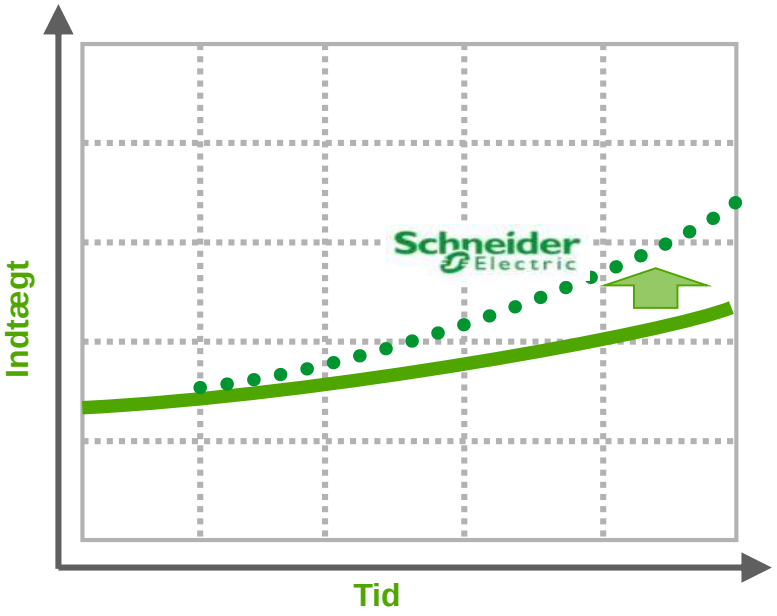
Sænke omkostningerne



Mindske risiciene



Øge værdien



Daglige udfordringer

- Optimal komfort for de tilstedeværende
- Komplicerede bygningssystemer
- Mangel på uddannelse af personale og operatører
- Minimale budgetter
- Ikke alle bygninger og systemer fungerer som de kunne.
- Behov for beslutninger på grundlag af investeringsafkast

Behov for brugbar information – ikke bare en masse bygningsdata ...

Fortroligt - tilhører Schneider Electric

Hvad finder løsningen?

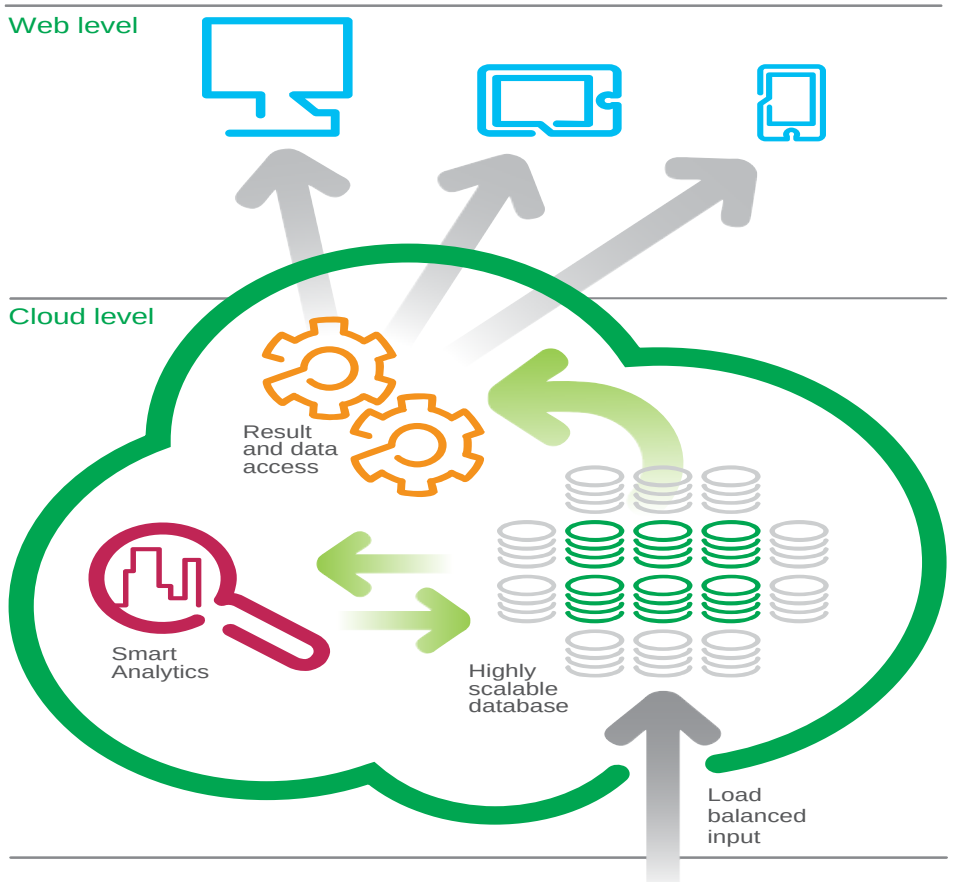
Ser på det enkelte udstyr og hele systemer for at udpege fejl og forbedringsmuligheder

Eksempler på fund ...

- *Samtidig opvarmning og afkøling*
- *Manuel overstyring*
- *"forkert" indstillet tidsprogrammer*
- *Mangelfuld styring af tilstedeværelse*
- *Utætte ventiler, defekte spjæld*
- *For høj temperaturindstilling i zoner*
- *Tendenser for køleeffektivitet*
- *Short cycling*
- *Mulighed for højere/lavere loop-indstillinger*
- *Mulighed for nulstilling af statisk tryk*
- *Suboptimal styring af economizer*
- *Gentagne alarmer* ***NYHED!***
- *Varighed af alarmer* ***NYHED!***

- *+ Skræddersyede analyser*

Systemarkitektur



Data fra bygningsautomatiksystemer
Schneider Electric og andre BMS/CTS leverandører

Kundetilpasset rapportering

Kend ÅRSAGEN og dens følger:

- **Ekspertvurdering – Undgåelige omkostninger, samlede besparelser og analytiske bemærkninger om problemer ved bygningens drift**

- **Tendensoversigt - Omkostningsreduktion plus komfort, energi og vedligeholdelse (C+E+M)**

Building Analytics
Quarterly Report
Anon Customer

For the period of:
October 20, 2012–
January 20, 2013

Avoidable Energy Cost
$33,265
Total This Period
$5,201
Decrease Since Last Period

- Much of the avoidable cost decrease may be attributed to fixing the cooling coil leak on AHU 1 (October 10, 2012). It is possible the actual savings are greater, since we are in heating season this quarter, and the building is not calling for much cooling (making a potential leak more detrimental).
- The current most costly equipment faults are possible leaking cooling valves on AHU 11, 6, 5, and 4. These issues are being flagged because the supply air temperature is as much as 25°F lower than the mixed air temperature while the cooling coil is off. On AHU 4 and 5, this is also creating comfort issues, since the supply air temp is too low.
- There are quite a few CAV boxes that have different chronic control probelms. CAV8_2 has a temperature setpoint of nearly 80°F. The room temperature is over 70°F and struggling to increase. The reheat valve is constantly open, probably indicating excessive reheat, and the supply air flow is higher than setpoint. Alternately, CAV3_5 and CAV2_26 are serving an overheated space with closed reheat valves, and wide open dampers. However, air flow is lower than setpoint. There are other CAV with problems, but these are the most severe and frequent.
- AHU 10 and 11 are struggling to meet static pressure setpoint. This is causing the fan VFDs to remain at 100% continuously. It may be worth checking the air flow balance of the affected AHU/CAV systems.

Period Trend Summary

Energy –
Daily avoidable energy costs average $378/day.

Maintenance –
Priority unchanged;
289 total daily incidents.

Comfort –
Priority unchanged;
267 total daily incidents.

Facility At A Glance

Customer: Anon Customer
Building name: Anon Hospital
Location: Mytown, FL 00000
Building type: Hospital
Year Built: 2008
Number of buildings: 1
Total square footage: 170,800 sq. ft.

Prepared By:

Joe Partner – Partner Co.
555 Main St, Anytown, MA 00000
(555) 555-5555
joe@partnerco.com

Make the most of your energy℠

Schneider Electric

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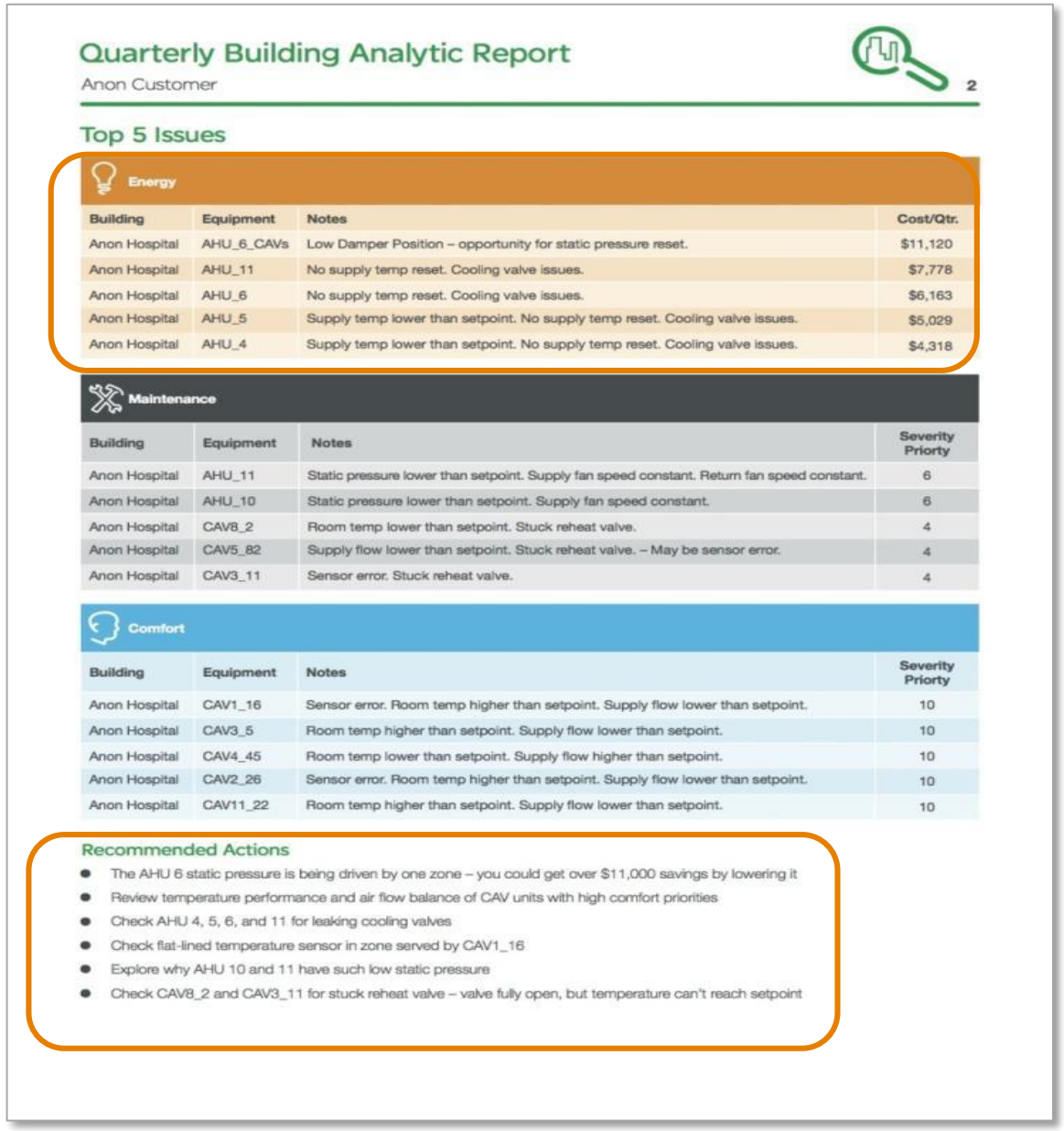
Kundetilpasset rapportering

Kend ÅRSAGEN og dens følger:

- **Top 5-problemer –**
  Prioriterede C+E+M-problemer med omkostninger eller alvorlighedsgrad

- **Anbefalede tiltag –**
  Hitliste med klare anbefalinger



Quarterly Building Analytic Report

Anon Customer

2

Top 5 Issues

Energy

Building	Equipment	Notes	Cost/Qtr.
Anon Hospital	AHU_6_CAVs	Low Damper Position – opportunity for static pressure reset.	$11,120
Anon Hospital	AHU_11	No supply temp reset. Cooling valve issues.	$7,778
Anon Hospital	AHU_6	No supply temp reset. Cooling valve issues.	$6,163
Anon Hospital	AHU_5	Supply temp lower than setpoint. No supply temp reset. Cooling valve issues.	$5,029
Anon Hospital	AHU_4	Supply temp lower than setpoint. No supply temp reset. Cooling valve issues.	$4,318

Maintenance

Building	Equipment	Notes	Severity Priorty
Anon Hospital	AHU_11	Static pressure lower than setpoint. Supply fan speed constant. Return fan speed constant.	6
Anon Hospital	AHU_10	Static pressure lower than setpoint. Supply fan speed constant.	6
Anon Hospital	CAV8_2	Room temp lower than setpoint. Stuck reheat valve.	4
Anon Hospital	CAV5_82	Supply flow lower than setpoint. Stuck reheat valve. – May be sensor error.	4
Anon Hospital	CAV3_11	Sensor error. Stuck reheat valve.	4

Comfort

Building	Equipment	Notes	Severity Priorty
Anon Hospital	CAV1_16	Sensor error. Room temp higher than setpoint. Supply flow lower than setpoint.	10
Anon Hospital	CAV3_5	Room temp higher than setpoint. Supply flow lower than setpoint.	10
Anon Hospital	CAV4_45	Room temp lower than setpoint. Supply flow higher than setpoint.	10
Anon Hospital	CAV2_26	Sensor error. Room temp higher than setpoint. Supply flow lower than setpoint.	10
Anon Hospital	CAV11_22	Room temp higher than setpoint. Supply flow lower than setpoint.	10

Recommended Actions

- The AHU 6 static pressure is being driven by one zone – you could get over $11,000 savings by lowering it
- Review temperature performance and air flow balance of CAV units with high comfort priorities
- Check AHU 4, 5, 6, and 11 for leaking cooling valves
- Check flat-lined temperature sensor in zone served by CAV1_16
- Explore why AHU 10 and 11 have such low static pressure
- Check CAV8_2 and CAV3_11 for stuck reheat valve – valve fully open, but temperature can't reach setpoint

Life Is On