Tværgående bygningsautomatik

Københavns Universitet

Energiforum 27/3, 2025.

Henrik Clausen, Heptagon.

Strategi for tværgående bygningsautomation:

"Vi ønsker at indføre en overliggende platform på tværs af alle tekninske installationer i vores bygninger, som forbedrer og forenkler mulighederne for: Rapportering, Analyser samt Energi og Drifts-optimering på tværs af alle bygninger.

Platformen skal være åben og baseret på åbne standarder

Formålet er ikke at udskifte eksisterende udstyr"

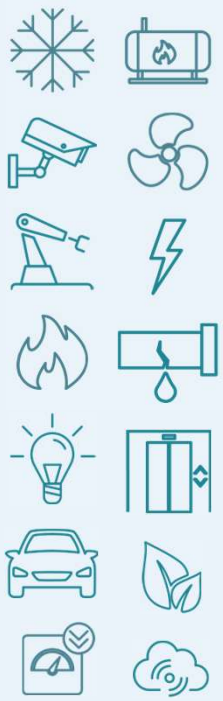
- Få opbakning i ledelsen
- Eksisterende leverandører inviteres med på rejsen
- Stil krav, men husk en god dialog med interessenter
- Lav en plan – vær realistisk. Definer klare mål.
- Opdel i faser – resultater og succes på den korte bane
- Der skal investeres for at opnå en besparelse (optimering)

Forslag til første fase – adgang til data:

1. Udvælg et antal bygninger der skal indgå
2. Identificer systemer og leverandører i de udvalgte bygninger (Tekniske)
3. Kortlæg systemernes mulighed for ekstern kommunikation
4. Kortlæg hvilke data systemet indeholder og hvad der er udstillet eksternt
5. Vær detaljeret – det er ikke nok, at systemet kan "BACnet eller OPC"
   - **OPC-DA, OPC-HDA, OPC A/E, OPC-UA – certificeret?**
   - **BACnet PV, Alarm, Trend, Schedule – certificeret?**
   - **BACnet Secure – certificeret?**
6. Identificer øvrige systemer der skal indgå (Ikke tekniske)
   - EMS-forbrugsdata
   - Energinet datahub forbrug på el
   - Nordpools prislister (historisk + fremad)
   - FM-arealdata
   - Forsyningsselskabers priser
   - Aftalegrundlag mellem KU og leverandører
   - (BBR data - forsyningsselskabernes arealgrundlag)
   - Indfak/faktura
   - Energinet datahub forbrug på el
   - FM-arealdata
   - IOT data
   - ADK data
   - Eksterne klimadata
   - **WEB-services, SQL, CSV-filer, AMQP, MQTT, SNMP, API**

Universal Connectivity

Sensors and Equipment



Building Systems

Rockwell Automation
ABB
Mitsubishi Electric
Emerson
Bedrock Open Secure Automation
Yokogawa
Trend
Priva
Delta Controls
Endress+Hauser
Alerton
Siemens
Tridium
Johnson Controls
Eaton
Schneider Electric
Automated Logic
Trane
Carrier
Hitachi
Omron
PointGrab
Simmtronic Lighting Controls
Honeywell
Beckhoff

Open Protocols

OPC Foundation
ASHRAE BACnet
Modbus
AMQP Advanced Message Queuing Protocol
MQTT.org
SNMP Simple Network Management Protocol
MySQL
Microsoft SQL Server
Oracle
Web Services

Centralized, Uniform Platform delivered on a Single Pane of Glass

ICONICS skaber Intelligent Buildings

- **Energibesparelse** på **20%**
- Reduceret **Komfort**-relaterede service kald med **40%**
- Forbedret **Brugertilfredshed** med **30%**
- Øget **Produktivitet**
- Reducere omkostninger
- Reducere CO2-udledning

Er det muligt i praksis eller er det bare en drøm?

Altså at:

Samle bygningsautomatik i én platform og opnå store energibesparelse og driftsoptimering

Cases

- VIA University College
- NYT OUH og Svendborg Sygehus
- Microsoft HQ
- Delta Airlines
- NYT OUH og Svendborg Sygehus
- Heathrow
- Pentagon
- Jtc – Singapore

VIA University

Aerial View of VIA University Aarhus N Campus

About VIA University

VIA University was established in Denmark in 2008 and was originally spread across 38 sites throughout the country. Today, the university has been consolidated to 18 sites in 8 cities. The university provides a variety of educational disciplines, including Business, Design, Movies/Animation, Education, Social Sciences, Healthcare and Technology and is a member of UNESCO-ASP (Associated Schools Project). Moreover, as a conscientious educational institution, VIA University works diligently to meet the 17 World Sustainable Development Goals. One such effort was the university's decision to increase the energy and operating efficiency of its buildings and facilities.

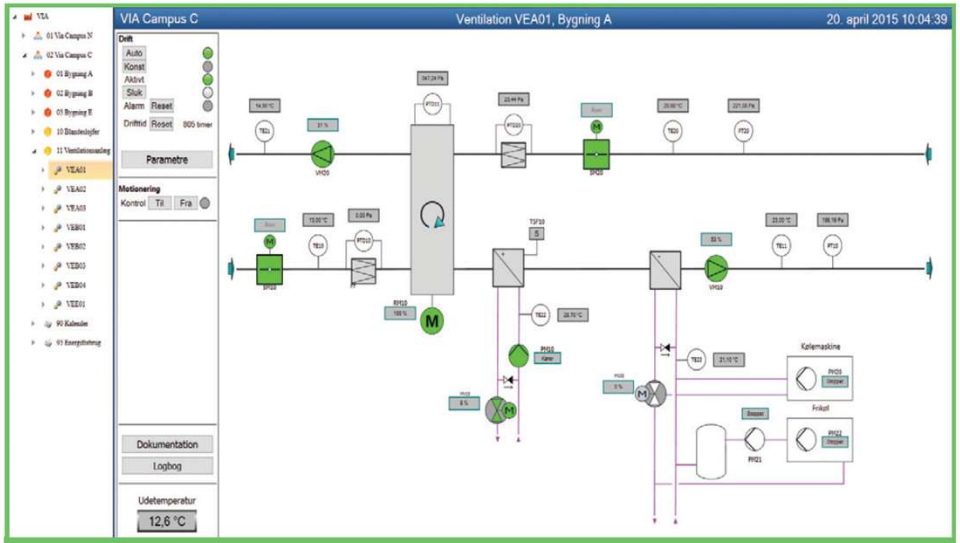
18 sites are spread across 238,000 square meters, with a student population of 20,000 (14% which are international) and an additional population of 5,000 made up of teachers, technical personnel and more. As part of the simultaneous regrouping and expansion, the university began construction on new facilities, such as its Aarhus N campus, while considering new options for building management solutions.

VIA University required a software vendor that could provide a cost-effective, open building management solution for its Aarhus N (37,000 square meter) and Aarhus C (47,000 square meter) campuses. The primary project goals were to realize energy savings through better monitoring and control of the daily operations of the campus

VIA University

Conclusion

Since VIA University was pleased with the Aarhus N and



Ventilation Control Screen for VIA University's Aarhus C Campus

> "We have lowered operational costs by selecting GENESIS64 and PLC-based controllers for our Building Management System (BMS). We wanted open systems based on open standards and to have the freedom to select suppliers of our choice in the future. This is saving us money every year."

Anders Thorsen,
VIA University Technical Manager

OUH Svendborg Hospital

View of Odense University Hospital, Svendborg

OUH
Odense University Hospital
Svendborg Hospital

AutomationLab
A partnership for your innovation

> "With ICONICS, we have an open system based on open standards which allows our own staff to maintain and expand the use of the system. We are continuously adding assets and buildings to our ICONICS BMS solution."
>
> **Lars Due Andersen,**
> Manager Building OUH Svendborg

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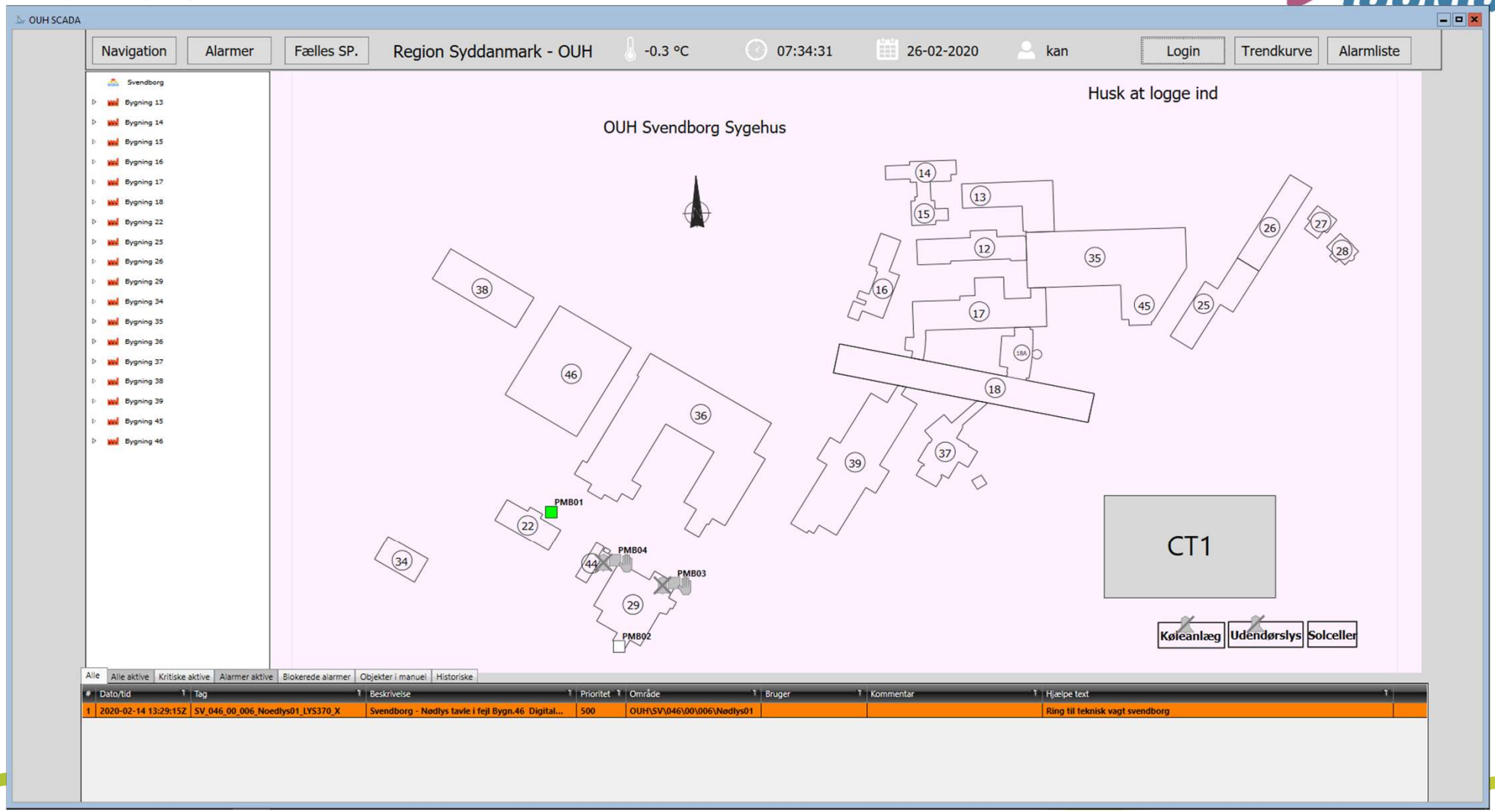
ICONICS



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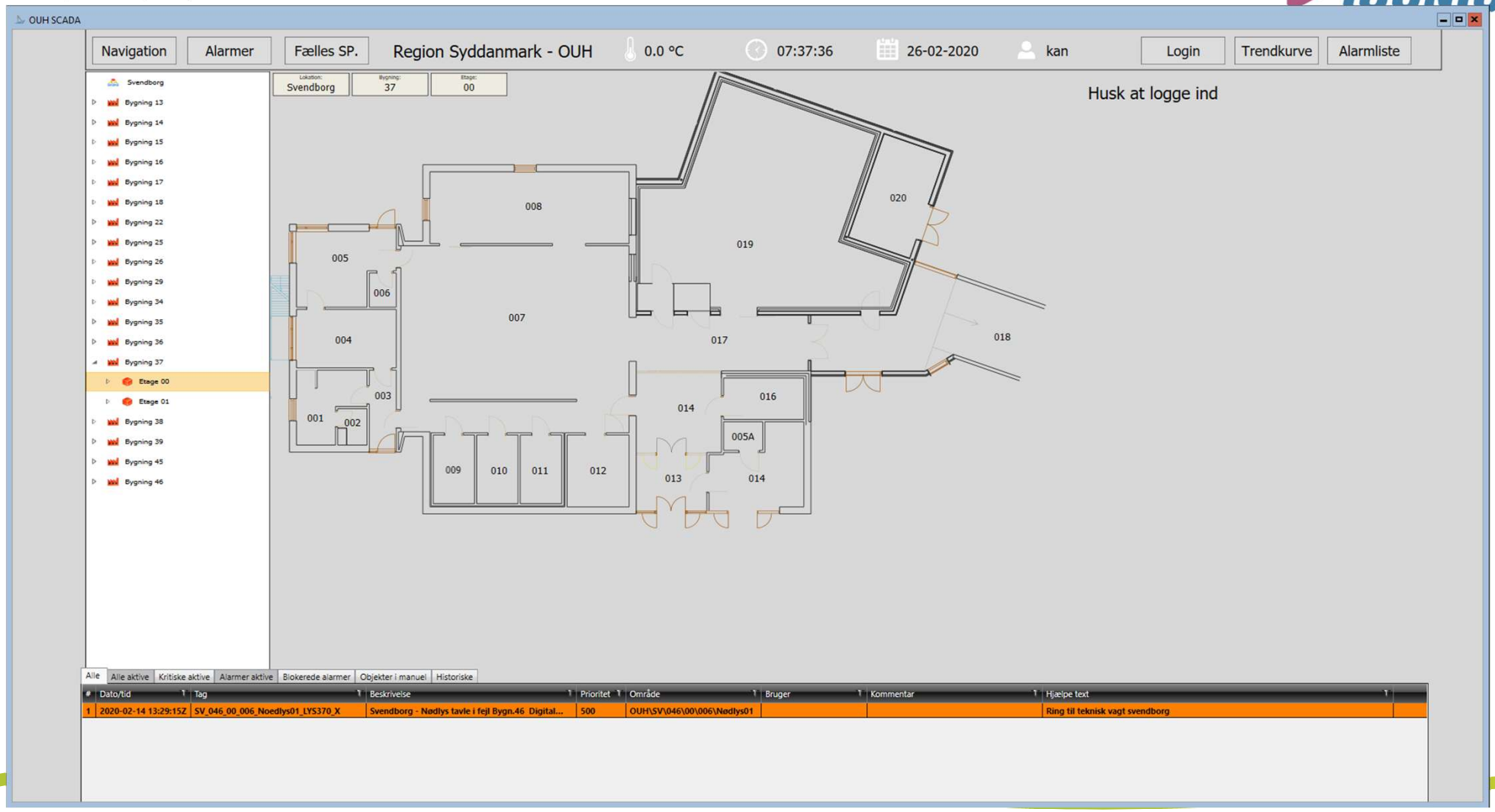
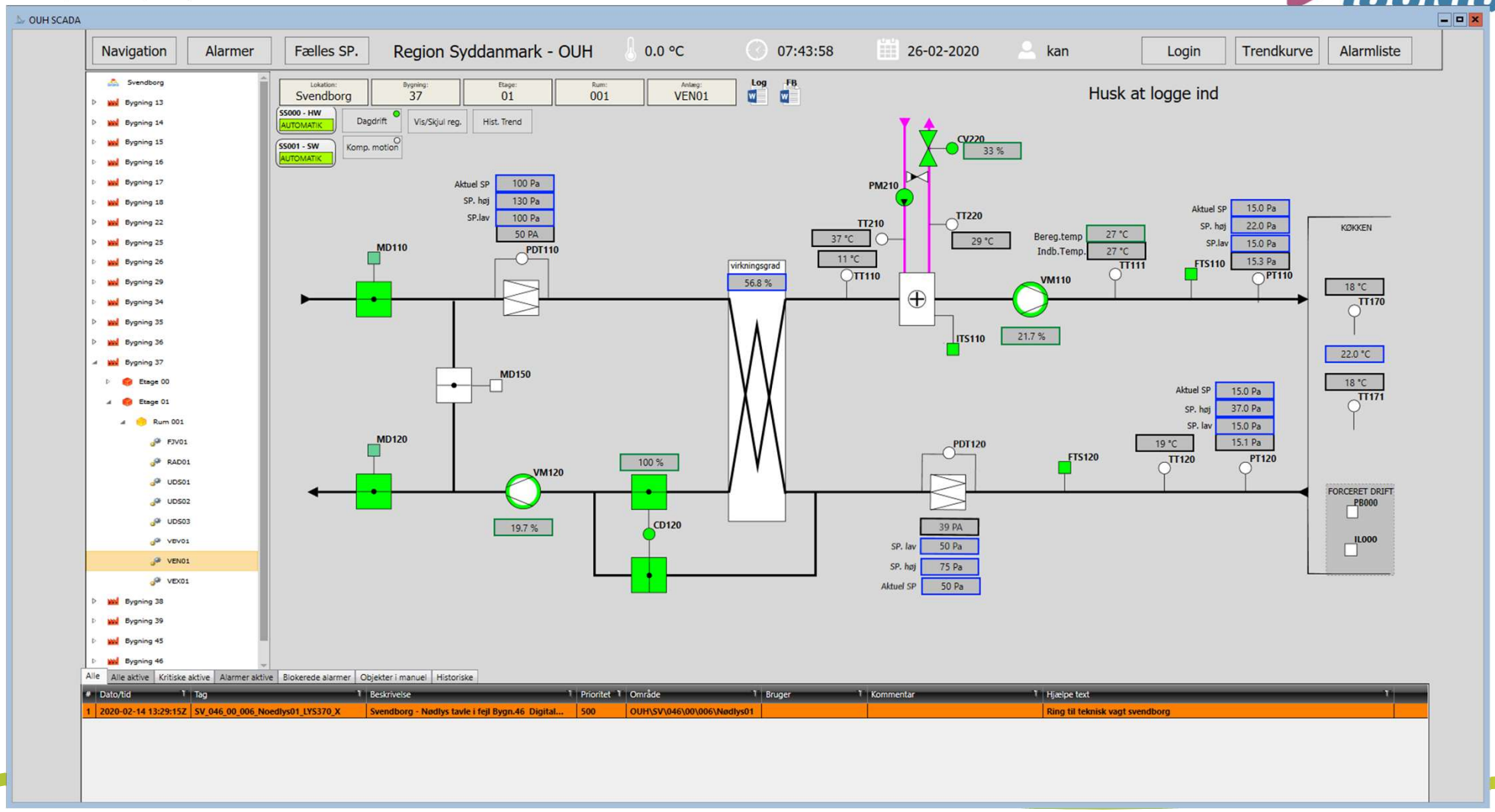


AutomationLab
A partnership for your innovation

ICONICS



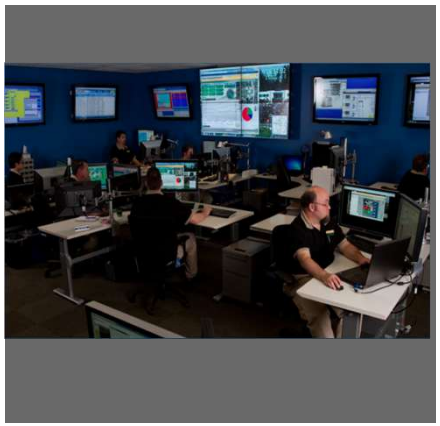
ICONICS showcase project Microsoft Redmond Campus

Why ICONICS?

- Centralized Situational Awareness
- Drill-down capabilities
- Integrate and normalize disparate systems
- Data Analytics and IoT
- Efficiently Scale Globally

Business Drivers:

- Find software to replace clipboard management
- Single view of all building systems (45,000 assets)
- Increase Occupant Comfort
- Reduce Operating Costs
- Optimize Building Utilization
- Condition-based Monitoring
- Integrate (CMMS, Work Orders)



Results

- More efficient System Co-ordination
- Reduced Energy Consumption
- Cost savings

ICONICS showcase project Microsoft Redmond Campus

Easier **system coordination**

Improved technician efficiency with **32,300 work orders per quarter**

48% of faults are corrected within **60 seconds**

Lower **energy consumption**

Forecasted energy savings of **15-22%** over three years

55 megawatts have been reduced **43** megawatts

Reduced **cost**

Saved $2 million in its first year

$56M saved by aggregating data from **sensors** vs. retrofitting equipment

50,000 Intelligent Buildings Run on ICONICS

5 Million Data Points

- Building Automation
- Security
- Lighting
- Jetways
- Baggage Handling
- Moving Walkways
- Billing Systems
- Elevators / Escalators
- Electrical

Intelligent BUILDING

- 6.5 Million sq. ft. Building
- 5 Million Data Points
- 3D Graphical Representations
- Effective Building Management
- Real-time Alarming
- Remote Monitoring and Control
- Integrates Disparate Systems

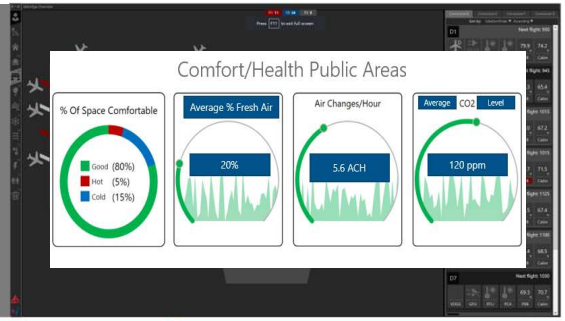
Smart Airport – Single Pane of Glass

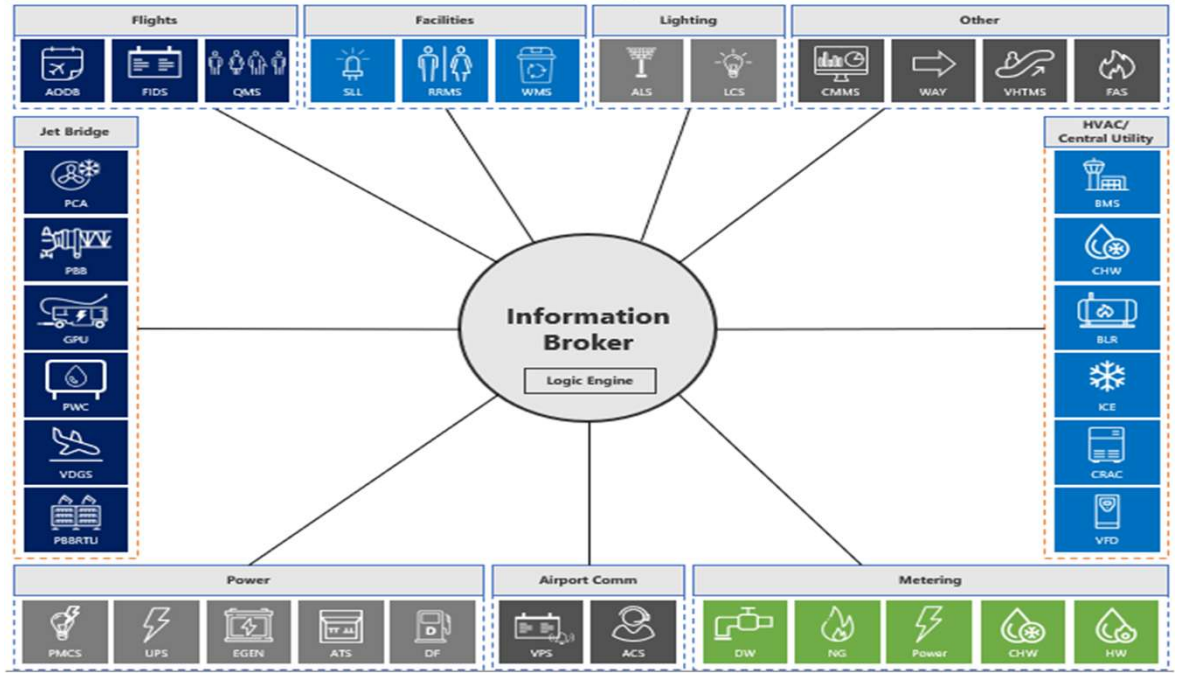
Universal Connectivity, Command and Control

- HVAC
- Lighting
- Power Distribution
- Data Center
- Elevators
- Moving Walkway
- People Movers
- Baggage Handling
- Radar Systems
- Fuel Systems
- Ramp Management
- Runway Lighting
- Fire Extinguishers
- Restroom Cleanliness
- Waste Bins
- Parking Lot Management
- Wayfinding Integration
- Digital Signage
- Passenger Messaging
- Water Treatment
- Fire & Security
- Sprinkler Systems

ICONICS Suite

- Unified User Interface
- Interoperability with 32+ Vendors
- Control from Terminal Operations Ctr
- Automated Workflow
- Real-time Integrated Dashboards
- Hybrid Redundancy



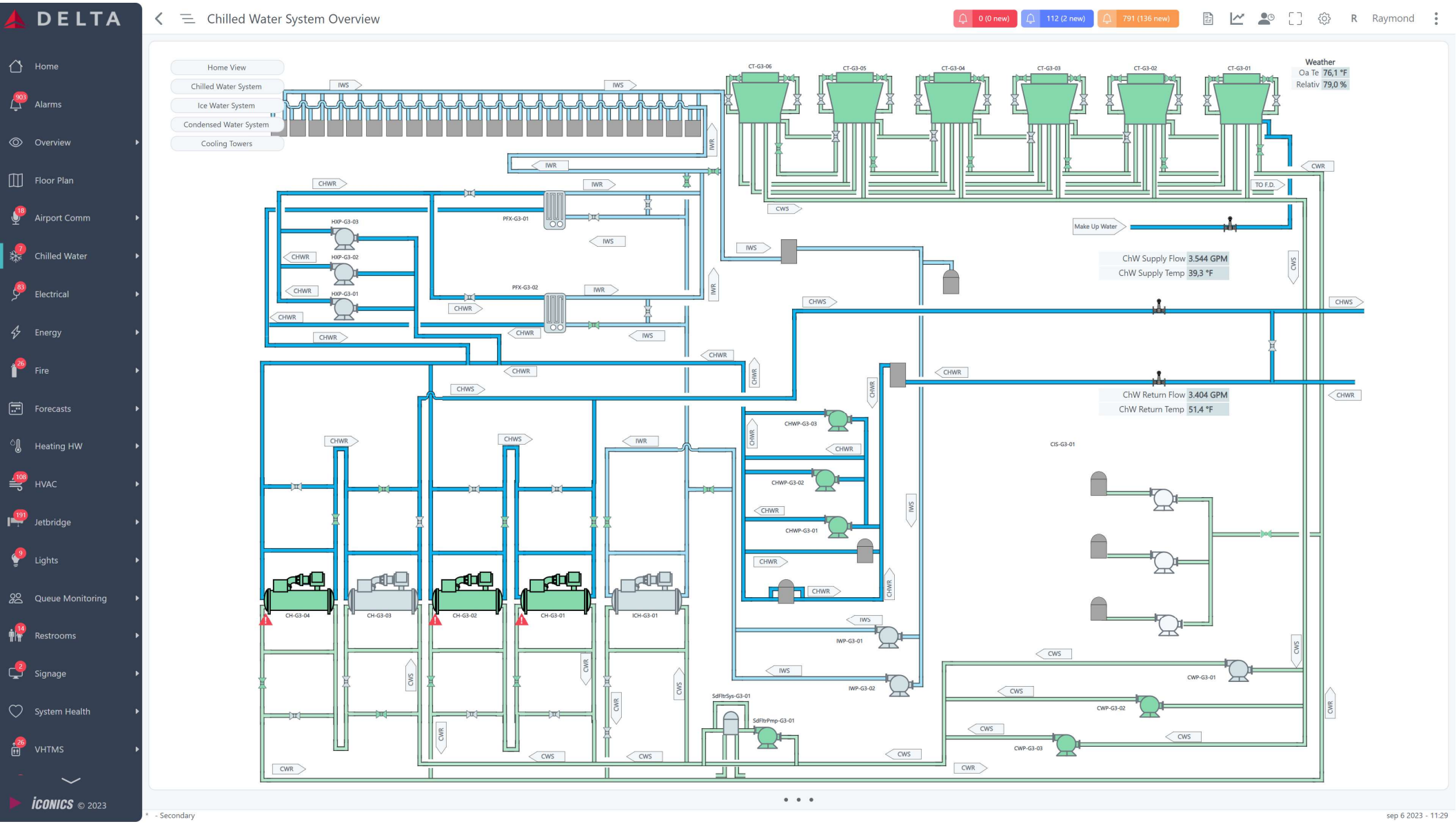


Eksempel fra Deloitte London

- 20 Undersystemer integreret med ICONICS
- Én Brugerflade
  Vis bygningen for brugere med forskellige roller
  - Facility Mgt
  - Aministration og Service
  - Teknisk service Services

- Digital skiltning og vejvisning
  med IBSP
- Tablets til rumstying
  erstatter forskerllige typer traditionelle styringer

- Intelligent logik
  styret med software.
  - F.eks. Brug af rumsensor til styring af ventilation og lys, med tilbagestilling til standby, hvis der ikke er tilstedeværekse selv om bookingsystemet melder rum I brug.



* - Secondary

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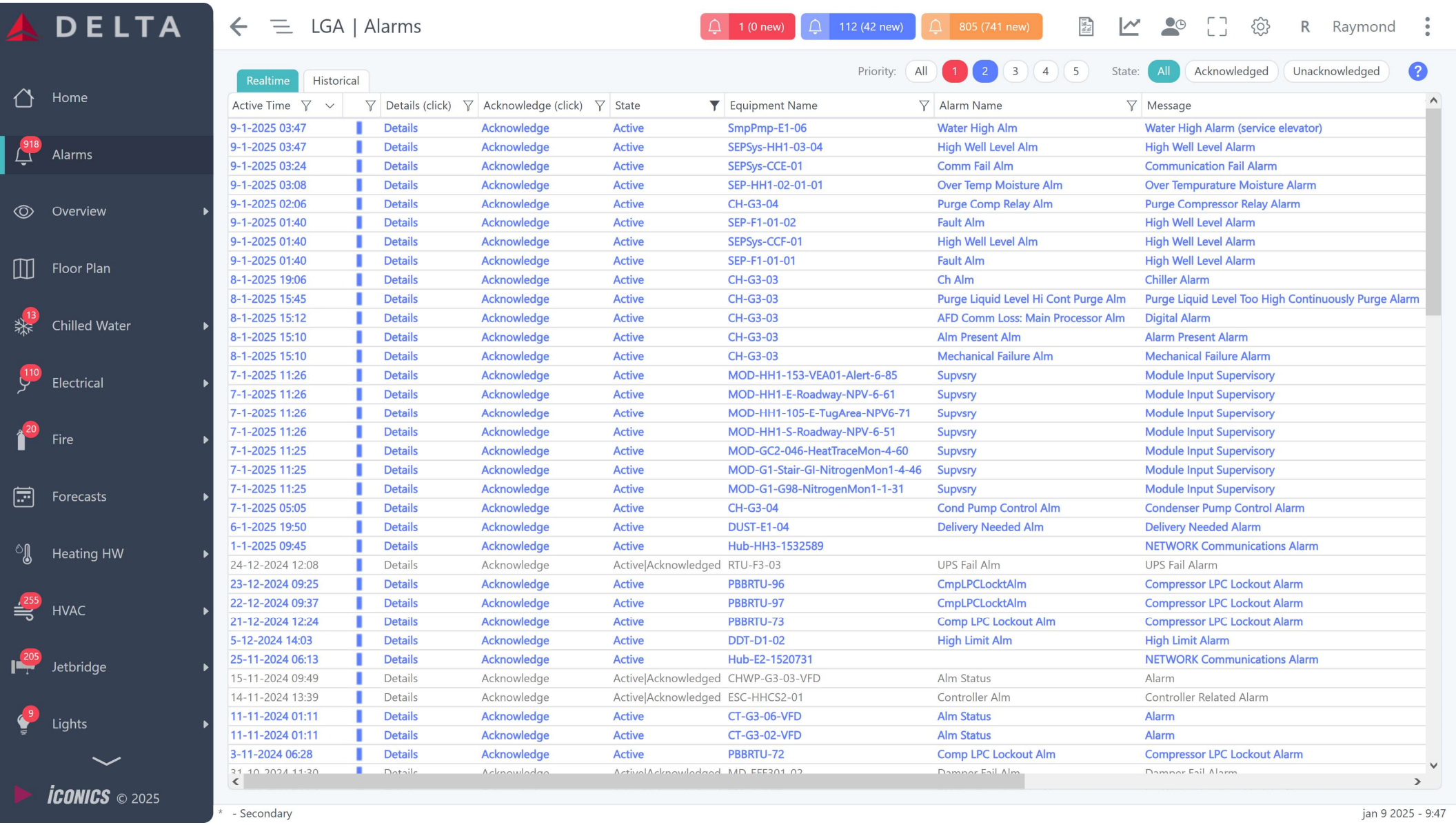
DELTA
Home
Alarms
Overview
Floor Plan
Chilled Water
Electrical
Fire
Forecasts
Heating HW
HVAC
Jetbridge
Lights
ICONICS © 2025
LGA | Alarms
1 (0 new)
112 (42 new)
805 (741 new)
Raymond
Realtime
Historical
Priority: All 1 2 3 4 5
State: All Acknowledged Unacknowledged
Active Time | Details (click) | Acknowledge (click) | State | Equipment Name | Alarm Name | Message
9-1-2025 03:47 | Details | Acknowledge | Active | SmpPmp-E1-06 | Water High Alm | Water High Alarm (service elevator)
9-1-2025 03:47 | Details | Acknowledge | Active | SEPSys-HH1-03-04 | High Well Level Alm | High Well Level Alarm
9-1-2025 03:24 | Details | Acknowledge | Active | SEPSys-CCE-01 | Comm Fail Alm | Communication Fail Alarm
9-1-2025 03:08 | Details | Acknowledge | Active | SEP-HH1-02-01-01 | Over Temp Moisture Alm | Over Tempurature Moisture Alarm
9-1-2025 02:06 | Details | Acknowledge | Active | CH-G3-04 | Purge Comp Relay Alm | Purge Compressor Relay Alarm
9-1-2025 01:40 | Details | Acknowledge | Active | SEP-F1-01-02 | Fault Alm | High Well Level Alarm
9-1-2025 01:40 | Details | Acknowledge | Active | SEPSys-CCF-01 | High Well Level Alm | High Well Level Alarm
9-1-2025 01:40 | Details | Acknowledge | Active | SEP-F1-01-01 | Fault Alm | High Well Level Alarm
8-1-2025 19:06 | Details | Acknowledge | Active | CH-G3-03 | Ch Alm | Chiller Alarm
8-1-2025 15:45 | Details | Acknowledge | Active | CH-G3-03 | Purge Liquid Level Hi Cont Purge Alm | Purge Liquid Level Too High Continuously Purge Alarm
8-1-2025 15:12 | Details | Acknowledge | Active | CH-G3-03 | AFD Comm Loss: Main Processor Alm | Digital Alarm
8-1-2025 15:10 | Details | Acknowledge | Active | CH-G3-03 | Alm Present Alm | Alarm Present Alarm
8-1-2025 15:10 | Details | Acknowledge | Active | CH-G3-03 | Mechanical Failure Alm | Mechanical Failure Alarm
7-1-2025 11:26 | Details | Acknowledge | Active | MOD-HH1-153-VEA01-Alert-6-85 | Supvsry | Module Input Supervisory
7-1-2025 11:26 | Details | Acknowledge | Active | MOD-HH1-E-Roadway-NPV-6-61 | Supvsry | Module Input Supervisory
7-1-2025 11:26 | Details | Acknowledge | Active | MOD-HH1-105-E-TugArea-NPV6-71 | Supvsry | Module Input Supervisory
7-1-2025 11:26 | Details | Acknowledge | Active | MOD-HH1-S-Roadway-NPV-6-51 | Supvsry | Module Input Supervisory
7-1-2025 11:25 | Details | Acknowledge | Active | MOD-GC2-046-HeatTraceMon-4-60 | Supvsry | Module Input Supervisory
7-1-2025 11:25 | Details | Acknowledge | Active | MOD-G1-Stair-GI-NitrogenMon1-4-46 | Supvsry | Module Input Supervisory
7-1-2025 11:25 | Details | Acknowledge | Active | MOD-G1-G98-NitrogenMon1-1-31 | Supvsry | Module Input Supervisory
7-1-2025 05:05 | Details | Acknowledge | Active | CH-G3-04 | Cond Pump Control Alm | Condenser Pump Control Alarm
6-1-2025 19:50 | Details | Acknowledge | Active | DUST-E1-04 | Delivery Needed Alm | Delivery Needed Alarm
1-1-2025 09:45 | Details | Acknowledge | Active | Hub-HH3-1532589 | | NETWORK Communications Alarm
24-12-2024 12:08 | Details | Acknowledge | Active|Acknowledged | RTU-F3-03 | UPS Fail Alm | UPS Fail Alarm
23-12-2024 09:25 | Details | Acknowledge | Active | PBBRTU-96 | CmpLPCLocktAlm | Compressor LPC Lockout Alarm
22-12-2024 09:37 | Details | Acknowledge | Active | PBBRTU-97 | CmpLPCLocktAlm | Compressor LPC Lockout Alarm
21-12-2024 12:24 | Details | Acknowledge | Active | PBBRTU-73 | Comp LPC Lockout Alm | Compressor LPC Lockout Alarm
5-12-2024 14:03 | Details | Acknowledge | Active | DDT-D1-02 | High Limit Alm | High Limit Alarm
25-11-2024 06:13 | Details | Acknowledge | Active | Hub-E2-1520731 | | NETWORK Communications Alarm
15-11-2024 09:49 | Details | Acknowledge | Active|Acknowledged | CHWP-G3-03-VFD | Alm Status | Alarm
14-11-2024 13:39 | Details | Acknowledge | Active|Acknowledged | ESC-HHCS2-01 | Controller Alm | Controller Related Alarm
11-11-2024 01:11 | Details | Acknowledge | Active | CT-G3-06-VFD | Alm Status | Alarm
11-11-2024 01:11 | Details | Acknowledge | Active | CT-G3-02-VFD | Alm Status | Alarm
3-11-2024 06:28 | Details | Acknowledge | Active | PBBRTU-72 | Comp LPC Lockout Alm | Compressor LPC Lockout Alarm
* - Secondary
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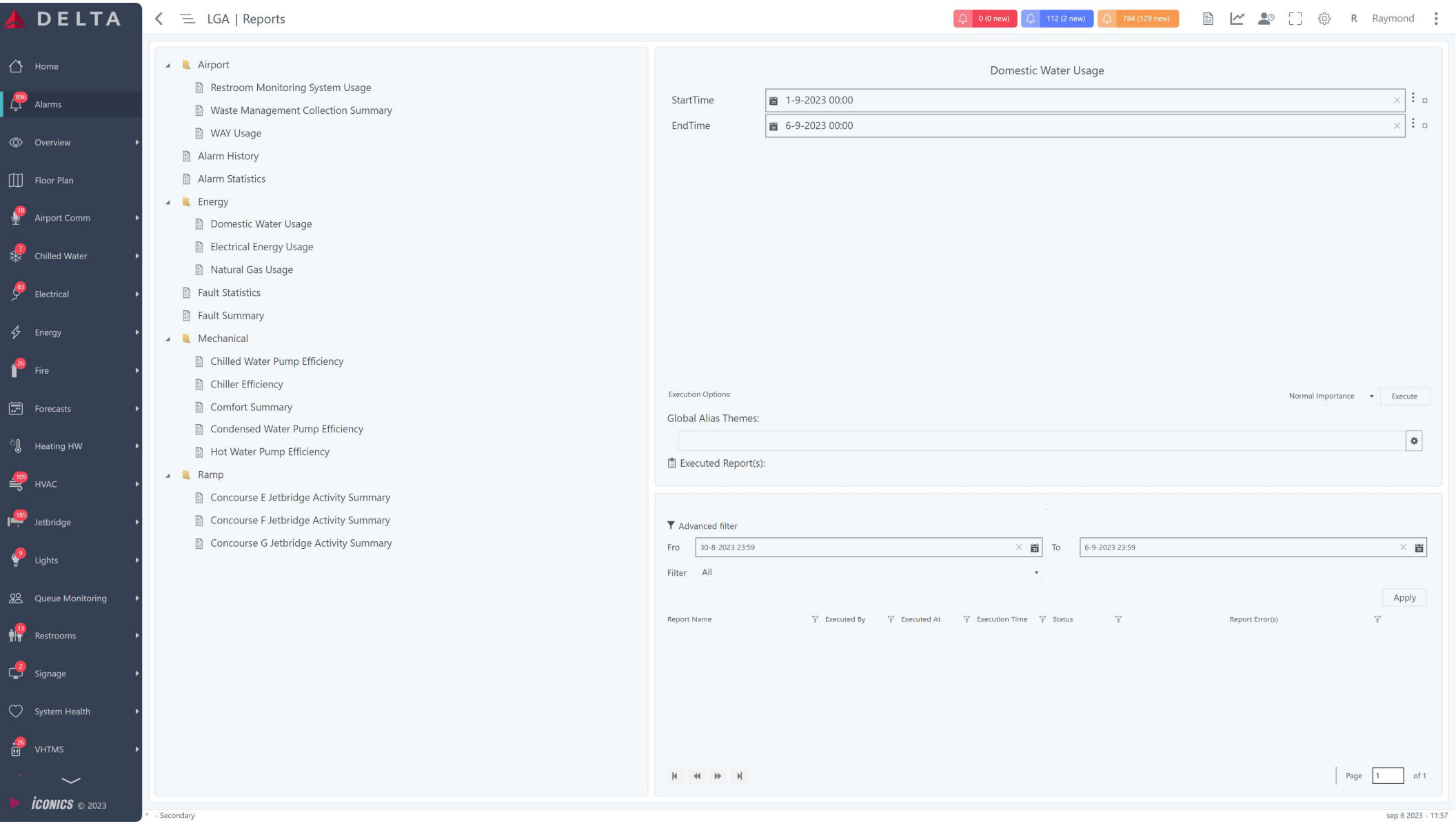
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LGA | Reports
0 (0 new)
112 (2 new)
784 (129 new)
Raymond
Home
Alarms
Overview
Floor Plan
Airport Comm
Chilled Water
Electrical
Energy
Fire
Forecasts
Heating HW
HVAC
Jetbridge
Lights
Queue Monitoring
Restrooms
Signage
System Health
VHTMS
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Airport
Restroom Monitoring System Usage
Waste Management Collection Summary
WAY Usage
Alarm History
Alarm Statistics
Energy
Domestic Water Usage
Electrical Energy Usage
Natural Gas Usage
Fault Statistics
Fault Summary
Mechanical
Chilled Water Pump Efficiency
Chiller Efficiency
Comfort Summary
Condensed Water Pump Efficiency
Hot Water Pump Efficiency
Ramp
Concourse E Jetbridge Activity Summary
Concourse F Jetbridge Activity Summary
Concourse G Jetbridge Activity Summary
Domestic Water Usage
StartTime
1-9-2023 00:00
EndTime
6-9-2023 00:00
Execution Options:
Normal Importance
Execute
Global Alias Themes:
Executed Report(s):
Advanced filter
Fro
30-8-2023 23:59
To
6-9-2023 23:59
Filter
All
Apply
Report Name
Executed By
Executed At
Execution Time
Status
Report Error(s)
Page
1
of 1
- Secondary
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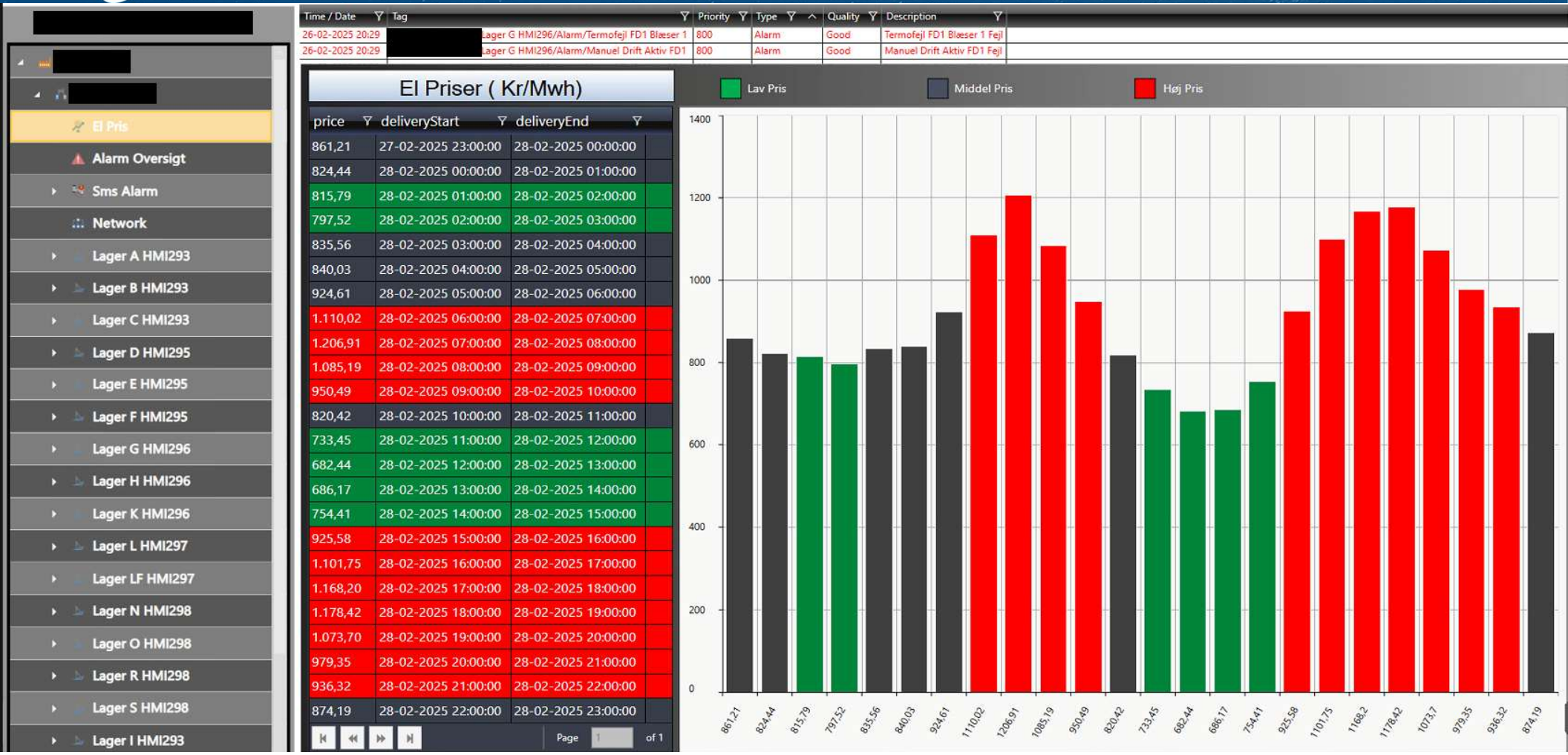
El-priser næste døgn fra Nord Pool



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26-02-2025 20:29	[redacted]Lager G HMI296/Alarm/Manuel Drift Aktiv FD1	800	Alarm	Good	Manuel Drift Aktiv FD1 Fejl

price	deliveryStart	deliveryEnd
861,21	27-02-2025 23:00:00	28-02-2025 00:00:00
824,44	28-02-2025 00:00:00	28-02-2025 01:00:00
815,79	28-02-2025 01:00:00	28-02-2025 02:00:00
797,52	28-02-2025 02:00:00	28-02-2025 03:00:00
835,56	28-02-2025 03:00:00	28-02-2025 04:00:00
840,03	28-02-2025 04:00:00	28-02-2025 05:00:00
924,61	28-02-2025 05:00:00	28-02-2025 06:00:00
1.110,02	28-02-2025 06:00:00	28-02-2025 07:00:00
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950,49	28-02-2025 09:00:00	28-02-2025 10:00:00
820,42	28-02-2025 10:00:00	28-02-2025 11:00:00
733,45	28-02-2025 11:00:00	28-02-2025 12:00:00
682,44	28-02-2025 12:00:00	28-02-2025 13:00:00
686,17	28-02-2025 13:00:00	28-02-2025 14:00:00
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925,58	28-02-2025 15:00:00	28-02-2025 16:00:00
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979,35	28-02-2025 20:00:00	28-02-2025 21:00:00
936,32	28-02-2025 21:00:00	28-02-2025 22:00:00
874,19	28-02-2025 22:00:00	28-02-2025 23:00:00

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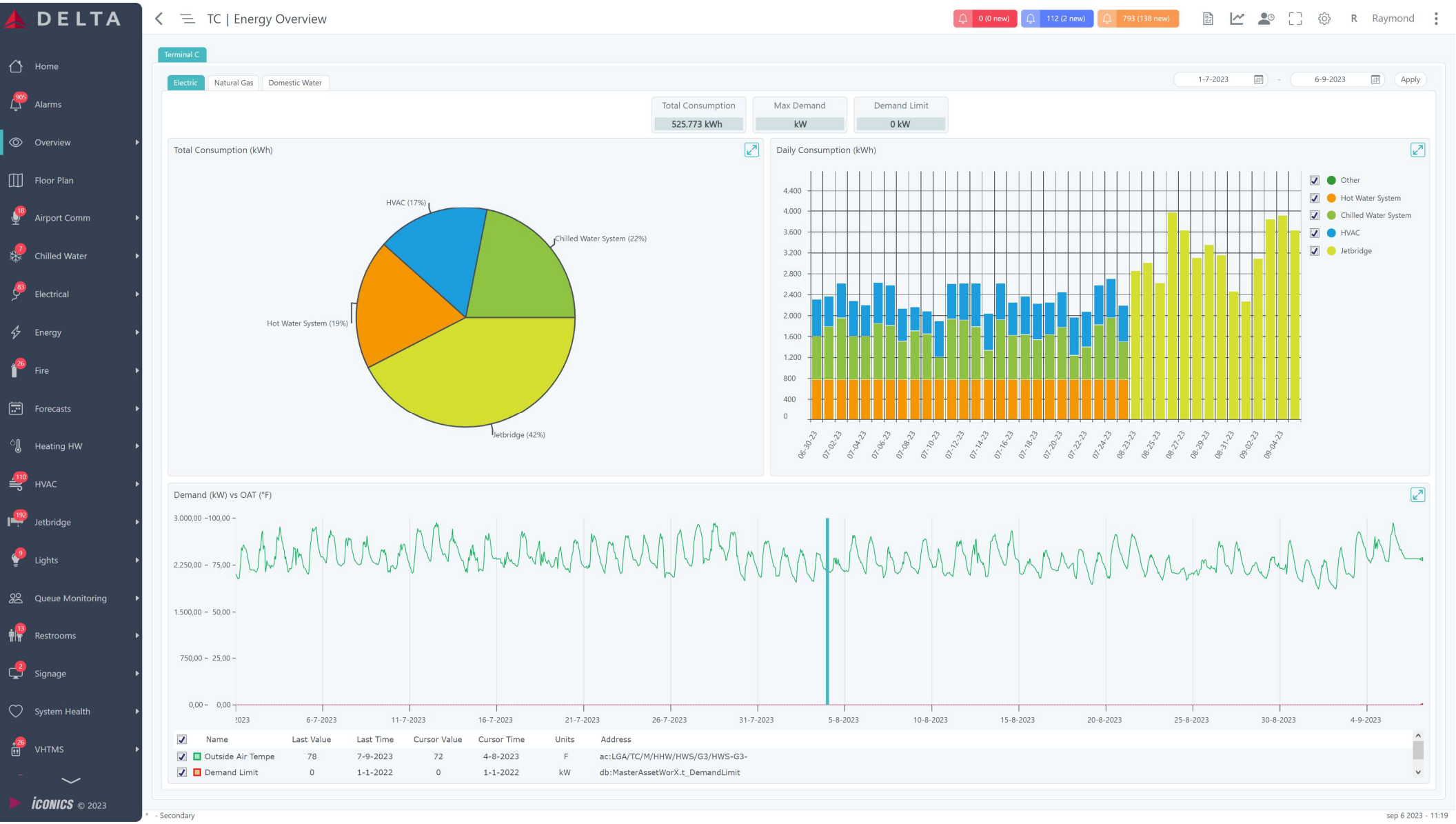
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TC | Energy Overview
0 (0 new)
112 (2 new)
793 (138 new)
Raymond
Home
Alarms
Overview
Floor Plan
Airport Comm
Chilled Water
Electrical
Energy
Fire
Forecasts
Heating HW
HVAC
Jetbridge
Lights
Queue Monitoring
Restrooms
Signage
System Health
VHTMS
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Terminal C
Electric
Natural Gas
Domestic Water
1-7-2023
6-9-2023
Apply
Total Consumption
525.773 kWh
Max Demand
kW
Demand Limit
0 kW
Total Consumption (kWh)
HVAC (17%)
Chilled Water System (22%)
Hot Water System (19%)
Jetbridge (42%)
Daily Consumption (kWh)
Other
Hot Water System
Chilled Water System
HVAC
Jetbridge
Demand (kW) vs OAT (°F)
Name
Last Value
Last Time
Cursor Value
Cursor Time
Units
Address
Outside Air Tempe
78
7-9-2023
72
4-8-2023
F
ac:LGA/TC/M/HHW/HWS/G3/HWS-G3-
Demand Limit
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1-1-2022
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kW
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* - Secondary
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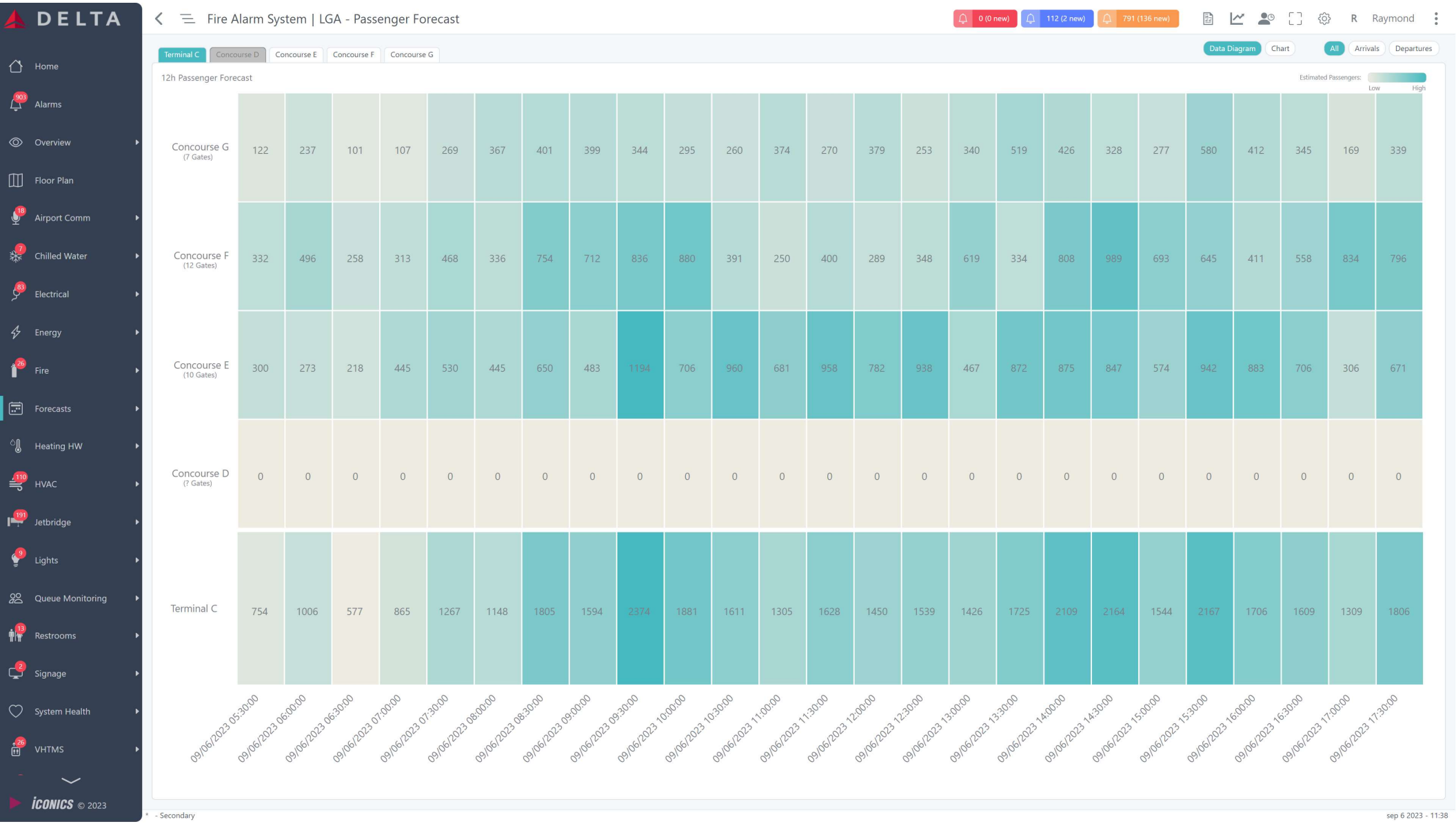
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Fire Alarm System | LGA - Passenger Forecast
0 (0 new)
112 (2 new)
791 (136 new)
Raymond
Home
Alarms
Overview
Floor Plan
Airport Comm
Chilled Water
Electrical
Energy
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Forecasts
Heating HW
HVAC
Jetbridge
Lights
Queue Monitoring
Restrooms
Signage
System Health
VHTMS
ICONICS © 2023
Terminal C
Concourse D
Concourse E
Concourse F
Concourse G
Data Diagram
Chart
All
Arrivals
Departures
12h Passenger Forecast
Estimated Passengers:
Low
High
Concourse G (7 Gates) 122 237 101 107 269 367 401 399 344 295 260 374 270 379 253 340 519 426 328 277 580 412 345 169 339
Concourse F (12 Gates) 332 496 258 313 468 336 754 712 836 880 391 250 400 289 348 619 334 808 989 693 645 411 558 834 796
Concourse E (10 Gates) 300 273 218 445 530 445 650 483 1194 706 960 681 958 782 938 467 872 875 847 574 942 883 706 306 671
Concourse D (? Gates) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Terminal C 754 1006 577 865 1267 1148 1805 1594 2374 1881 1611 1305 1628 1450 1539 1426 1725 2109 2164 1544 2167 1706 1609 1309 1806
09/06/2023 05:30:00
09/06/2023 06:00:00
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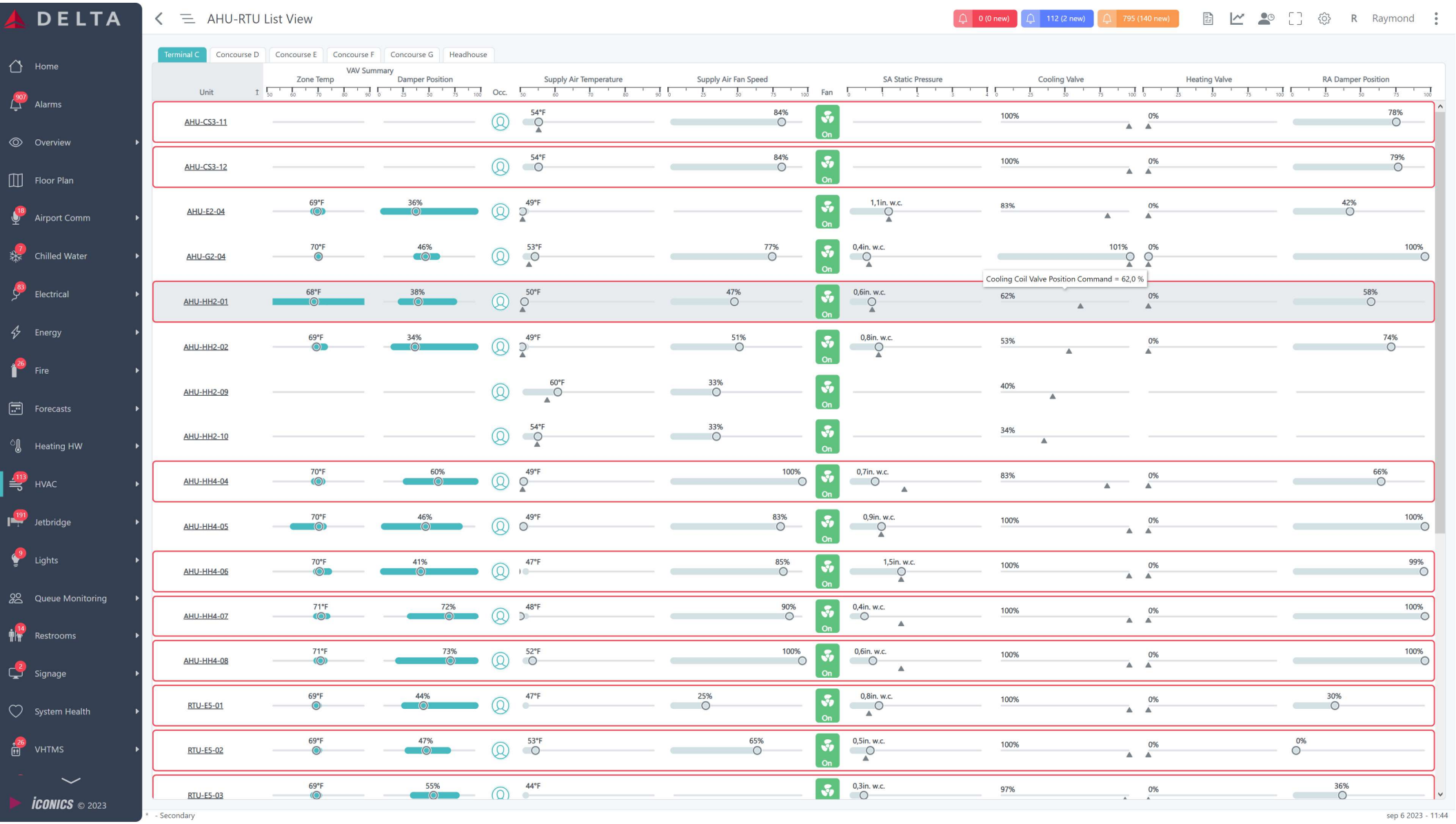
09/06/2023 07:00:00
09/06/2023 07:30:00
09/06/2023 08:00:00
09/06/2023 08:30:00
09/06/2023 09:00:00
09/06/2023 09:30:00
09/06/2023 10:00:00
09/06/2023 10:30:00
09/06/2023 11:00:00
09/06/2023 11:30:00
09/06/2023 12:00:00
09/06/2023 12:30:00
09/06/2023 13:00:00
09/06/2023 13:30:00
09/06/2023 14:00:00
09/06/2023 14:30:00
09/06/2023 15:00:00
09/06/2023 15:30:00
09/06/2023 16:00:00
09/06/2023 16:30:00
09/06/2023 17:00:00
09/06/2023 17:30:00
* - Secondary
sep 6 2023 - 11:38


DELTA
AHU-RTU List View
0 (0 new)
112 (2 new)
795 (140 new)
Raymond
Home
Alarms
Overview
Floor Plan
Airport Comm
Chilled Water
Electrical
Energy
Fire
Forecasts
Heating HW
HVAC
Jetbridge
Lights
Queue Monitoring
Restrooms
Signage
System Health
VHTMS
Terminal C
Concourse D
Concourse E
Concourse F
Concourse G
Headhouse
VAV Summary
Unit
Zone Temp
Damper Position
Occ.
Supply Air Temperature
Supply Air Fan Speed
Fan
SA Static Pressure
Cooling Valve
Heating Valve
RA Damper Position
AHU-CS3-11
AHU-CS3-12
AHU-E2-04
AHU-G2-04
AHU-HH2-01
AHU-HH2-02
AHU-HH2-09
AHU-HH2-10
AHU-HH4-04
AHU-HH4-05
AHU-HH4-06
AHU-HH4-07
AHU-HH4-08
RTU-E5-01
RTU-E5-02
RTU-E5-03
Cooling Coil Valve Position Command = 62,0 %
iCONICS © 2023
- Secondary
sep 6 2023 - 11:44

ICONICS showcase project Smart Nation
JTC & Country of Singapore

Why ICONICS?

- Visualization for clear overview dashboards
- Drill-down capabilities to better identify issues
- Normalize Disparate BAS
- Offered Cloud Computing
- Efficiently Scale
- Fulfill Business Outcome

Business Drivers:

- Develop Smart Nation to be competitive
- Develop Brand in Smart Nation
- Centralize and Streamline Operations
- Better monitor, analyze and control buildings across country
- Improve productivity
- Drive ENERGY SAVINGS

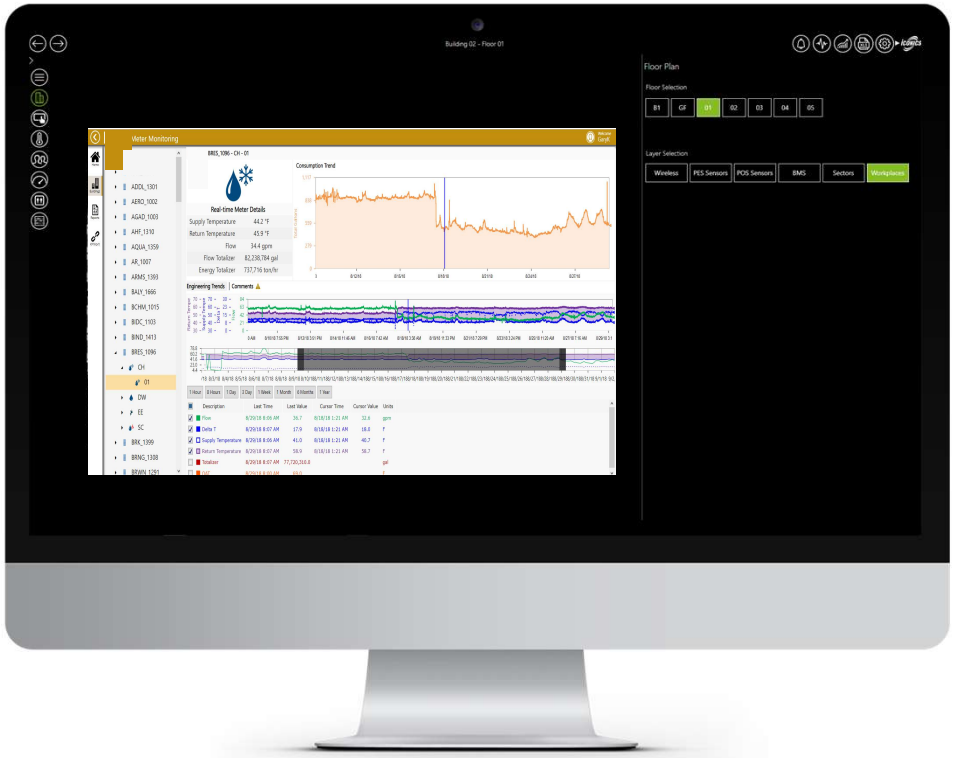
Results

- Central Monitoring of all Assets
- Provide real-time visibility of Building Efficiency
- Improve productivity


Smart Buildings
All Bldgs. Power Demand: 1260 kW
All Bldgs. Current Critical Faults
2
All Bldgs. Current Active Faults
1370
All Bldgs. Avg Fault Duration
9.9 Hours
Reports
Back
Forward
View
Layout
Help
GaryK
23 May 2016
ac:SUMMIT/
JTC
CleanTech
MedTech
Summit
Summit
GFA: 56527 sq. m
EEI: 104.5
Critical Faults: 0
Active Faults: 1184
Avg. Fault Duration: 9.6 Hours
Power Demand
940
kW
Energy
1872
kWh
Cumulative Fault Count by Day
Active fault count per asset type
AHU 106
CENTRAL PLANT 1
CHL 3
Active fault count at floors with AHU assets
L01 1
L02 14
L03 19
L05 4
L06 0
L07 4
Critical Faults (0)
AHU Active Faults
AHU Fault Statistics
Drag a column header and drop it here to group by that column
Asset Path
Fault Name
Total Fault Count
Total Active Duration (Hours)
Total Estimated Lost Opportunity
SUMMIT/ACMV/AHU/L18/2 Manual Override - Supply Fan Speed 104 3,442.27 1,491.64
SUMMIT/ACMV/AHU/L01/4 Manual Override - Supply Fan Speed 35 887.82 769.10
SUMMIT/ACMV/AHU/L05/2 Under-Pressurization 82 785.11 667.83
SUMMIT/ACMV/AHU/L22/2 Under-Pressurization 71 712.06 540.37
SUMMIT/ACMV/AHU/L02/5 Manual Override - Supply Fan Speed 74 1,319.43 519.69
SUMMIT/ACMV/AHU/L22/1 Under-Pressurization 71 711.69 499.16
SUMMIT/ACMV/AHU/L20/2 Manual Override - Supply Fan Speed 107 706.03 457.40
SUMMIT/ACMV/AHU/L26/2 Under-Pressurization 82 741.42 455.07
SUMMIT/ACMV/AHU/L20/1 Manual Override - Supply Fan Speed 106 779.50 427.61
SUMMIT/ACMV/AHU/L26/1 Manual Override - Supply Fan Speed 83 743.67 415.61
SUMMIT/ACMV/AHU/L02/5 Failed Control Reset - Supply Static... 51 484.39 399.79
SUMMIT/ACMV/AHU/L19/2 Manual Override - Supply Fan Speed 86 641.50 381.82
SUMMIT/ACMV/AHU/L03/1 Failed Control Reset - Supply Static... 40 338.28 377.58
SUMMIT/ACMV/AHU/L25/2 Under-Pressurization 80 558.35 374.10
SUMMIT/ACMV/AHU/L10/1 Manual Override - Manual Mode Enabled 33 1,106.87 370.80
SUMMIT/ACMV/AHU/L23/2 Under-Pressurization 80 613.62 365.55
Mini-map
Interval: Last 30 days

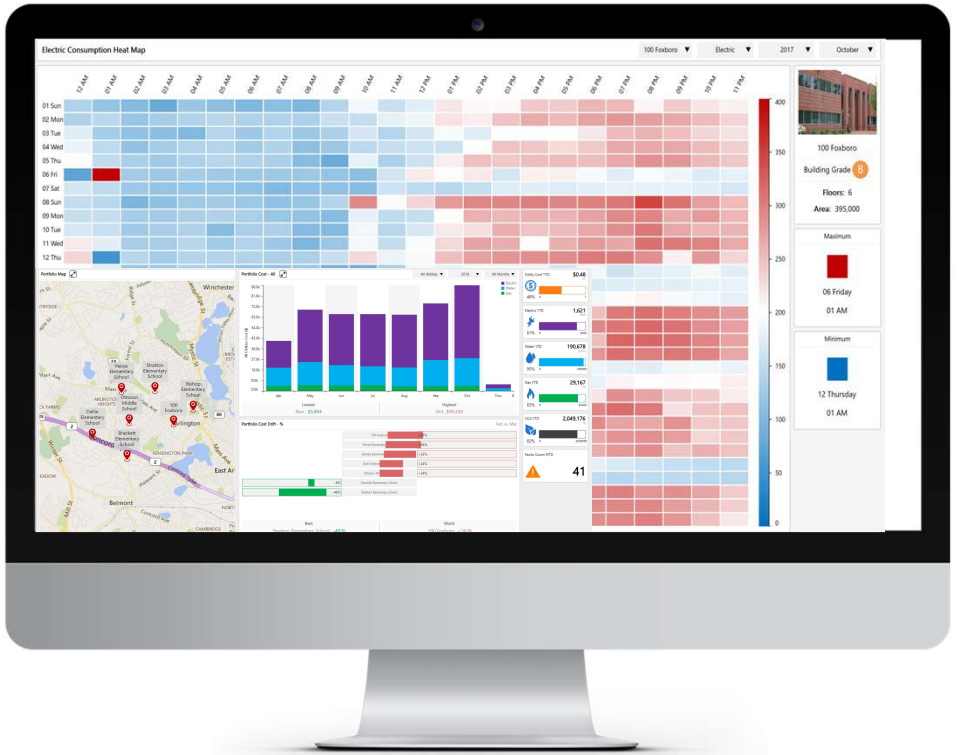
Hvad kan FDDWorX

- Brug intern ekspertviden til at bygge fejl-regler
  - Drifts- og projektpersoner
- Prioritering af fejl
  - Energi omkostninger
  - Drifts omkostninger
  - Kritikalitet
- Ændring af setpunkter
- Sende arbejdsordre til FM



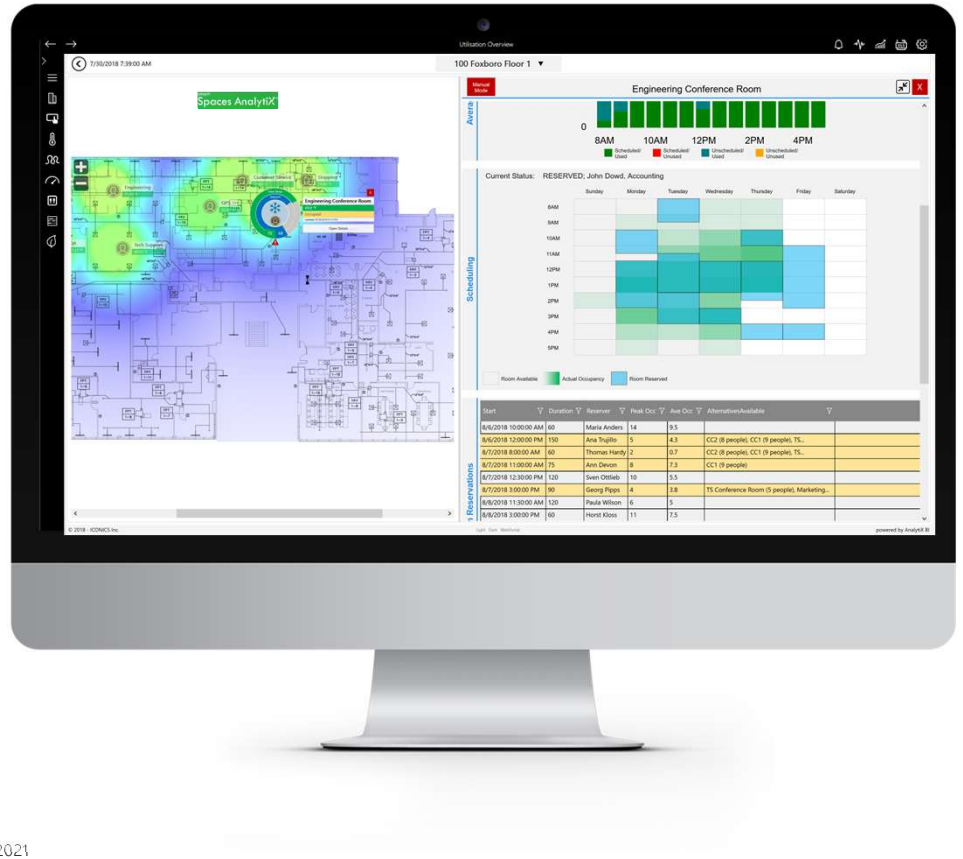
Mulighed for Energy Styring

- Energiforbrug pr. bygning, etage og lokaler
- Aktuelt energiforbrug fordelt på plantegning
- Udvikling/trends i forbruget
- Automatisk rapportering
- Langtidslagring af data
- Rapportering ift. forsyningsselskaber
- Forecast/budget modeller



Mulighed for oversigt over bygningers udnyttelse

- Udnyt eksisterende PIR sensorer
- Integration til Outlook for mødebookninger i kalenderen
- Melder fejl ved brud på regler:
  - Mødelokale booket med ikke I brug
  - Mødelokale I brug men ikke booket
  - Anvendt mødelokale for stort eller for lille
- Hvor godt udnyttes arealet



Ja – det er muligt at samle bygningsautomatik i én platform!

Ja – det er muligt at opnå store energibesparelser og driftsoptimering!

Q&A

Heptagon/ICONICS

Energiforum 27/3, 2025.

Henrik Clausen, Heptagon