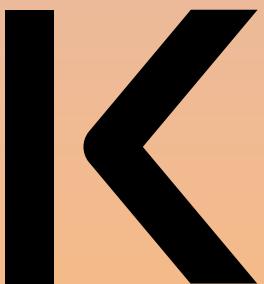


Kiona

Workshop: Demand response and digitalization of demand side in district heating and cooling systems.

Agenda

- > Introduction to Kiona Group
- > How we work and create value
- > Optimizing buildings – optimizing grids
- > What can we do (better) together?



Kiona

Software and services for technical property management, energy optimization with AI, cooling management, energy monitoring and follow up.

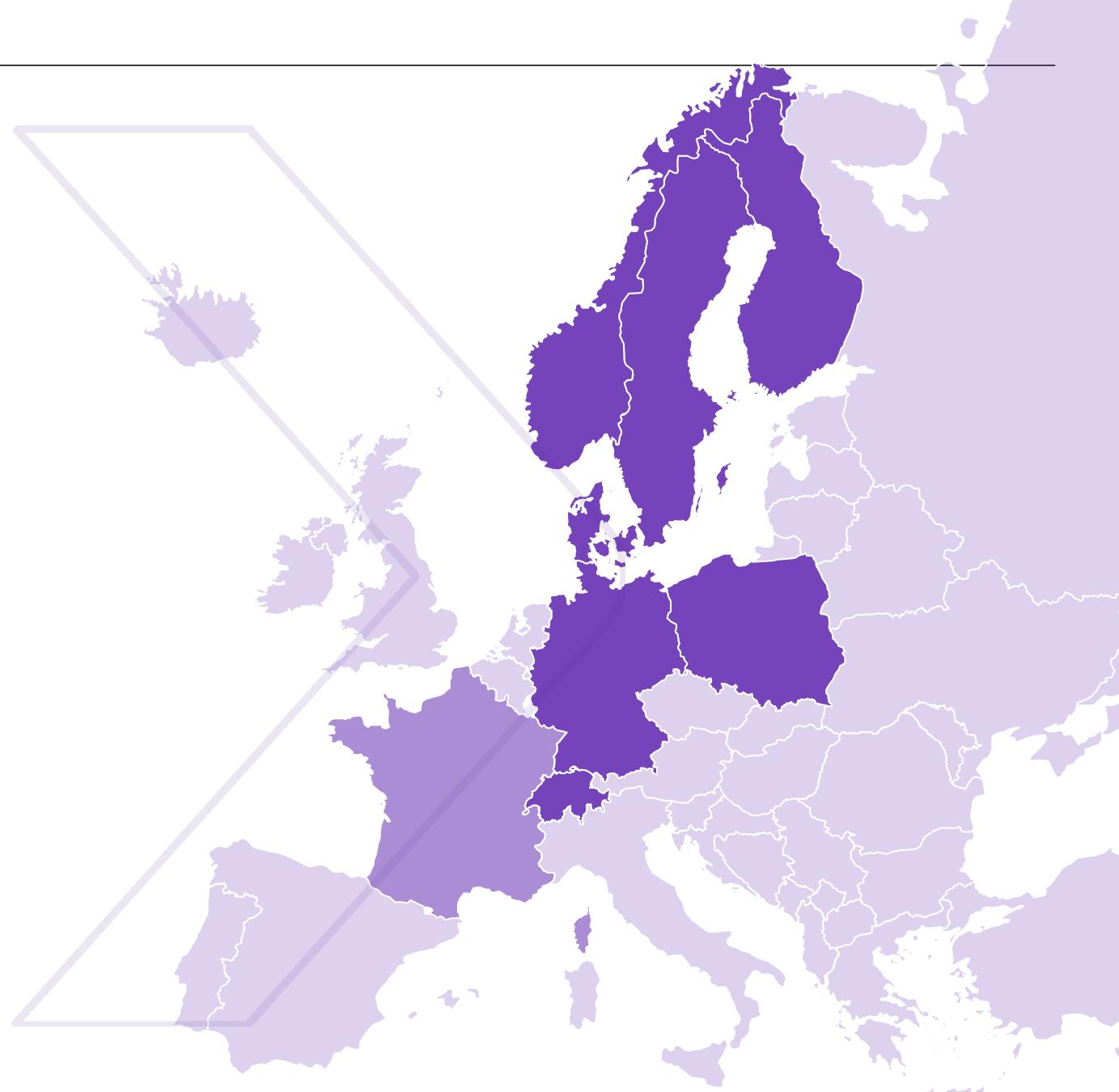


→ Facts

Open. Flexible. Independent

With proven integration and connectivity solutions, Kiona helps customers achieve their financial and sustainability goals by digitizing new and old buildings and their heating, cooling, ventilation and refrigeration systems.

-  **135** employees in 8 countries
-  **55 000** connected buildings
-  **180+** partners i Europa
-  **~200 NOKm** revenue in 2021



Edge



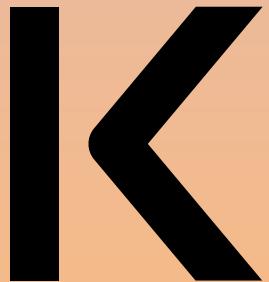
Works on all buildings!
Extends the lifespan of existing hardware.
No need for expensive replacements.



Easy access from every where.
High security

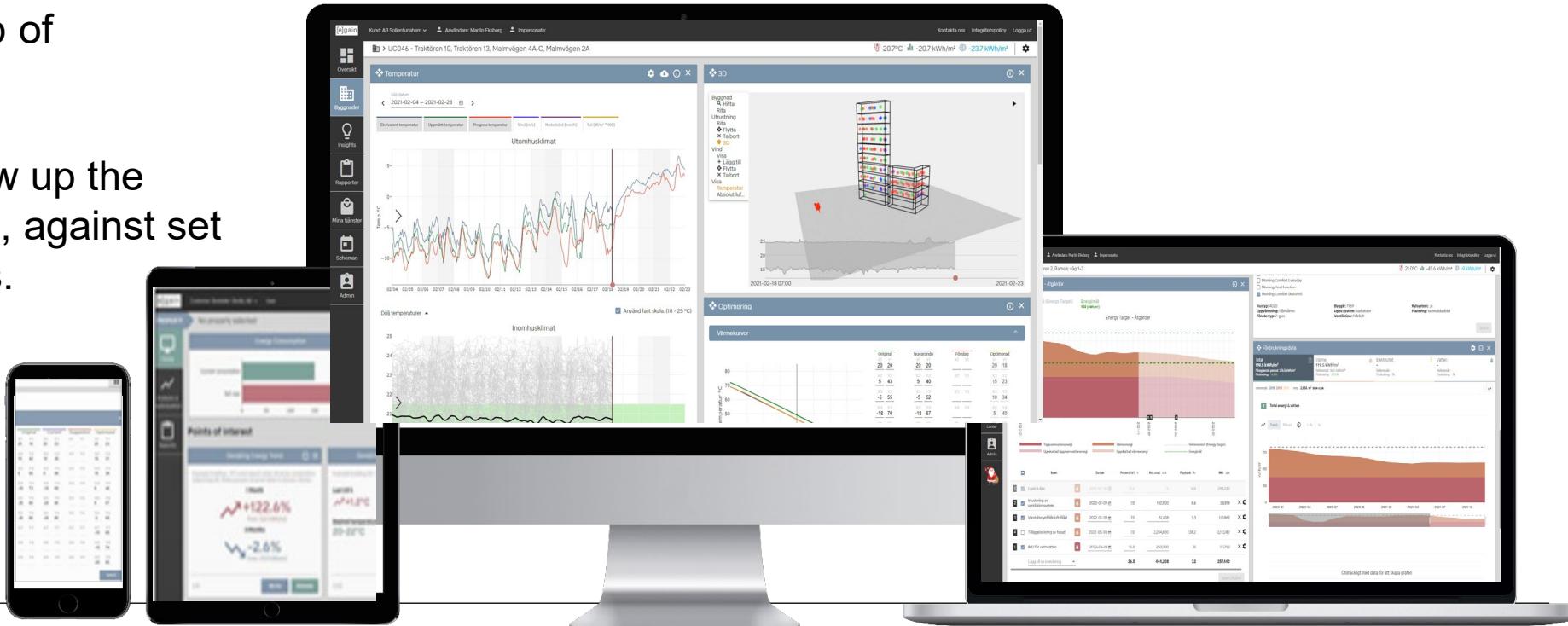


Low cost and easy implementation.
Savings



Flexible platform with efficient analysis tools

- Effective operation & analysis tools in a flexible platform for high availability at all levels throughout the organization
- Identify opportunities for improvement and make data-driven decisions as well as quality-assured follow-up of measures
- Simulate, analyze and follow up the results of various measures, against set energy and financial targets.



UC010 - Ekorren 1, Ekbacken 3, Skyttevägen 4-16, 5-17

20.4°C -12.8 kWh/m² -23.3 kWh/m²

Temperatur



Välj datum

2021-02-04 – 2021-02-23



Ekvivalent temperatur

Uppmätt temperatur

Prognos temperatur

Vind [m/s]

Nederbörd [mm/h]

Sol [W/m² * 100]

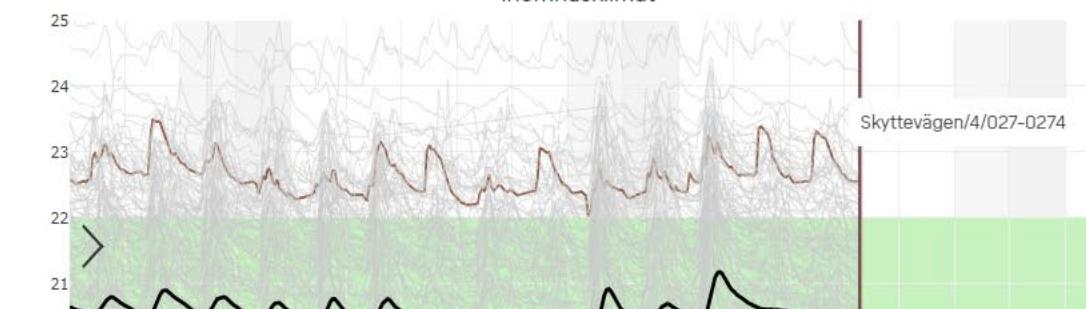
Utomhusklimat



Dölj temperaturer ▾

 Använd fast skala. (18 - 25 °C)

Inomhusklimat



3D

Byggnad



Hitta

Rita

Utrustning

Rita



Flytta



Ta bort



3D

Vind

Visa



Lägg till



Flytta

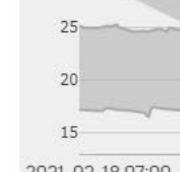


Ta bort

Visa

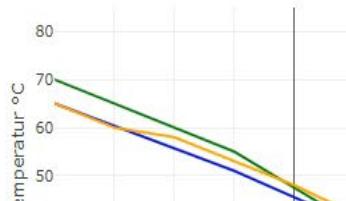
Temperatur

Absolut luft...



Optimering

Värmekurvor



Original

X1 Y1

20

18

X2 Y2

5

40

X3 Y3

-5

55

X4 Y4

-20

70

X5 Y5

-20

65

X6 Y6

-20

42

X7 Y7

5

42

X8 Y8

10

32

X9 Y9

X3

Y3

X10 Y10

X4

Y4

X11 Y11

X5

Y5

X12 Y12

X6

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X13 Y13

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X67

Y67

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X75 Y75

X69

Y69

X76 Y76

X70

Y70

X77 Y77

X71



BYGGNAD

Dalen 1, Tulegatan 63&67

24.1°C 0.0 kWh/m²

Temperatur 3d Peak control



Temperatur

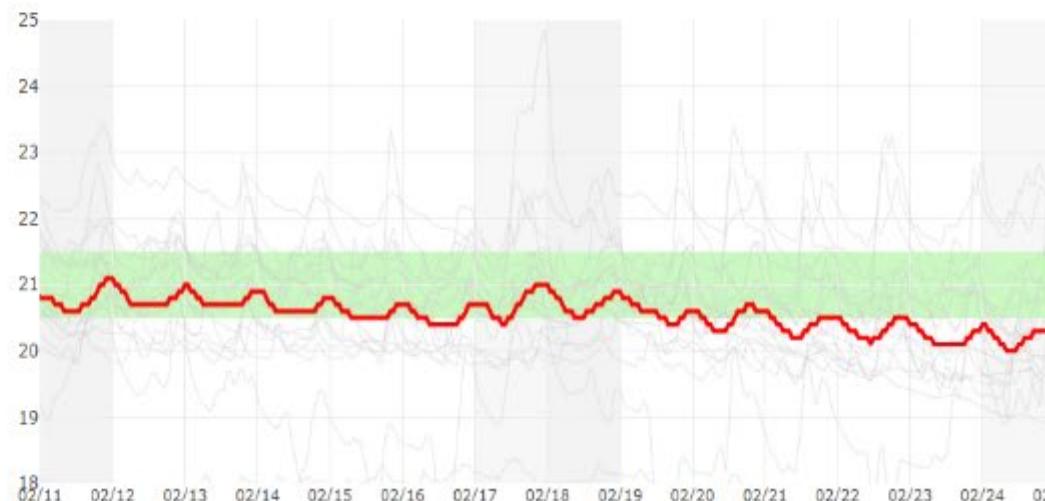


Period < 2018-02-11 > och 2 Veckor ▾ framåt

Dölj temperaturer ▾

 Använd fast skala. (18 - 25 °C)

Inomhusklimat



Visa luftfuktighet ▾

Välj trappuppgång ▾

Aktivera klimatlogger

Inomhusglövar (20)

Markera alla linjer med Teq3

Beskrivning

Tulegatan 63/1301

Tulegatan 63/1401

Tulegatan 63/1101

Tulegatan 67/1101

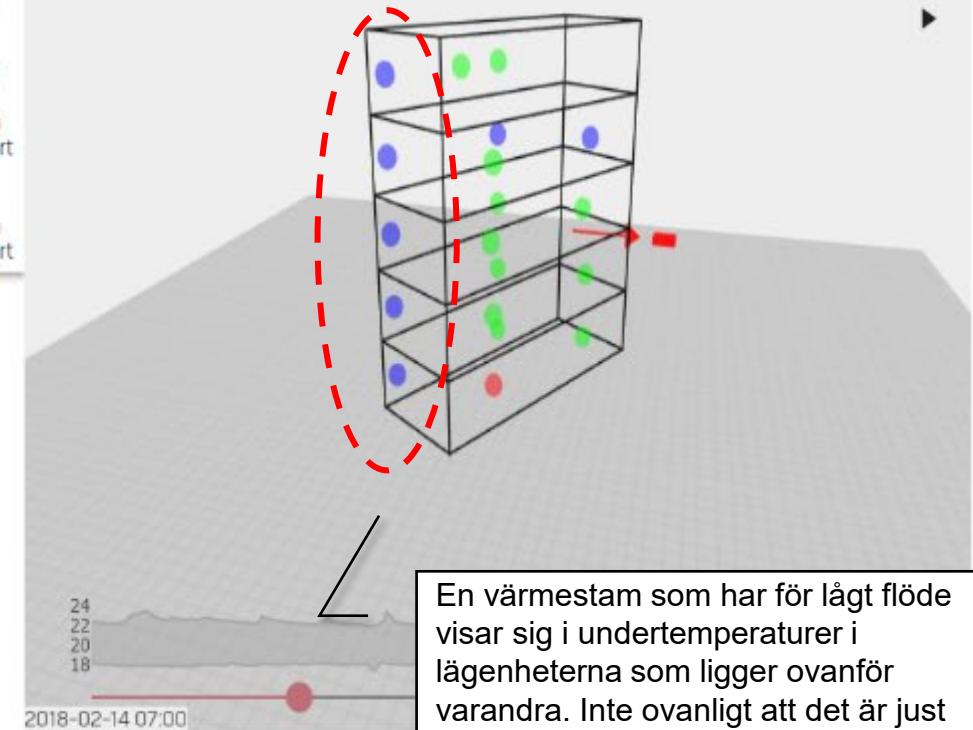
Nummer

Visa

Teq3

3d

Byggnad
Hitta
Rita
Utrustning
Rita
Flytta
Ta bort
3D
Vind
Flytta
Ta bort



En värmestam som har för lågt flöde visar sig i undertemperaturer i lägenheterna som ligger ovanför varandra. Inte ovanligt att det är just gavellägenheterna som är svagaste länken.

BYGGNAD

Staven 6-B, Backluravägen 13-17

25.3°C 6.5 kWh/m²

Temperatur Optimering Energistatistik 3d Peak control



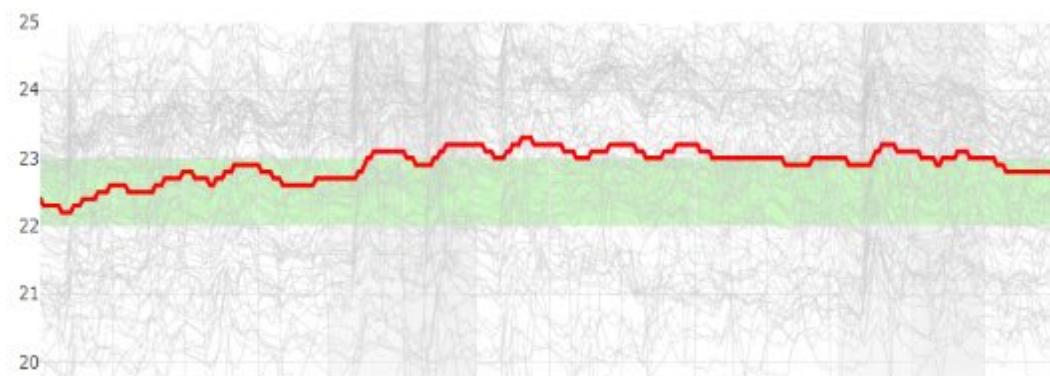
Temperatur

Startdatum
Period < 2018-02-20 > och 2 Veckor ▾ framåt

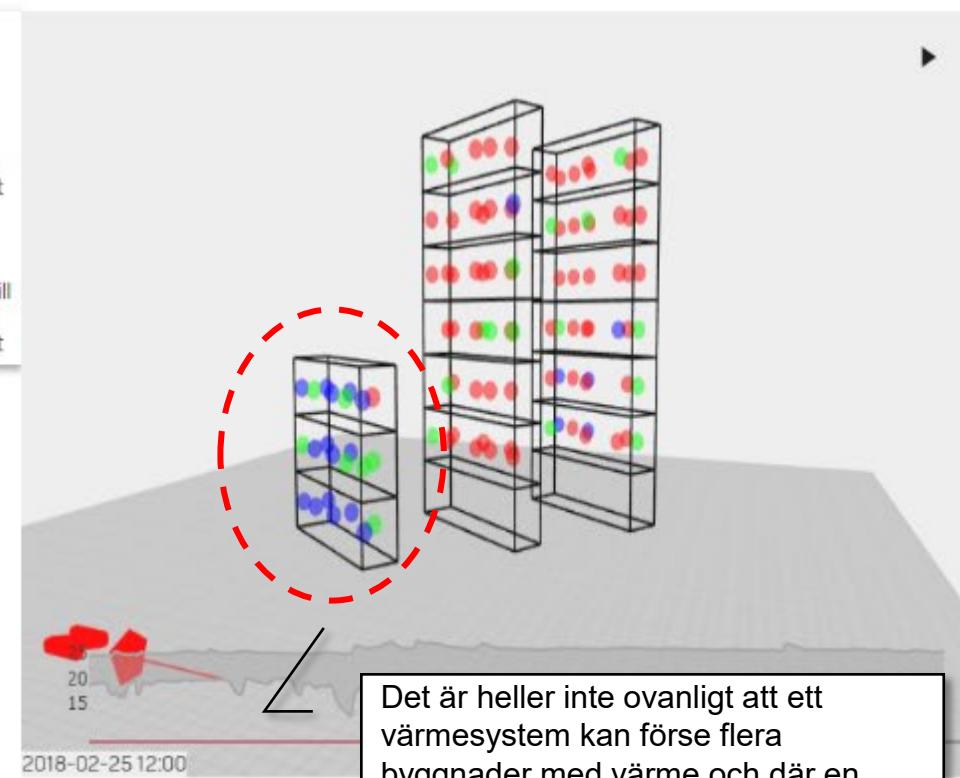
Interval

Ekvivalent temperatur Uppmätt temperatur Prognos temperatur Vind [m/s] Nederbörd [mm/h] Sol [W/m² * 100]

Inomhusklimat



3d

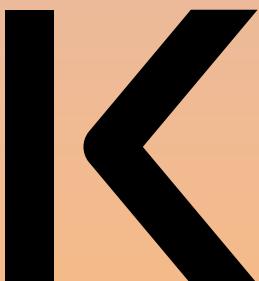
Byggnad
Q Hitta
Rita
Utrustning
Rita
❖ Flytta
X Ta bort
📍 3D
Vind
Visa
+ Lägg till
❖ Flytta
X Ta bort

Det är heller inte ovanligt att ett värmesystem kan förse flera byggnader med värme och där en huskropp ligger betydligt lägre i inomhus temperatur än övriga

Edge

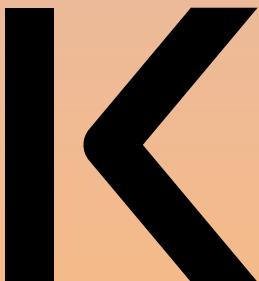
Typical benefits for customers

- > Average 10% reduction in consumption.
- > Problems with return temperature solved.
- > More stable indoor temperature.
- > Better dialog between tenants and service/management personel.
- > Lower maintenance cost due to efficient fault seeking - and targeted efforts.
- > Insights to make better decision for long term investments



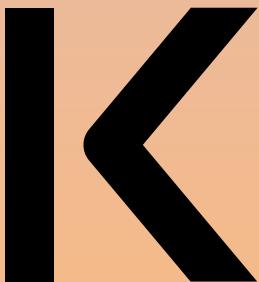
Edge Benefits for District Heating Companies

- > 10% “free” capacity
- > Lower forward temperature due to optimized buildings
- > Lower return temperature



Combined gains

- > 10% “free” capacity
- > Flexibility
- > Load shift
- > Optimized heat and power production
- > Potential business area (service/maintenance)
either in-house or by partner models



We collaborate with Utilifeed





Flexi-Sync

Flexible energy system integration
using concept development,
demonstration and replication



Webinar #6: Demo of district energy flexibility optimization tool

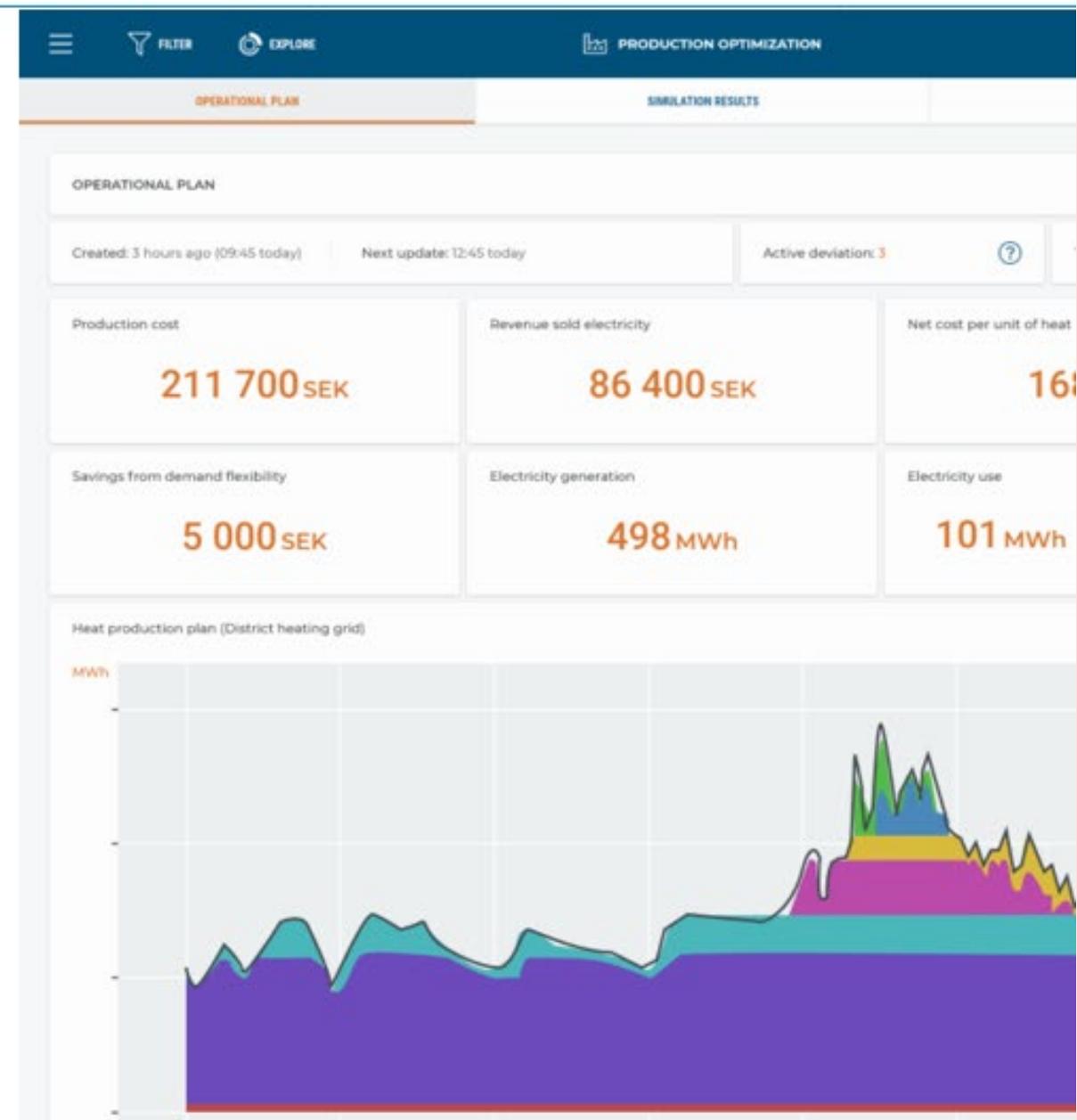
Filippa Sandgren & Johan Kensby - Utilifeed 2022-02-08

This initiative has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no. 775970 (RegSys).



Key features Optimization

- Load forecast with EnergyPredict
- Electricity price forecast
- Flexibility as a part of the optimization
- Demand side flexibility, Kiona



Current situation in electricity grid

Large variation in electricity prices

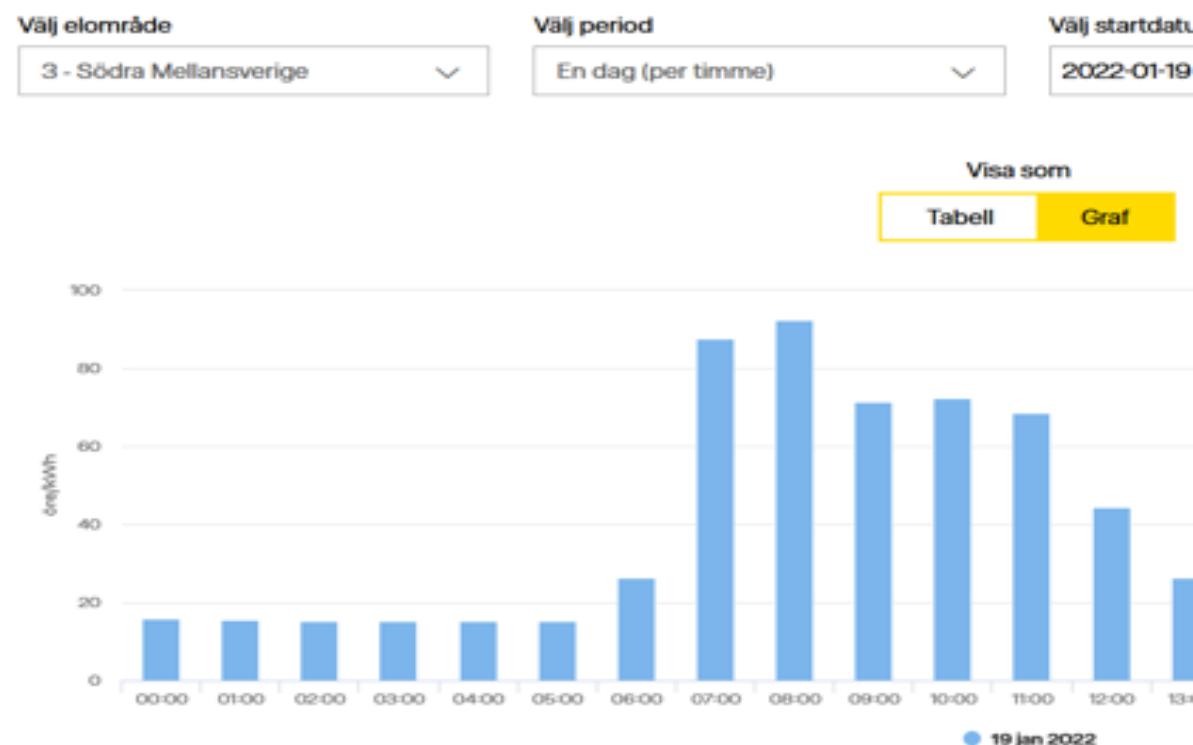
November - December (SE3):

- On average - Factor 10 between daily max & daily min price
- All days - Factor >1.8 between daily max & daily min price

The one with flexibility is the winner

- Large value in shifting electricity use (and generation) in time
- Large value in shifting between heating using and not using electricity (e.g. heat pump and district heat from CHP)

Hourly electricity price January 19th - 19 Jan 2022



Thanks for listening

Looking forward to solve the
challenges together with you!

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Kiona

