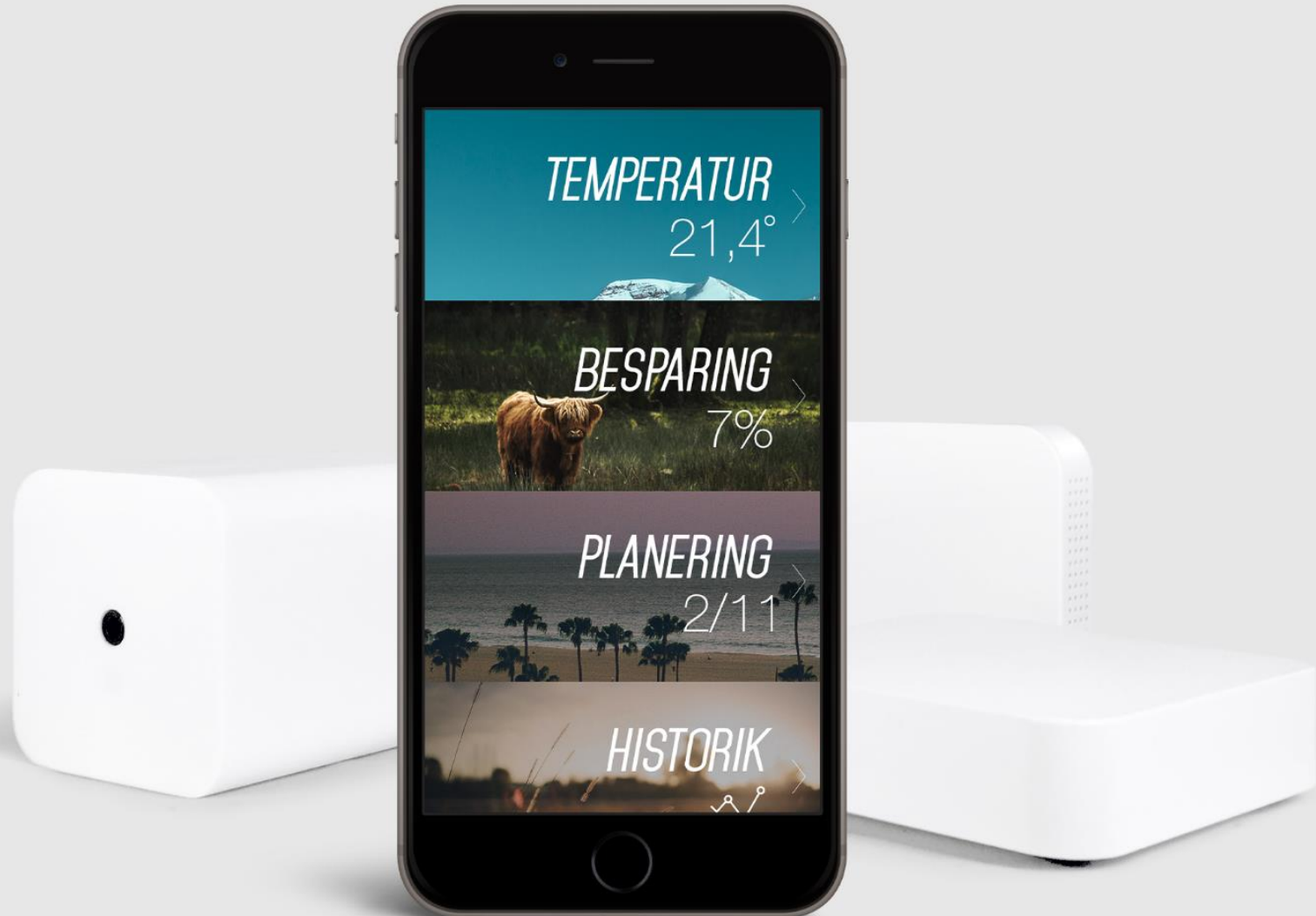




N NGENIC

A SMART THERMOSTAT, IF NOT THE SMARTEST



SAY HELLO TO TUNE!

- Tune is not just another smart thermostat. It's technically actually not a thermostat at all. It's a control system for your boiler/heat pump - Continuous "Eco-drive" tuning for the house
- Works with water-based heating systems (Electric/gas/bio-fueled boilers, Ground source/Air-to-Water heat pumps and district heating) with an outdoor temperature sensor
- Advantages for the end-user:
 - Improved comfort/more even indoor climate
 - An already installed heating system gets upgraded for internet control from an app.
 - Saves energy, money and the climate, up to 20% lower heating bills.
- The ONLY do-it-yourself system for water based heating control on the market in Northern Europe



MARKET TRENDS, ACCORDING TO FROST&SULLIVAN 2015-05-20

Analysis of the European Smart Thermostats Market
Booming Demand, Channel Diversification, and Business Model Innovation are Delivering Rapid Growth Across Europe

KEY QUESTIONS THIS STUDY WILL ANSWER

- How will the change in companies' business models impact the market?
- How will the structure of the market change with time? Is the market ripe for acquisitions?
- Which are the key hotspots in European region for current market penetration and future market potential?

KEY MARKET DRIVERS

- HIGH: Increasing support from energy utility companies
- MEDIUM: Greater demand for energy conservation
- LOW: Adaptability of smart technologies

CEO PERSPECTIVE

Key competitive factors:

- User friendliness
- Ease of installation
- Attractiveness of products

KEY COMPANIES

Heat Genius, Crestron, Emerson Electric, Eneco, Honeywell Danfoss, RWE Carrier, PassivSystems, British Gas, Heatapp, Ngenic, Google-Nest, Tado, eQ3, Johnson Controls, Netatmo, Climote

THE LAST WORD

- Smart thermostats are the fastest growing product segment in European home automation market.
- New business model of smart thermostat manufacturers partnering with utility companies drives market penetration and lowers cost.
- Smart thermostats that are easy to install, have simple appearances, and require limited technical knowledge will be highly preferred.

START YOUR JOURNEY

<https://www.frost.com/m01>
TEL: +1.877.GoFROST (463.7678)
EMAIL: myfrost@frost.com

Dhivya Sundara
MANOJAR
RESEARCH ANALYST

John Raspin
PRACTICE DIRECTOR

FROST & SULLIVAN

KEY COMPANIES

Heat Genius
Crestron
Emerson Electric

Eneco
Tado
eQ3
Honeywell Danfoss
RWE Carrier
PassivSystems
British Gas
Heatapp
Ngenic
Google-Nest
Johnson Controls
Netatmo
Climote

KEY MARKET DRIVERS

HIGH
MED
LOW

3-4 YEARS

- HIGH: Increasing support from energy utility companies
- MEDIUM: Greater demand for energy conservation
- LOW: Adaptability of smart technologies

THE LAST WORD

- Smart thermostats are the fastest growing product segment in European home automation market.
- New business model of smart thermostat manufacturers partnering with utility companies drives market penetration and lowers cost.
- Smart thermostats that are easy to install, have simple appearances, and require limited technical knowledge will be highly preferred.

BEHOLD, CHANGE IS COMING 



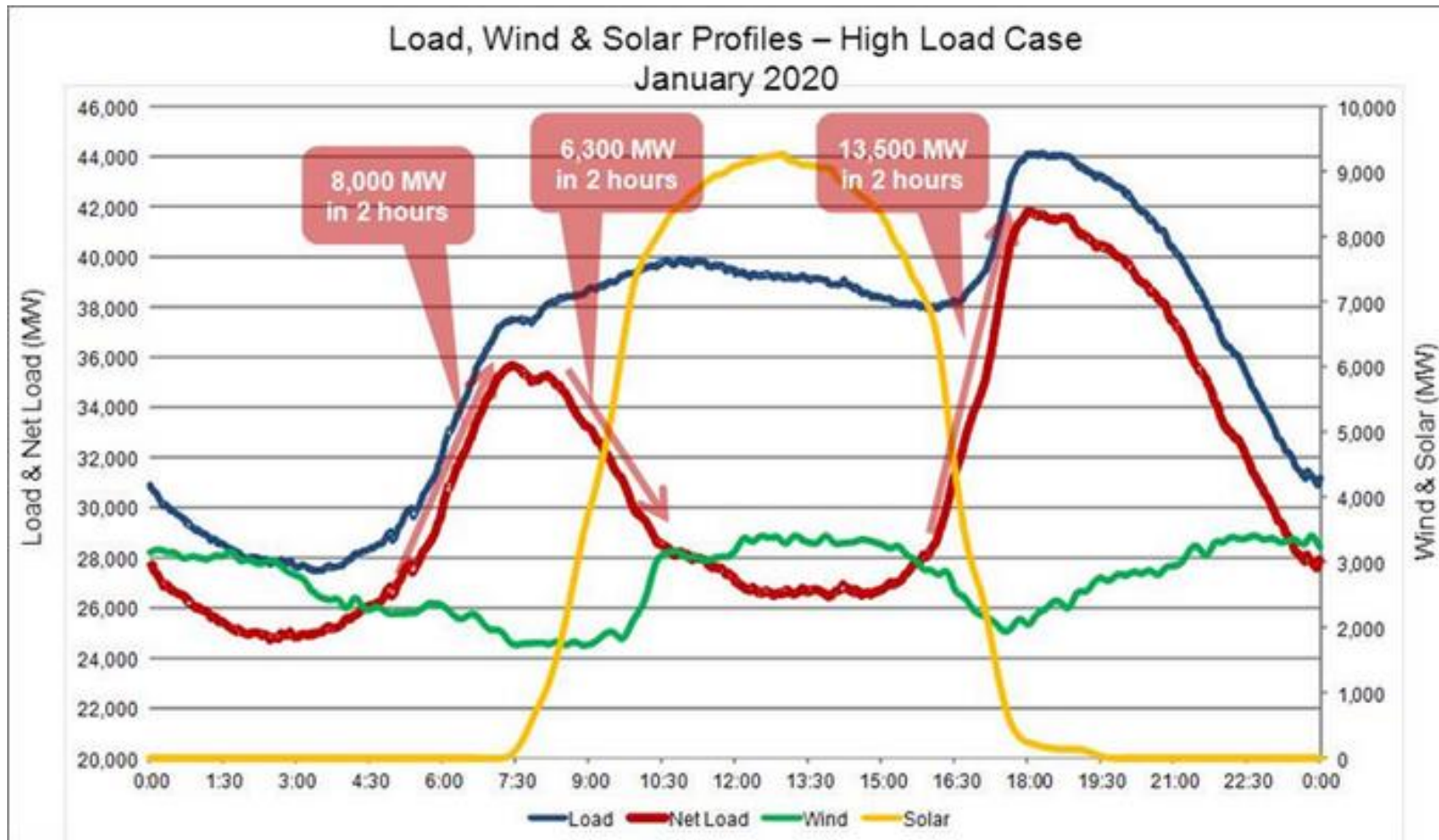
THREE WISHES

- Use the energy (kWh) more efficient
- Enable more renewable energy into the energy system (flexible consumption)
- Increase customer satisfaction
 - Better comfort, better control, automatic
 - Lower cost
 - Contribute to a better world



PROBLEM – SUPPLY AND DEMAND IN THE FUTURE

GAS TURBINES VS. AUTOMATED FLEXIBLE CONSUMPTION



Source: Wärtsilä Gas Turbines

CLOUD SERVICE FOR DEMAND SIDE LOAD BALANCING



Grid Load
(local, regional, national)



Production forecast,
Import/Export



Building dynamics



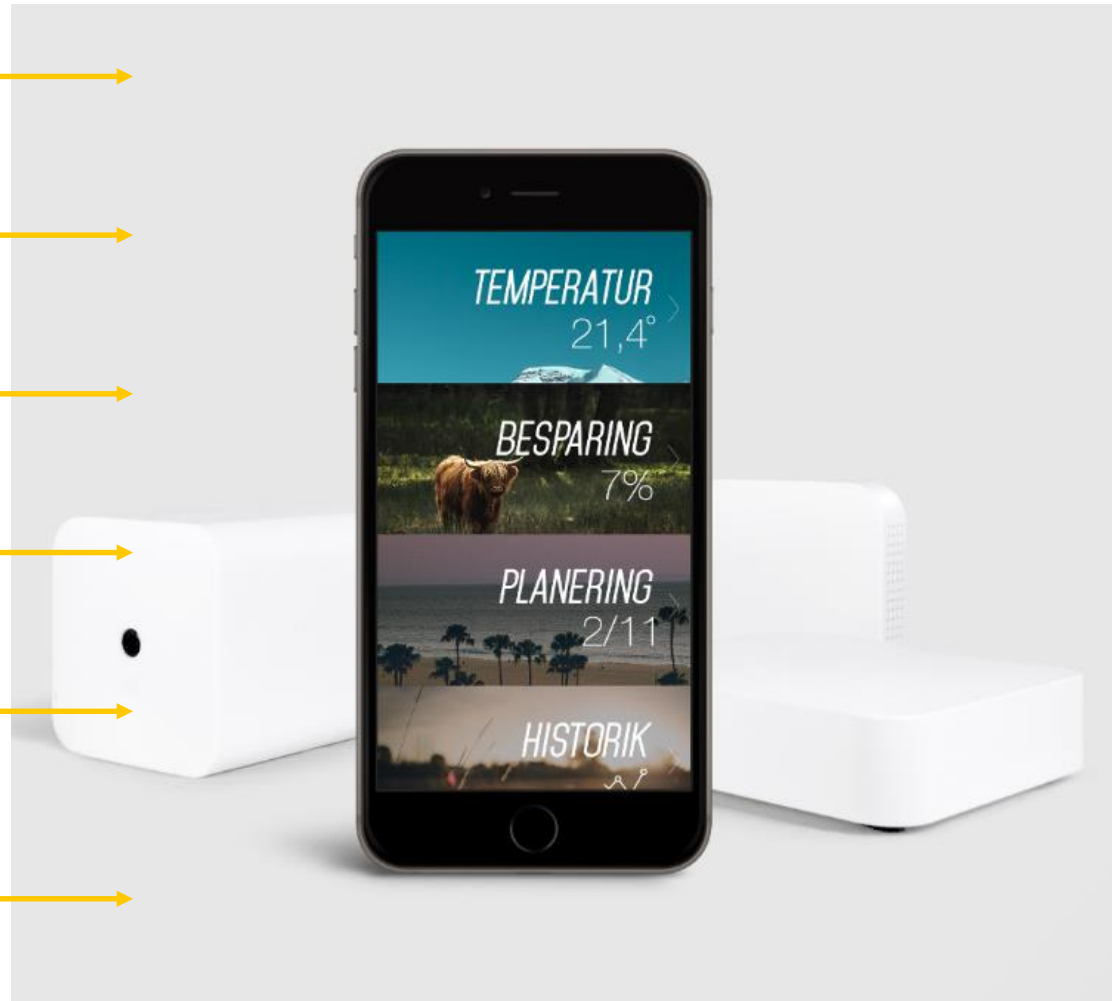
Weather forecast



Day-ahead market



Intraday markets
Balance market
Power reserve



KLOKEL: 500 HOMES = 1 MW FLEXIBILITY!

Project goals

- Simultaneous Automatic energy efficiency and DSM
 - Peer-to-peer load control as well as grid optimization.
- Enables more renewable energy into the energy system (flexible consumption)
- Enables fast charging without peak costs
- Enables better grid utilization on *existing* infrastructure.

ROI: 2-3 years

Potential: 20% of peak load flexibility



KLOKEL – MASSIVE GAIN WITH MINIMAL EFFORT

- Enable more renewables in the energy mix
- Less need for peak power installations(i.e. Gasturbine's -> Co2)
- Smothen the peak prices* (Elforsk report 13:95)
- Energy storage at 40€/kWh compared to 500€/kWh utility scale



KLOKEL – RESULTS FROM FIRST TRIAL

- January 15, 4-5 PM: Peak load 66 MW in local grid
- Average outdoor temperature -17°C
- 100 homes participated
 - All Heating turned off during the hour, only water based heat pumps participated. No electric boilers.
 - Average indoor temperature drop: 0,2°C
 - ~200 kW power load reduction
 - No returning load peak when heating was resumed
- Value on spot and balancing market ~600 SEK
- Value on purchased power for local grid: 60 000 SEK
- Potential in local grid 10 MW. In practice only 6 MW needed today
 - Value 1,8 MSEK/year



2020: LOCAL GRID AND EV'S

- ~3 MW extra peak load between 16-18 due to charging EV's (+5% of current peak load)
- 1MSEK extra cost for DSO
 - Only 500 kSEK extra revenue...
- Increased grid tariff or more flexibility!
- Within existing DR potential? YES!



POTENTIAL IN A LARGER SCALE:

1,5 MILLION CUSTOMERS IN SWEDEN = 3 GW FLEXIBILITY

50 MILLION CUSTOMERS IN EUROPE = 100 GW FLEXIBILITY

IT HAPPENS NOW.



/ YOUR FRIENDS AT NGENIC