

# Optimizing ROI with Dynamic Value Stacking

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# Agenda



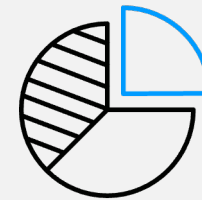
**Pixii & Products**



**Status in Sweden**



**The principle of  
dynamic value stacking**



**Relevant markets**

# Solid ownership



ELTEK HOLDING



## Revenue

2021, 3 MUSD, 2022, 18 MUSD, 2024 71 MUSD

*\*Estimates*

PRODUCTS

# Solutions C&I



## PRODUCTS

# PixiiPowerShaper ID

A powerful BESS with a wide range of services and functionality serving a wide range of markets and applications – saving money or generating revenues in front of and behind the meter.

### Key features

- Modular and scalable up to 50kW
- Advanced energy/power management and control
- Fan cooling or aircon IP 20
- Fast response
- Fully integrated battery & inverter solution
- 51V safe operation and service
- Battery agnostic



## PRODUCTS

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Explore more



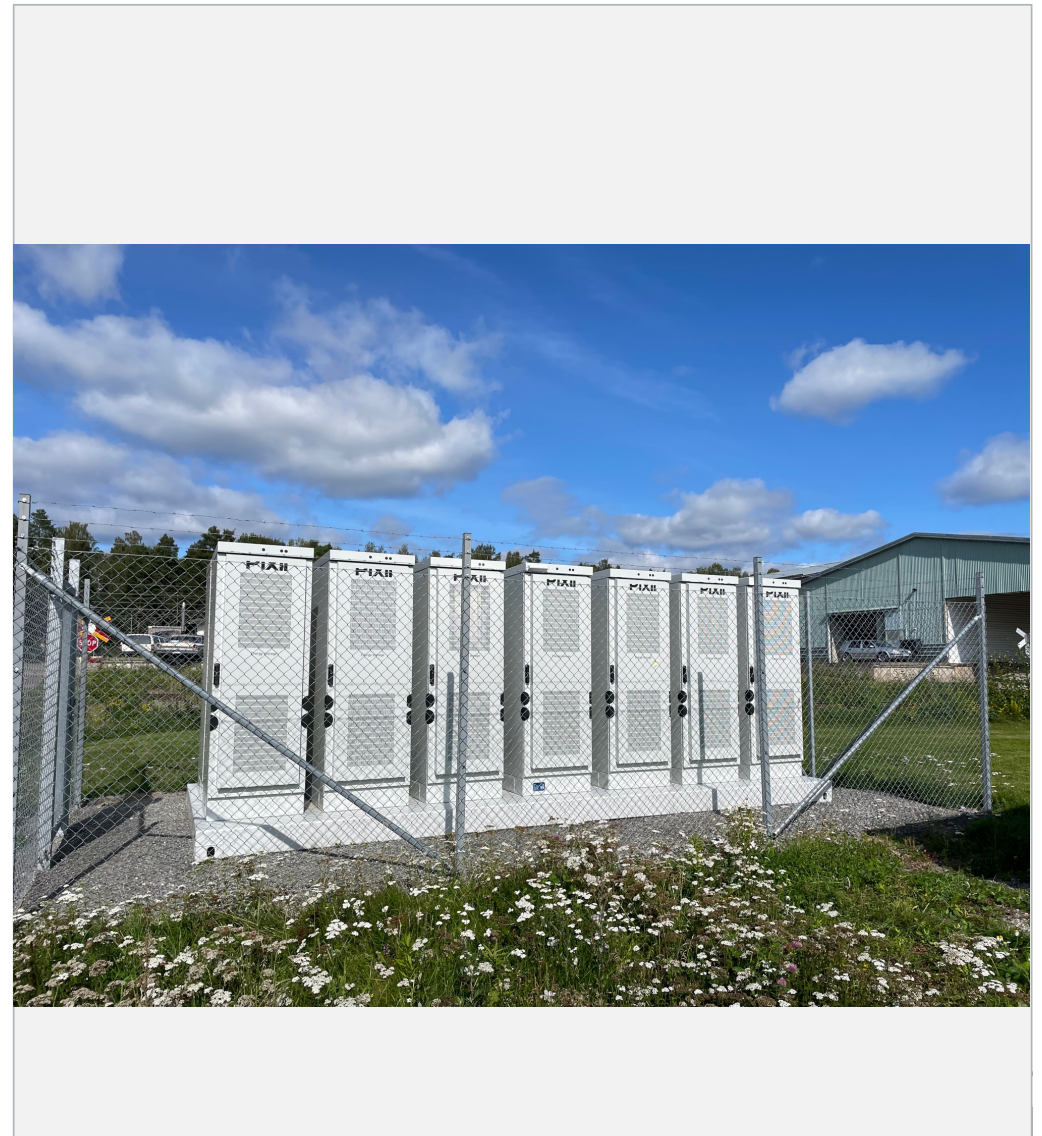
## PRODUCTS

# PixiiPowerBase

Is a complete BESS for up to 600kW/600kWh power capacity. PowerShaper cabinets are installed in the factory on a 20-foot steel frame and cabled to a single AC connection cabinet – significantly reducing site preparation requirements and installation time.

### Key features

- Scalable up to 2,4 MW and beyond
- Fast to deploy and install
- Scalable – within a PowerBase or multiples
- Up to 600kW/600kWh or 480kW/1,4MWh
- Fast response
- Integrated battery & inverter solution
- 51V battery voltage for ease of service

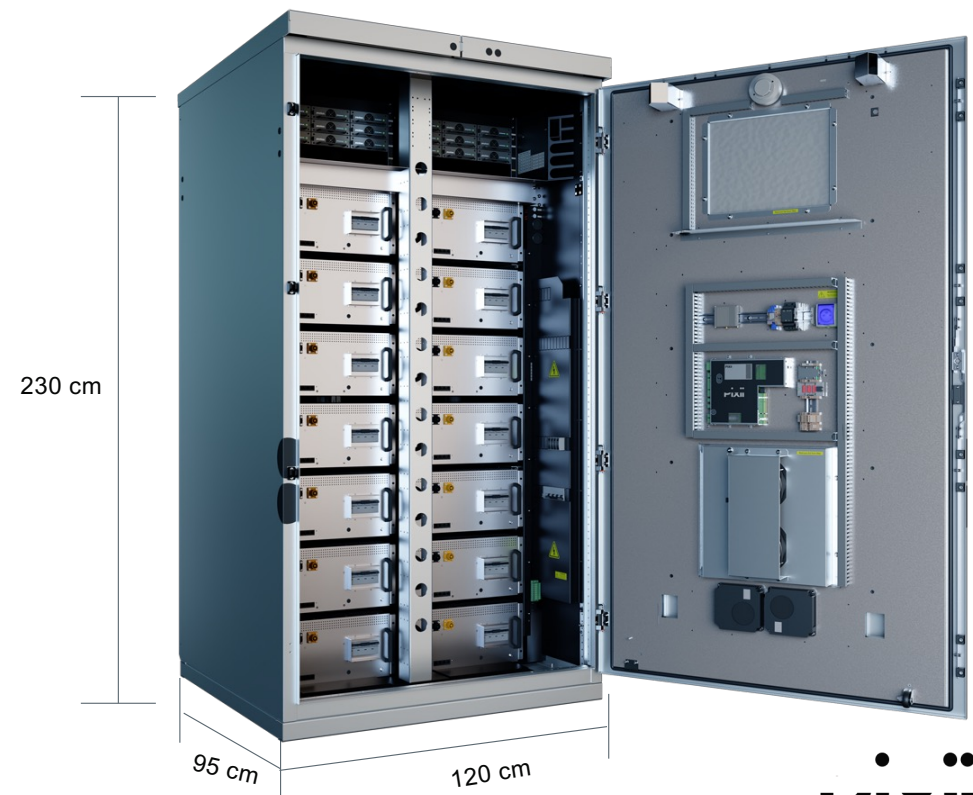


# PowerShaper XL 60-100kW/200 kWh

Low C-Rate for higher energy requirements vs power.

## Key features

- XLE Modular and scalable up to 60kW / 200 kWh per cabinet 0,33C
- XLP Modular and scalable up to 100kW / 200 kWh per cabinet 0,5C
- 14,4kWh LFP battery
- Designed for transport with batteries installed
- All advantages of the existing PowerShaper included
  - Pixii Gateway
  - PixiiBox
  - 51V Batteries





# Power Base XL 20ft Skid (540-900kW / 1,8MWh)



PRODUCTS

# Solutions Home



USP

## Specs and Warranty

- Outdoor system IP55
- **-30°(internal heater) to 45°**
- IP55
- 10 years of warranty
- Multiple use cases
- Modular & Scalable



Increase your energy independence. Optimize your energy consumption by charging your batteries with excess energy from the sun or by charging your batteries from the grid when electricity tariffs are low. Spend your stored energy when you need it.



Peak shaving



PV self consumption



Arbitrage



Flexibility markets



**PIXII**

DESIGN THAT IS FUNCTIONAL

# Scalable

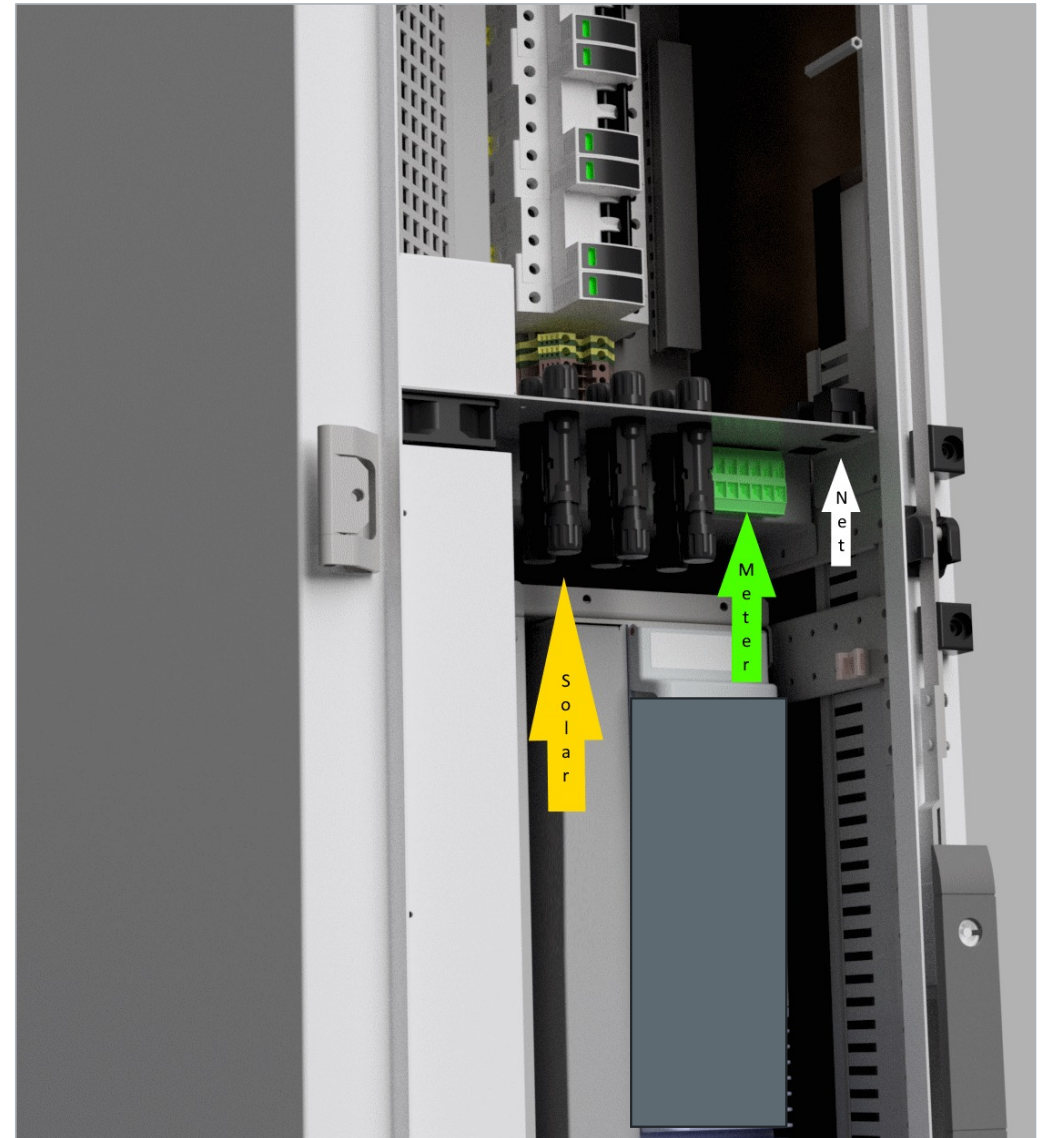
Start small and grow as you go!  
Begin with 10 kWh and expand up to 20 kWh  
as your energy demands or family grows.

- Software driven – customize functions like arbitrage, peak shaving or frequency support as the market for these services changes over time
- Align investment with government support incentives
- 10KW/10kWh
- 10KW/15kWh
- 10KW/20kWh
- 20KW/20kWh



# Hybrid

- Available, 2<sup>nd</sup> half 2024
- 10kW DC input → 13-15kWp
- 1 MPPT and string per PixiiBox
- MC4 connectors inside the cabinet
- SPD's inside the cabinet
  
- 10KW/10kWh-3,3-10kW Solar Converter
- 10KW/10kWh-3,3-15kW Solar Converter
- 10KW/10kWh-3,3-20kW Solar Converter
  
- One spare part Inverter or Converter (**PixiiBox 3.3 kW**)



A photograph of a power line tower against a sunset sky. The sun is low on the horizon, creating a bright orange glow. Several other power line towers are visible in the distance. The sky is a mix of orange and blue. The text "Status in Sweden" is overlaid in white on a dark horizontal band across the middle of the image.

# Status in Sweden

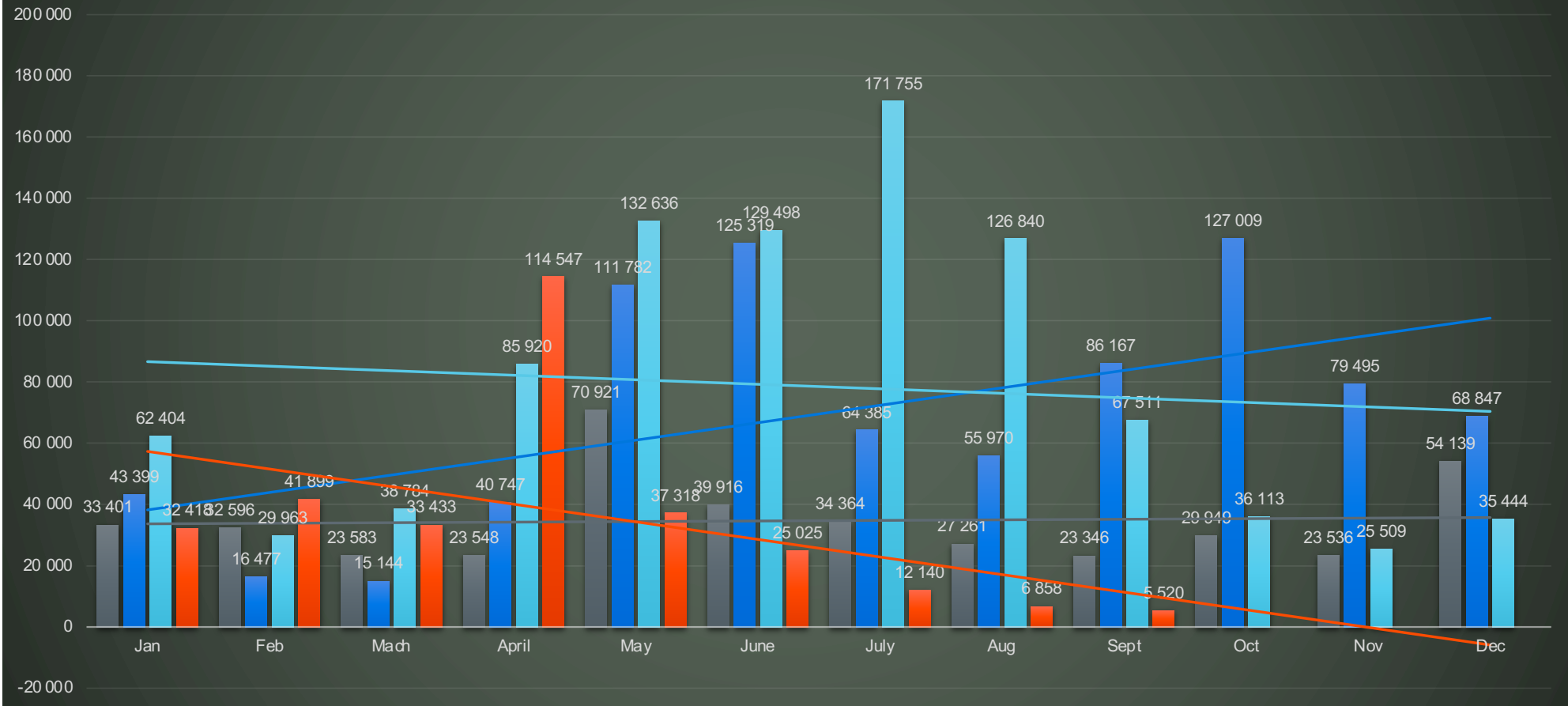
2021 418 579

2022 836 764

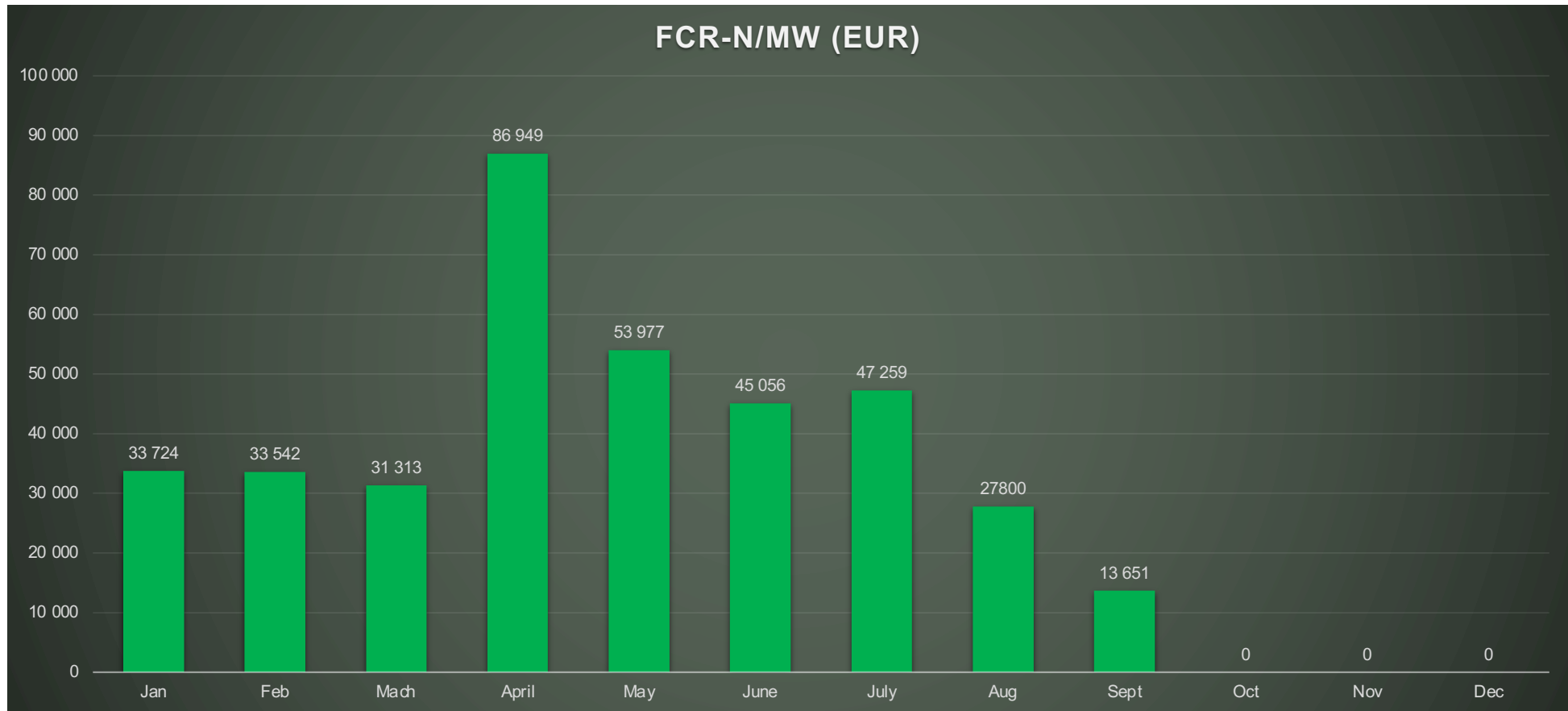
2023 944 399

2024 309 158

### FCR-D /MW 2021-2024 ytd (EUR)

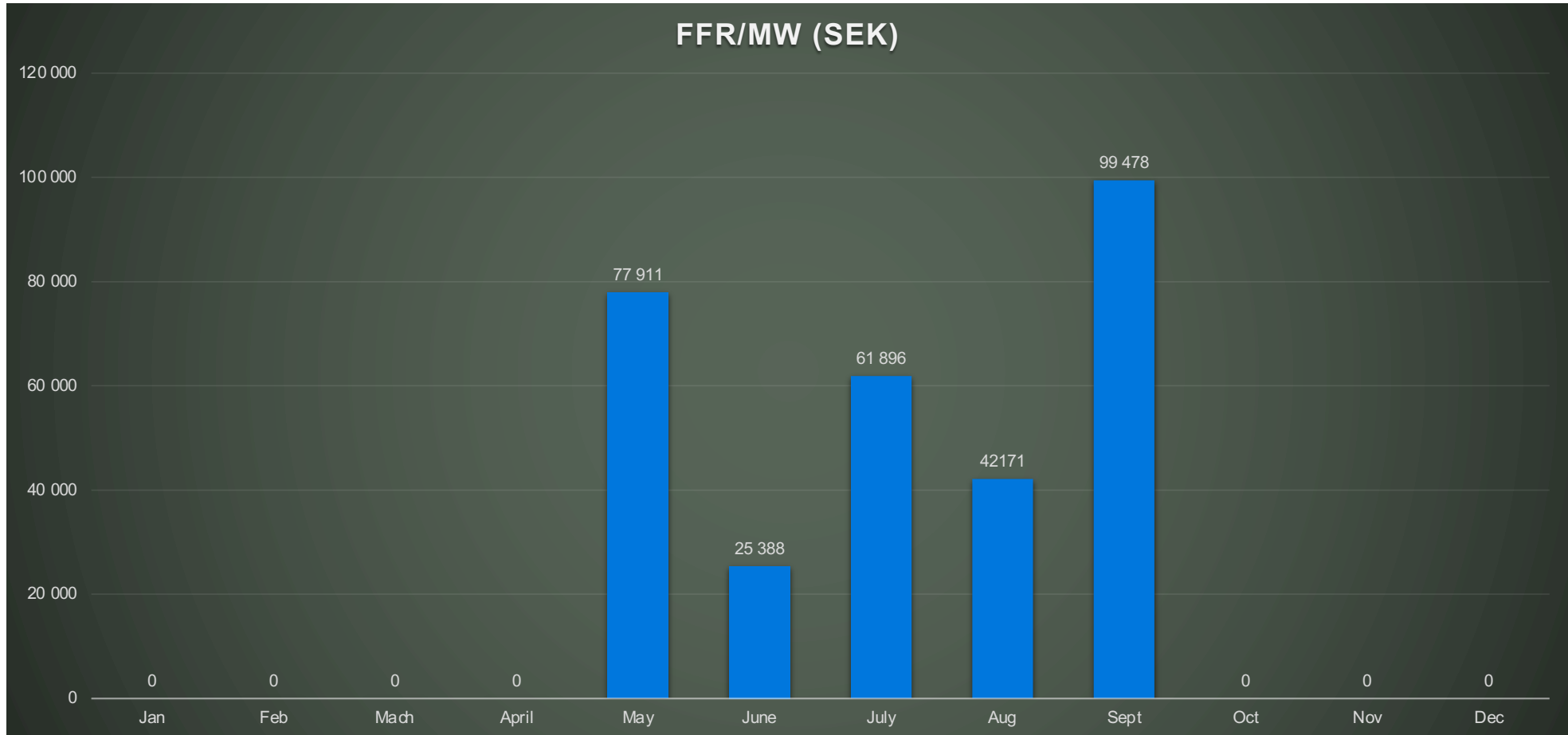


Year to Date 375 395 EUR



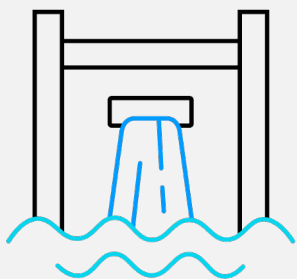


YEAR TO DATE 2024 **308 868**

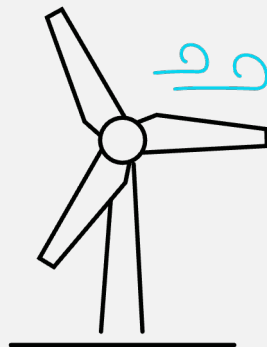


## DRIVERS FOR LOW FCR-D PRICES

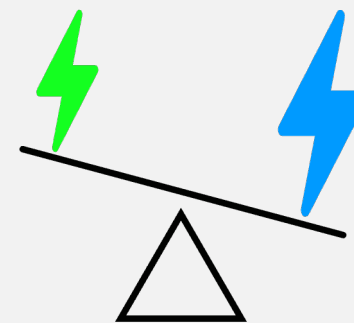
# Varberg energi expect the FCR-D prices to rise again soon



- High hydropower production push prices down



- High influx of wind, BESS assets, and flexible demand in the market



- Actors are not trading in alternative markets.
- They keep (only) participating in FCR-D despite earnings below break even

Source: <https://www.varbergenergi.se/privat/tjanster/el/energilaget-just-nu/>

## The BESS investment case

# Roughly 10-20% of the operational hours of BESS will account for 70-90% of the revenue

### Seasonal variations

- The complex nature of a transitional energy system can result in big imbalances and high compensation for resolution of these imbalances. However, seasonal factors such as weather, temperature and external markets such as the gas market influence the pricing.

### What's happening in more mature markets

- In more mature markets such as the UK and Germany, ancillary services initially made up 80-90% of the revenue but as the market matured other markets such as wholesale arbitrage and intraday trading has emerged as the primary revenue sources

### The case for distributed BESS

- In addition to reaping the benefits that large scale batteries have – distributed BESS are ideal for providing local services such as local flexibility, voltage control and peak shaving.

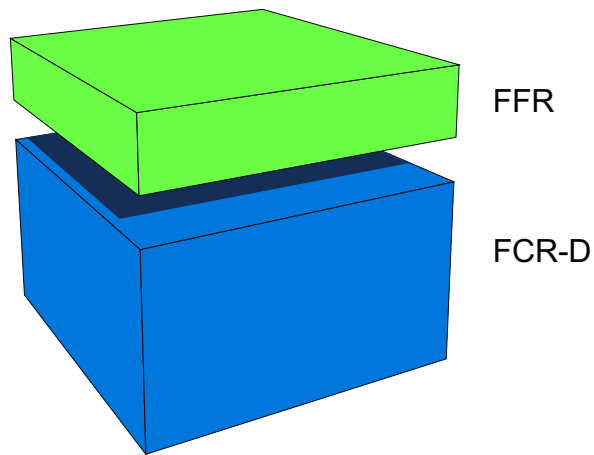
### What should you expect?

- With advanced trades, Pixii estimated that you should be able to make **150 - 400 k€ per MW** annually of BESS in the Sweden depending on your location, your DSO and the energy situation in Europe and the Nordics

The image shows four stacks of coins on a dark, reflective surface. From left to right, the stacks increase in height. The first stack on the left is the shortest, followed by a medium-height stack, then a taller stack, and finally the tallest stack on the right. Each stack is topped with a single coin. The background is a dark blue gradient. A semi-transparent dark grey horizontal band is overlaid across the middle of the image, containing the text.

**Principle of dynamic value stacking**

# Typical BESS operation today



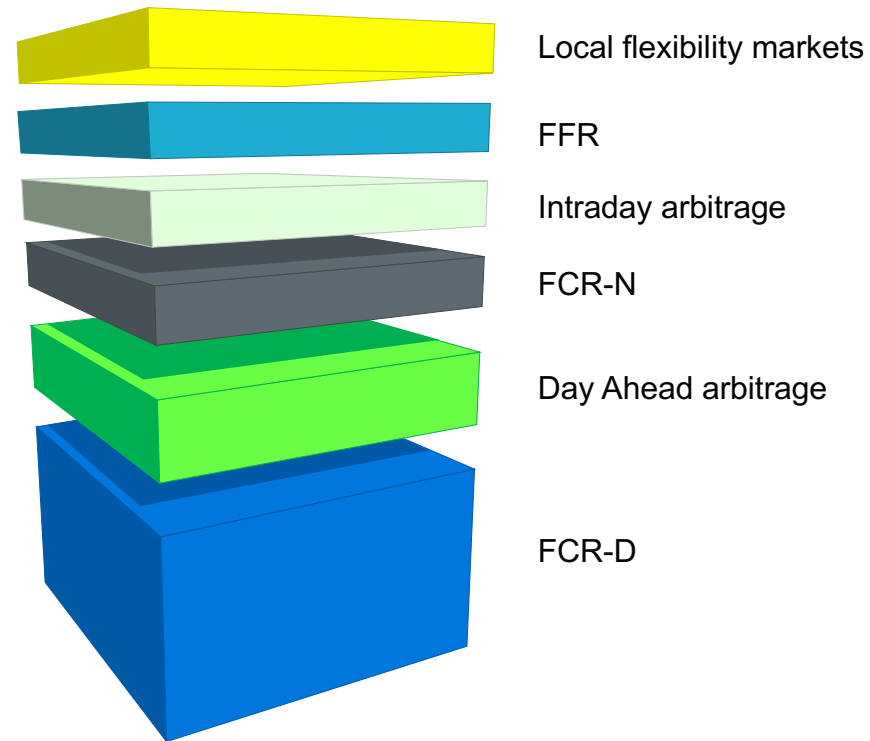
Example of a value stack comprising of various services

## Estimated Revenue in 2024 per MW / 1C

	YTD (jan-jul)
FFR	14 k€
FCR-D	256 k€
<b>YTD 07</b>	<b>270 k€</b>
<b>Combined 2024</b>	<b>320-450k€</b>

# Dynamic value stacking ensures your ROI

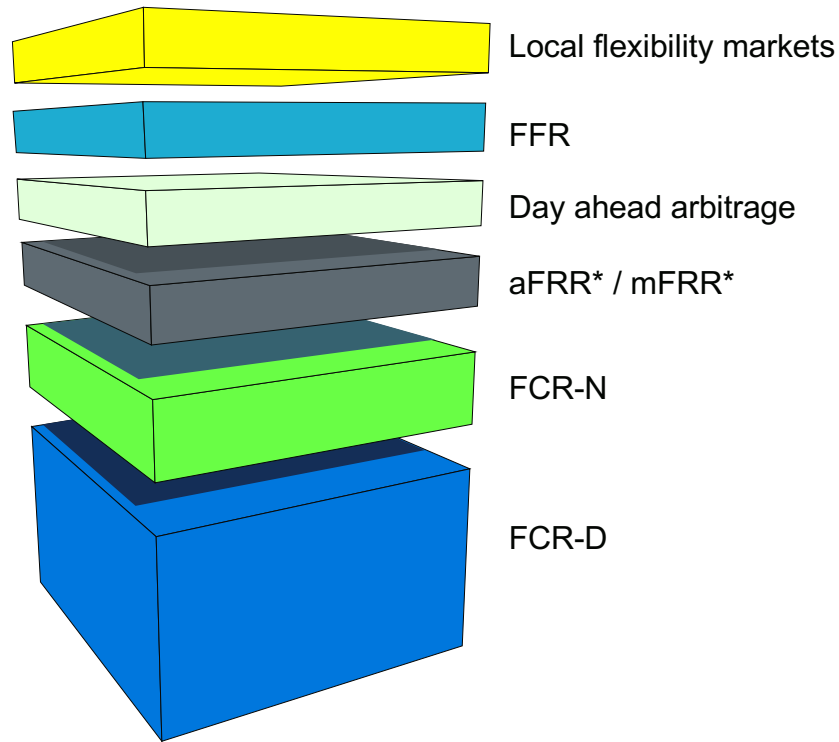
- Despite falling FCR-D prices, great money can be made by more advanced energy trades
- Your aggregator and BRP can, and should, help you set up a value stack of services that gives you the best possible ROI, at all times



Example of a value stack comprising of various services

DYNAMIC VALUE STACKING

# Maximize your ROI



Example of a value stack comprising of various services

## Estimated Revenue in 2024 per MW / 1C

	YTD (jan-jul)
FFR	14 k€
FCR-D	256 k€
FCR-N	132 k€
mFRR*	***
aFRR*	42-242 k€**
Intraday trading	***
Day- ahead Arbitrage	176 k€
<b>YTD 07</b>	<b>620k€</b>
<b>Combined</b>	<b>700-900k€</b>

\* Capacity market, more than 1 MW to participate

\*\* Total market

\*\*\* No figures '



# Relevant markets & Applications



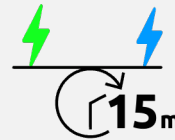
# Relevant markets for revenue creation



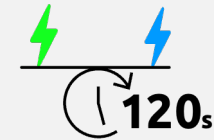
**Day ahead**



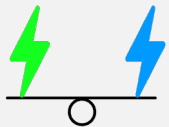
**Intraday**



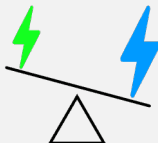
**mFRR**



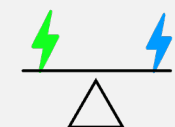
**aFRR**



**FCR-N**



**FCR-D**



**FFR**

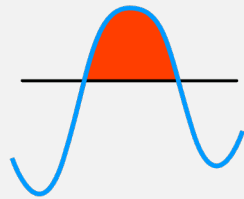


**Local flexibility  
markets**

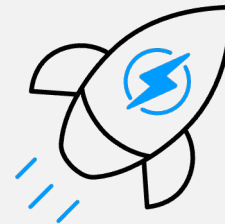
# Relevant cost saving applications



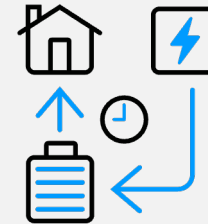
**PV self-  
optimization**



**Peak  
Shaving**



**Power Boost**



**Arbitrage**

Q&A





HOW TO GET YOUR VALUE STACK RIGHT?

- Do you already own a Pixii BESS?

**Talk to your aggregator or  
balance responsible (BRP)**

- Are you interested in BESS?

**Contact Pixii**

[ingar.sorensen@pixii.com](mailto:ingar.sorensen@pixii.com)

# MODULAR ENERGY STORAGE

Flexibility made simple



PIXII