



EnAppSys

- part of **MONTEL** GROUP



Intraday trading in Hungary

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Who we are?

Recent Price Developments CEE

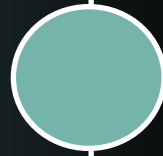
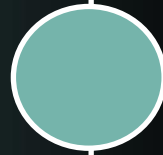
- ✓ End of Extremistan*?
- ✓ New Normal – Volatility and Negative Prices

Fundamentals in motion

- ✓ Increased *must-run* gen.
- ✓ April 2019 vs 2023

Hungarian Intraday Market

- ✓ What's driving the intraday market?
- ✓ Regional outlook
- ✓ HU Balancing anomalies
- ✓ Case studies

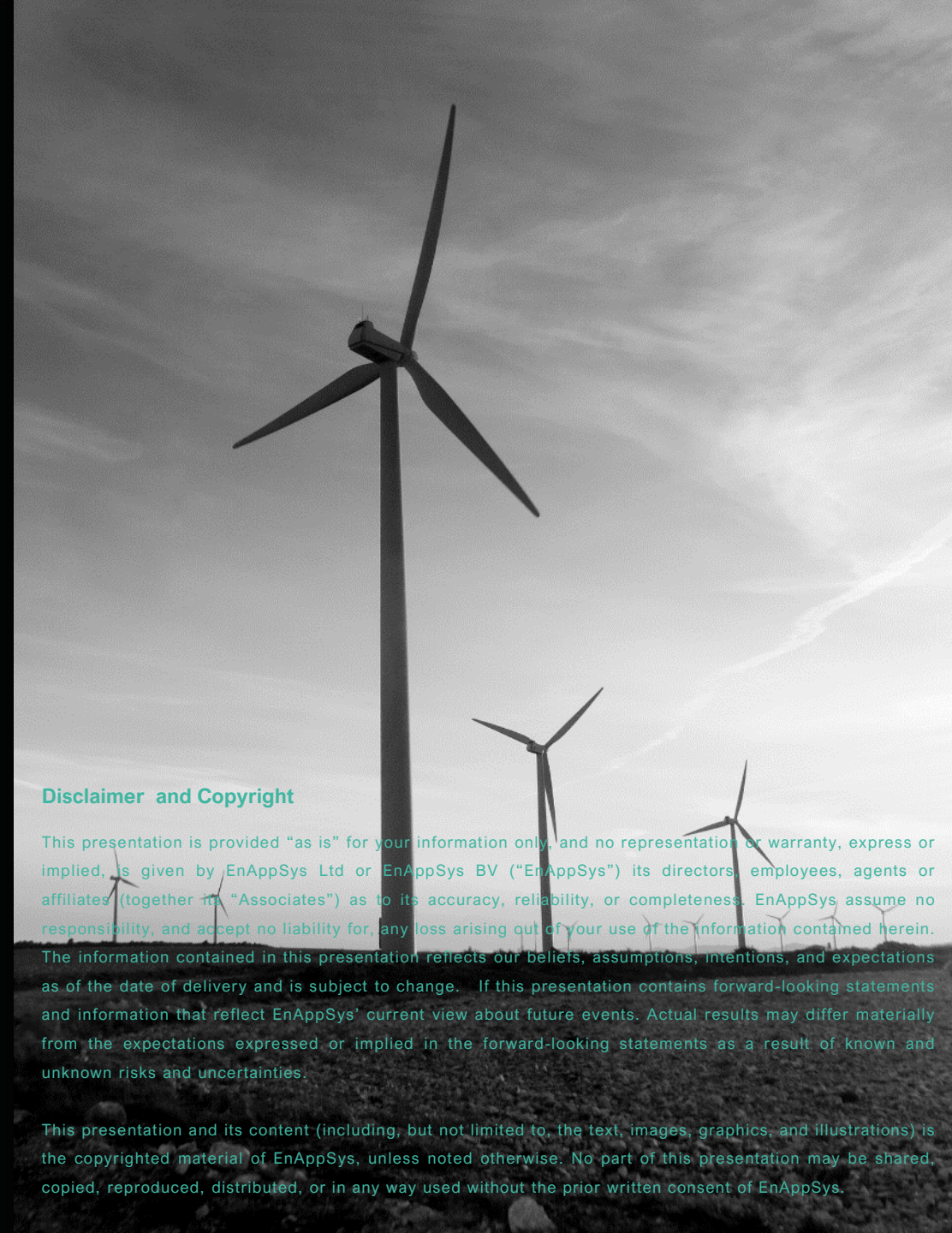


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**Extremistan is a term coined by Nassim Nicholas Taleb to explain the randomness and deviations from the mean of most social, man-made aspects of human society. The term was popularized by Taleb's book The Black Swan.*



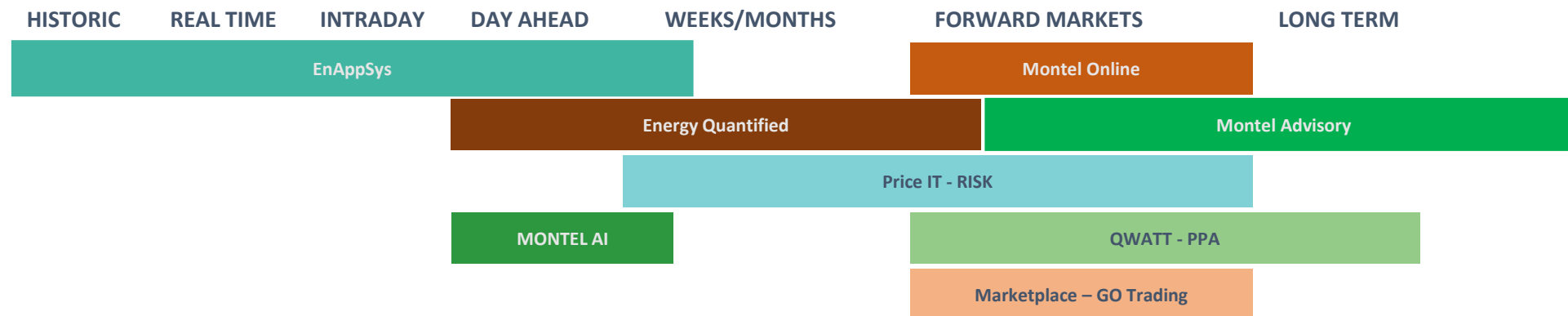
EnAppSys is a new acquisition of Montel Group

Data and Analytics Platform for Short-Term, Intraday and Historic Data

- Demand, Renewables Forecasts
- Day Ahead Price Forecasts
- Market Sensitivities
- Intraday Trading Analytics
- Cross Border Analytics
- Balancing Markets

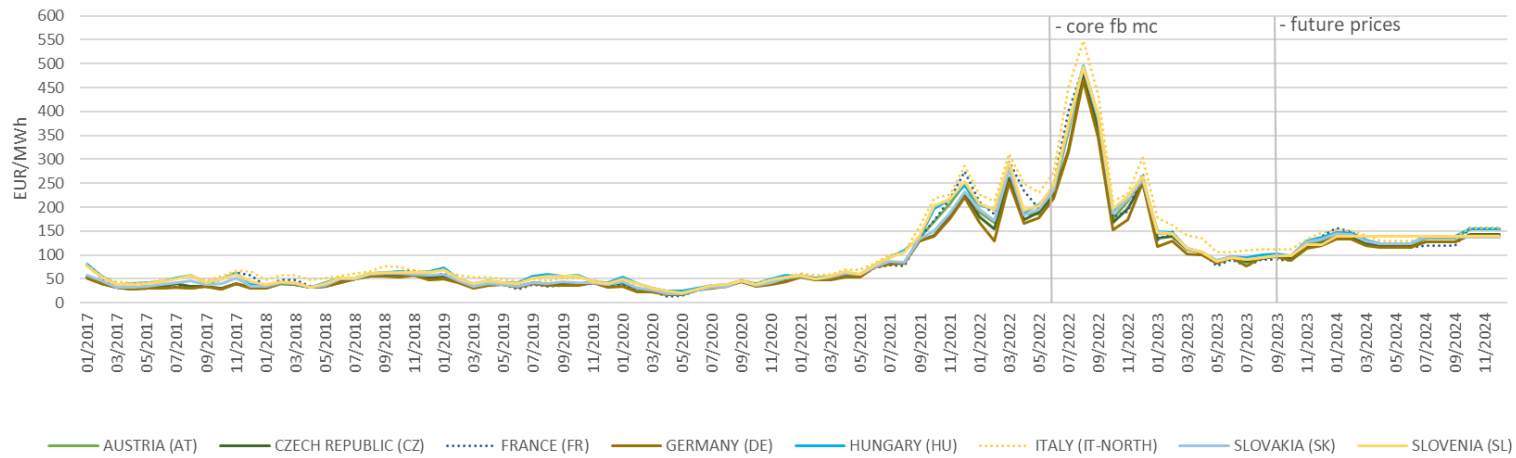
The EnAppSys Platform is a highly configurable and customizable source of data and analytics, featuring API-connectivity and rapid development.

It allows you to create your personal views on the market while leveraging the knowledge and experience of our analysts.

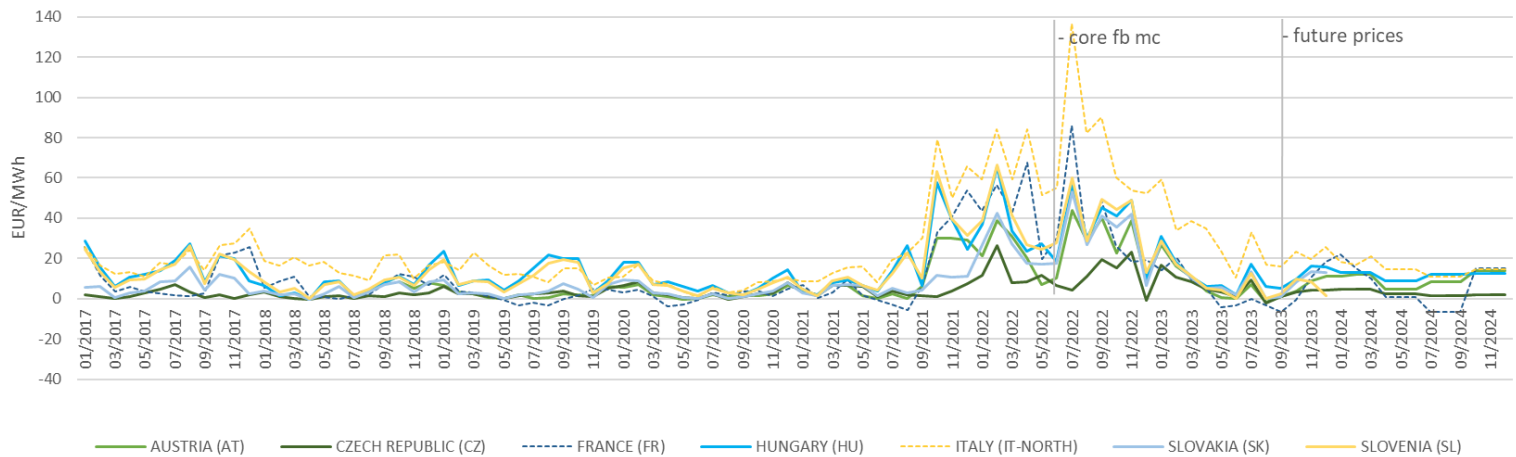


Recent Price Dev.

DA power price history - Monthly averages + Monthly Futures

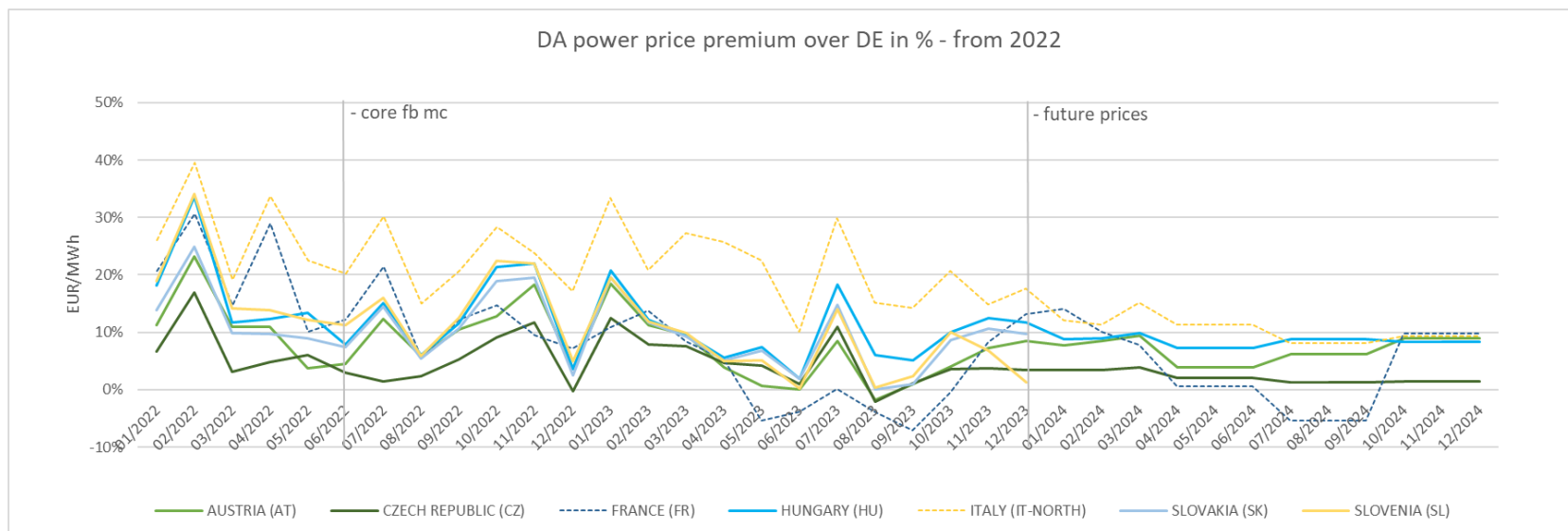
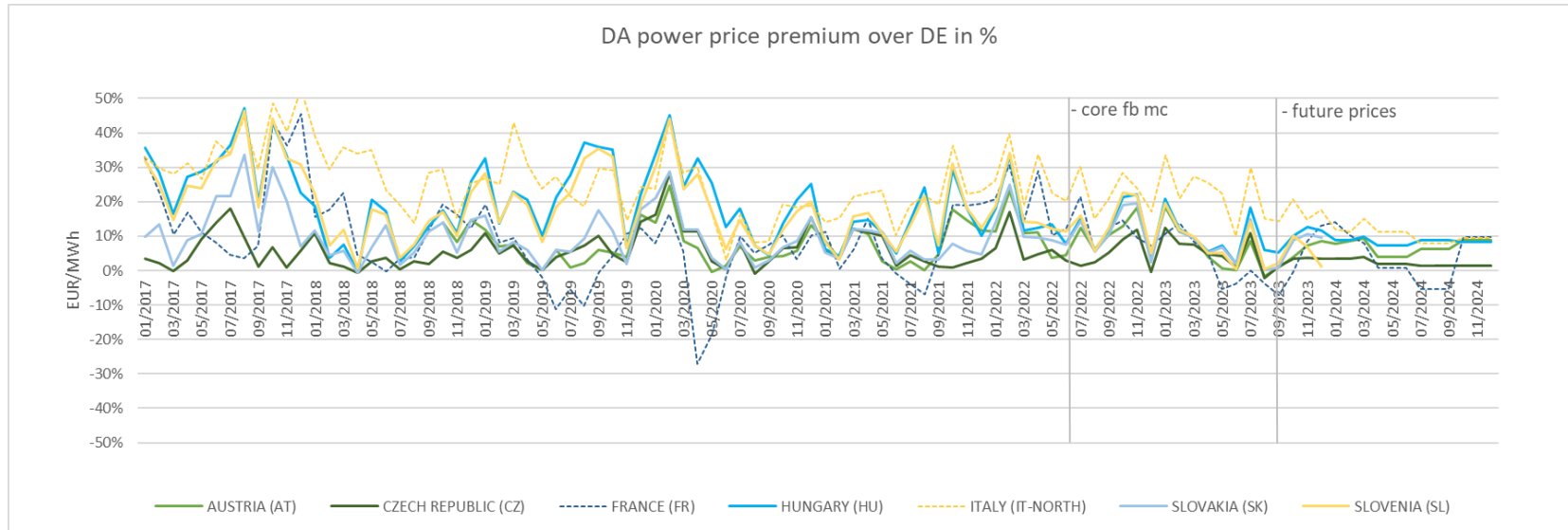


DA power price spreads/premium over DE



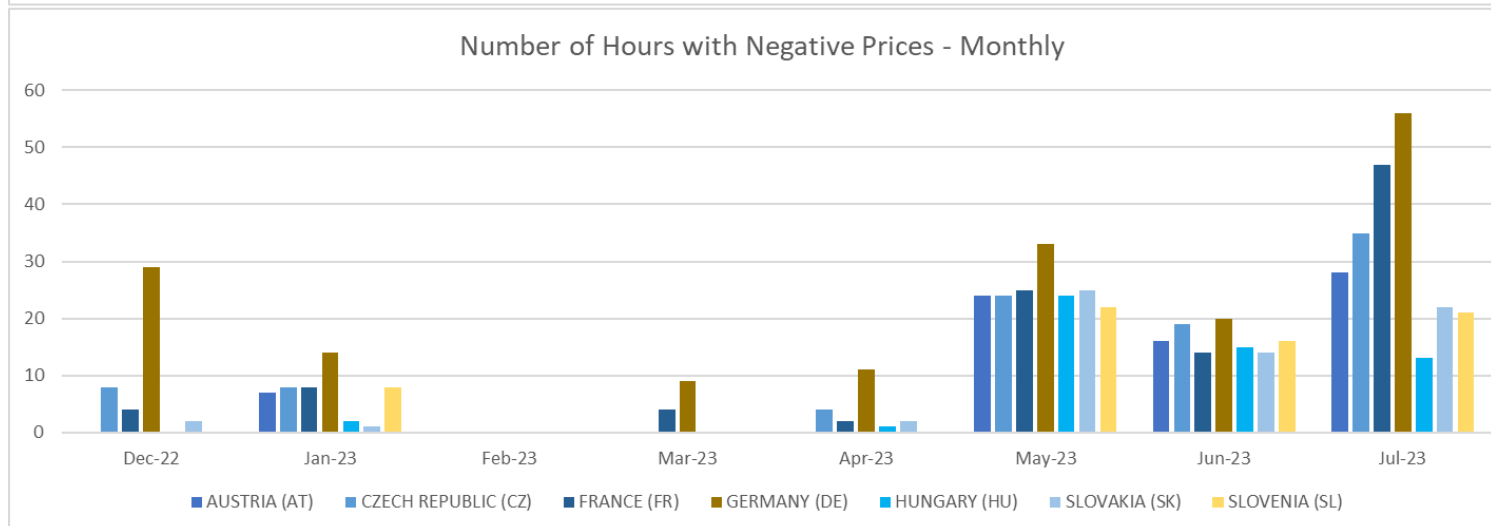
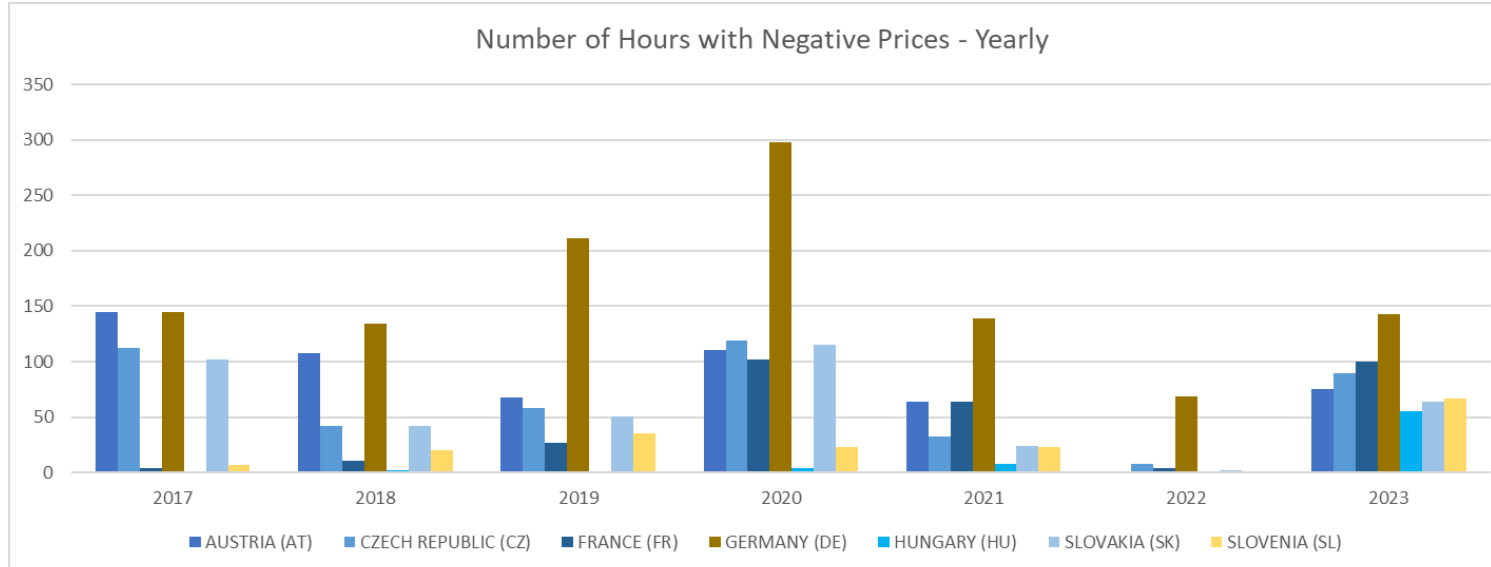
- **Peak Extremistan: 08.2022**
- **Spreads to Germany were more moderate (MC)**
- **FWD Market prices indicate currently that the most extreme periods are over**
- **Germany is the benchmark, France and Italy are influential on the DA market**
- **Spreads: AT, FR, IT, HU with forward Quarterly prices in 2024**

Recent Price Dev.



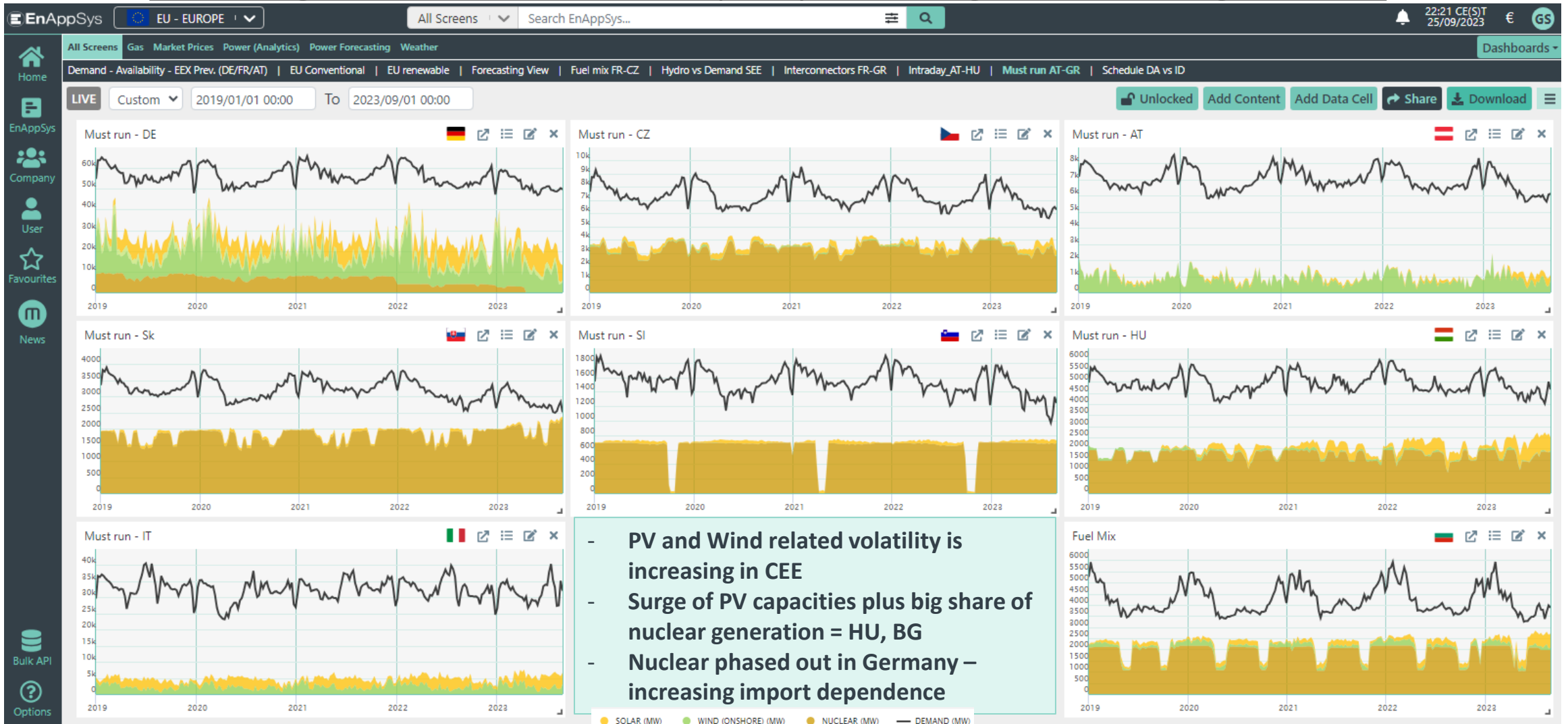
- Price premium to DE is shrinking steadily in the percentage of the outright-local price
- Even more so since Core FB MC 06.2022
- Previous highest periods above 40% since 06.2022 around and below 20%
- Spreads: AT, FR, IT, HU with forward Quarterly prices in 2024

Negative Prices

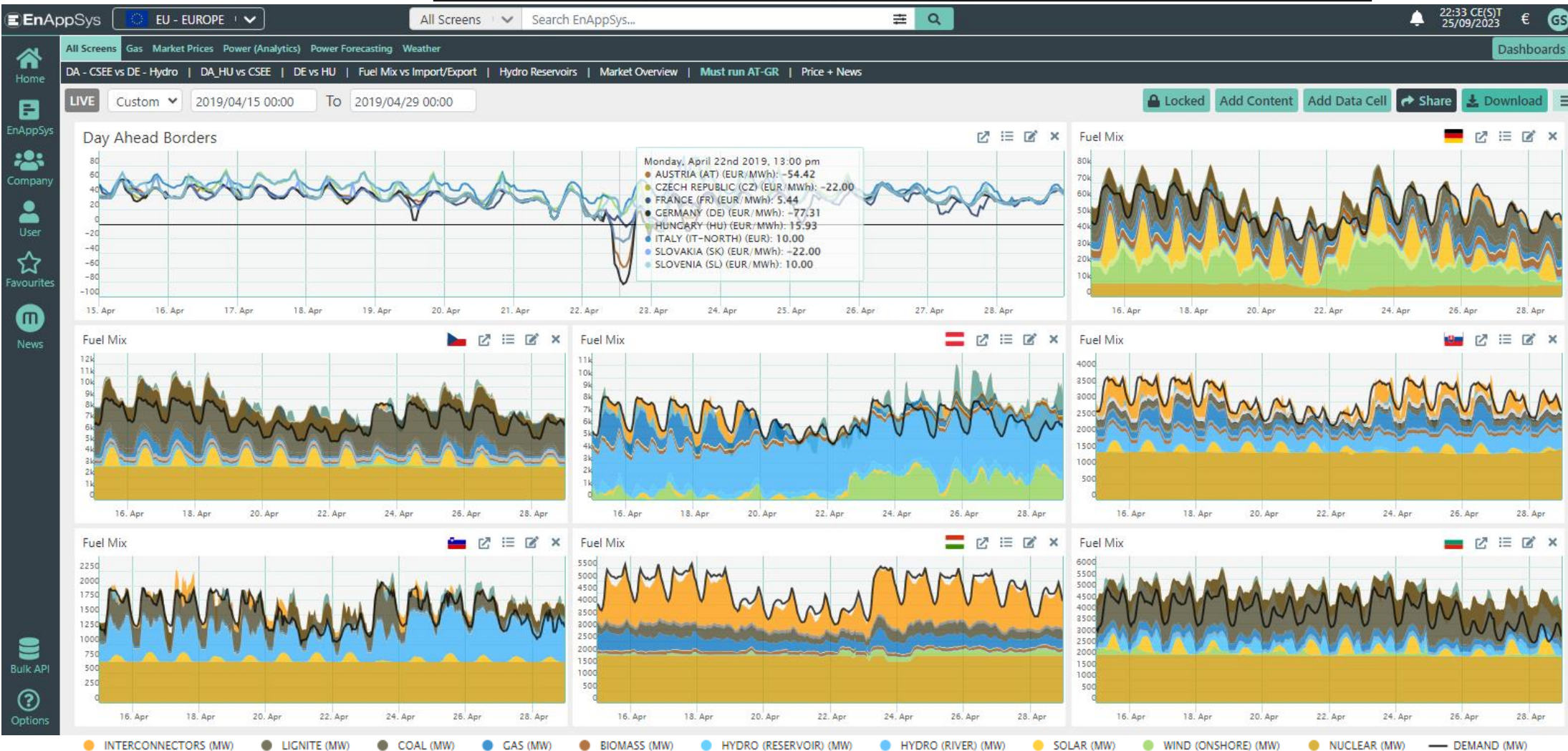


- Negative prices were a sensation more common in WE
- Even despite DE nuclear phase-out
- More renewable generation, more *must-run* brought this volatility to CEE as well
- Before 2023 it rarely happened (only during COVID-19)
- Since May 2023 the number of negative prices rose in HU, SK and SL
- Seasonality hints at increasing PV capacities + lack of flexibility

Increasing PV and Wind installed capacity increasing the must-run generation

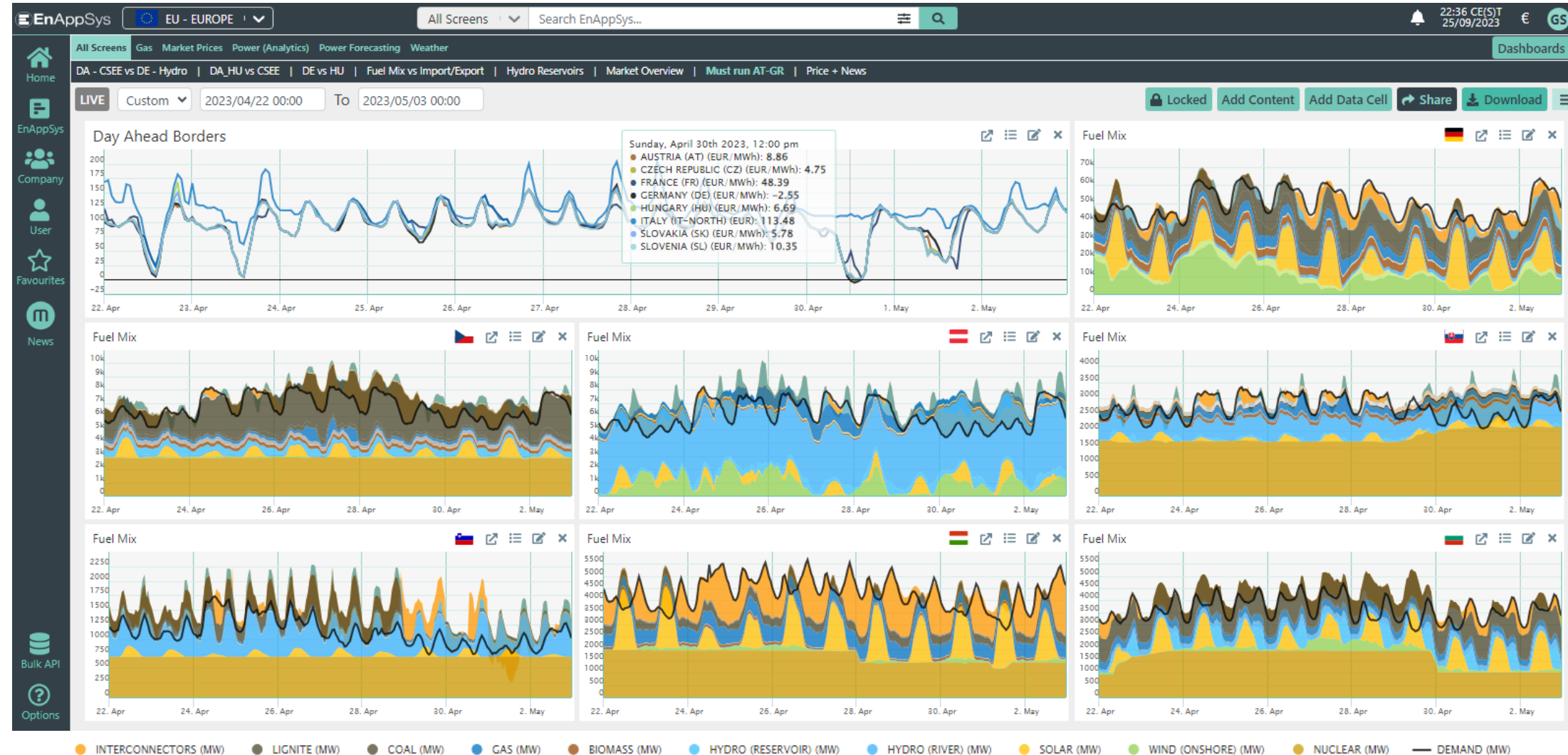


Fuel Mix, imports and spreads to Germany – April 2019

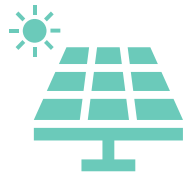


- CEE regional prices higher than Germany
- High level of imports despite low demand: SK, HU
- Virtually zero PV generation in HU and moderate in BG and SI

Fuel Mix, imports and spreads to Germany – April 2023



- CEE regional prices follow Germany to 0 EUR/MWh and even decouple to the downside on their own
- Nuclear not part of the mix in DE, higher imports
- Nuclear unit needs to be ramped down in HU
- Rarely any import in Peak hours in HU
- Increased PV cap. in BG with lower lignite



Record breaking Solar Power Plant installations

Both household and industrial-scale solar power is booming in Hungary

Total installed cap.:

2018: 667 MW

2021: 2 953 MW (+342%)

2023: 5 039 MW (+77%)*

*01.07.2023:

3 112 MW ind.-scale solar

1 927 MW household solar



Balancing the system is a serious challenge

Solar boom and limited flexible reserve capacity is testing the system security (MAVIR).

Extreme downward balancing volumes, asymmetrical balancing prices are the biggest challenges

MAVIR allows traders to stay imbalanced even without physical assets



HUPX IDM - growing liquidity

HUPX IDM traded volume:

2021: 2 529 GWh (+125% yoy)

2022: 4 319 GWh (+71% yoy)

2023: 4 348 GWh (1-8 month)

Growing liquidity creates a perfect tool for bringing further flexibility for the Hungarian System

Intraday prices still less closely follow the Balancing prices than WE exchanges



Intraday Trading is growing in CEE/SEE

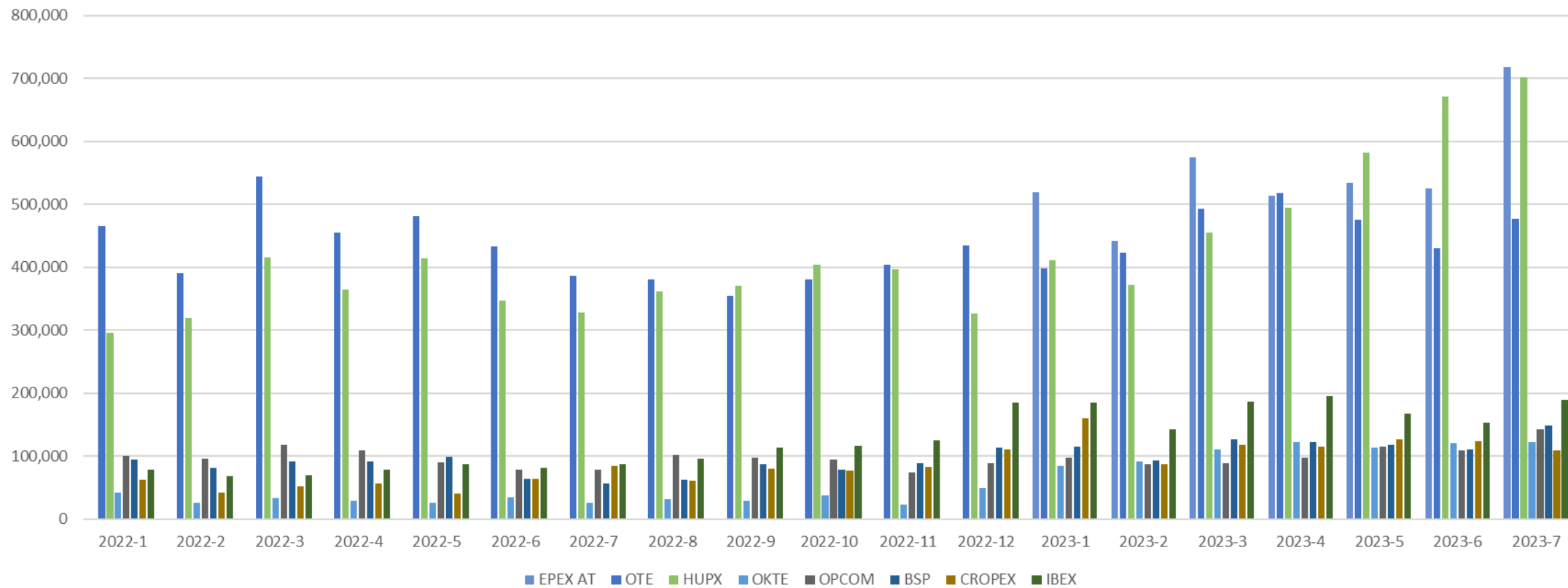
Market Coupling and the growing liquidity of HUPX boosted energy trading in CEE/SEE in the decade of 2010

Due to 4th wave of SIDC (Single intraday Coupling) additional borders of Greece and Slovakia connects the whole continent

Transparency and Algorithmic trading along with XBID is building a new market in CEE/SEE 2020's

Regional Intraday Exchanges

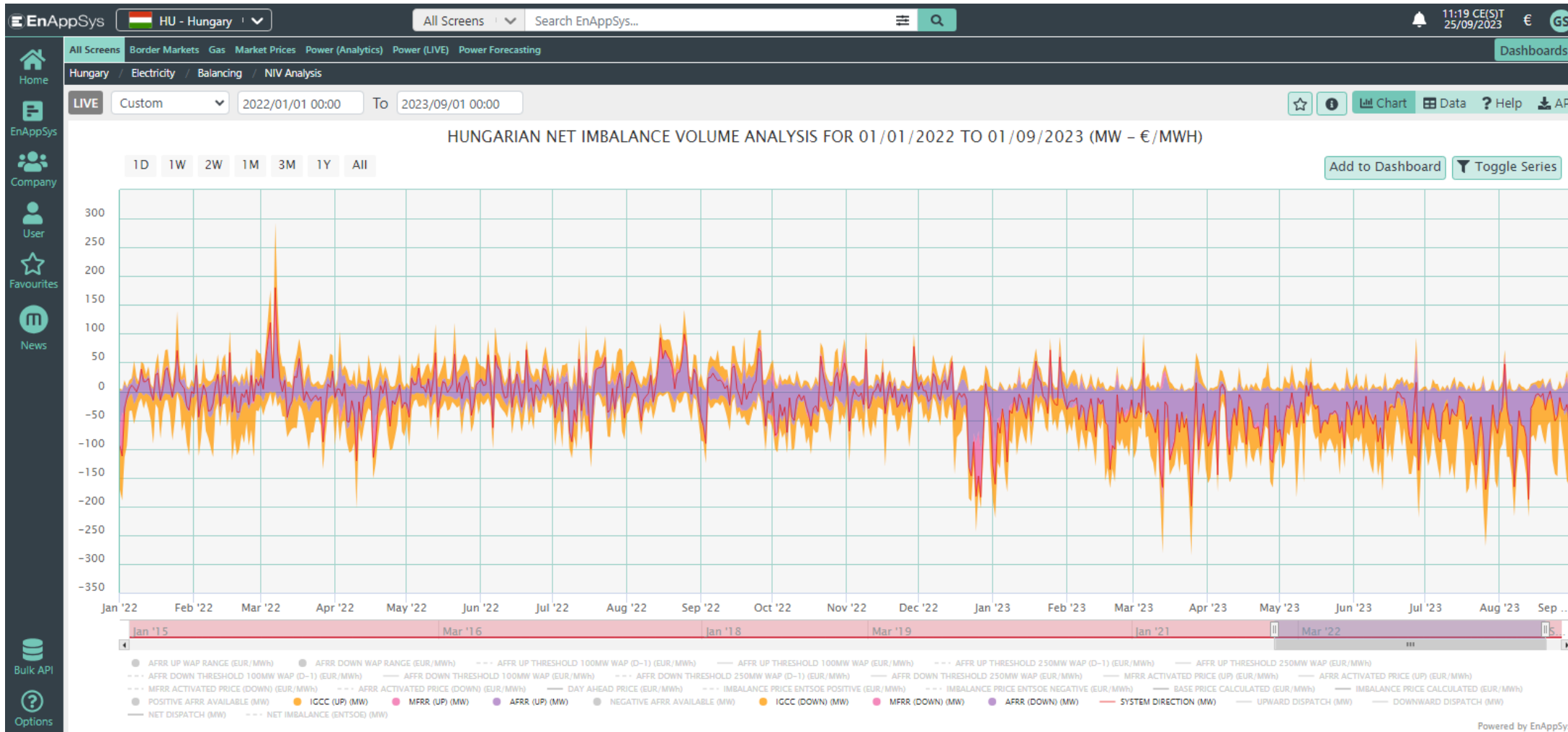
Traded volume (MWh)



- AT, CZ and HU volumes above the rest but significant growth in all CEE/SEE region
- Full digital solutions, API are key requirements
- Clear and transparent guidelines from the regulators needed
- Both on trading and Balancing Rules

*EPEX AT from 2023-1

Hungary Balancing Market – System Direction



- Share of up and down balancing 50% - 50% by the total number of QHs until Q4 2022

- Since Q4 2022 the System is long in 60% - 70% of the cases

- in the last months the share of long QHs. is 80%

Note:
01.11.2021:
aFFR/mFFR energy fee limit prices introduced
03.10.2022:
aFFR/mFFR pos. limit cancelled
Neg. limit at 50,000 HUF/MWh

Hungary Balancing Market – aFFR bid developments



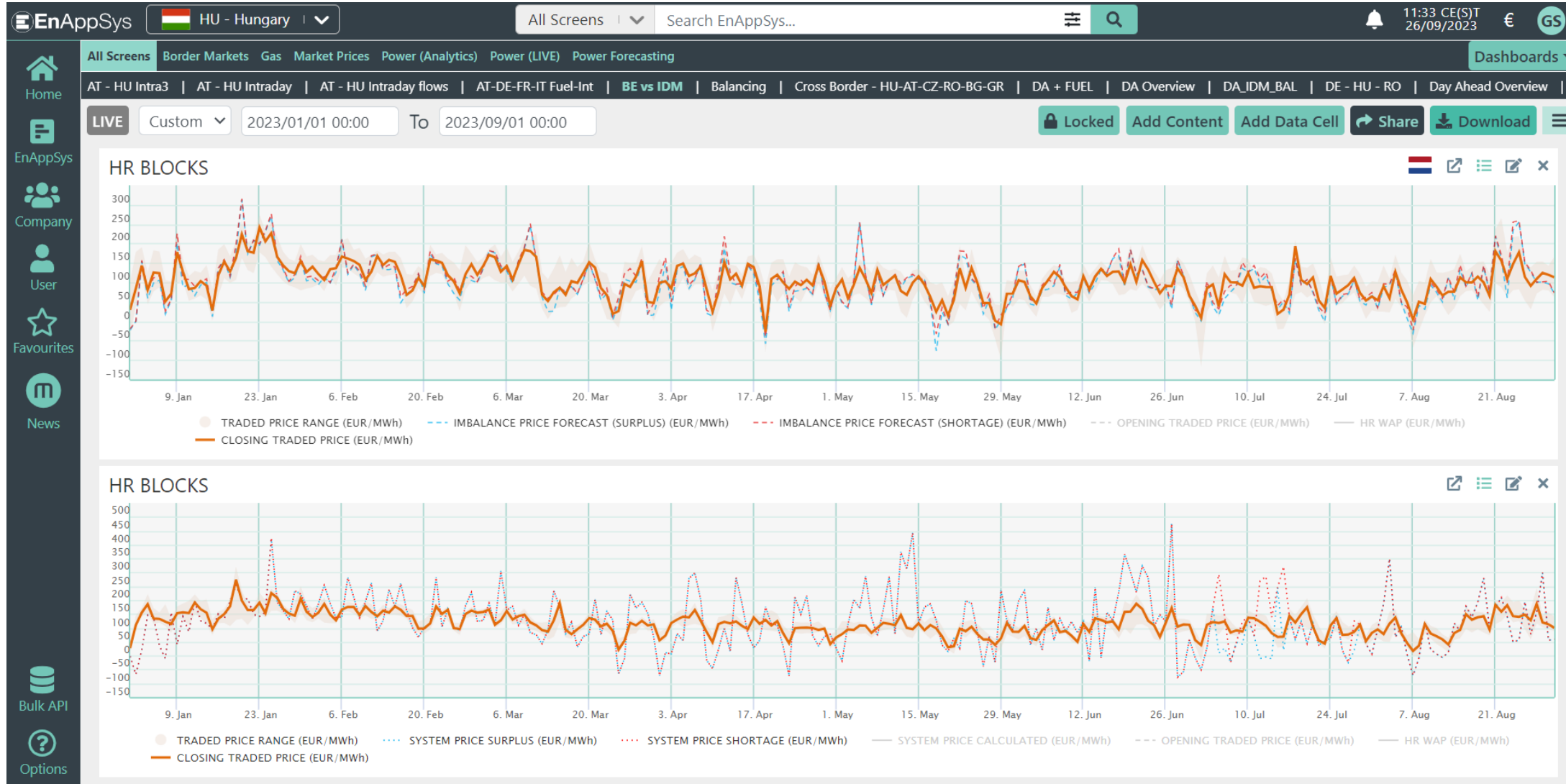
- DAM prices decrease into 2023

- Renewable gen. pushes out conventional units more and more often

- aFFR pos. bids react on increasing ramp up and start up cost/risk

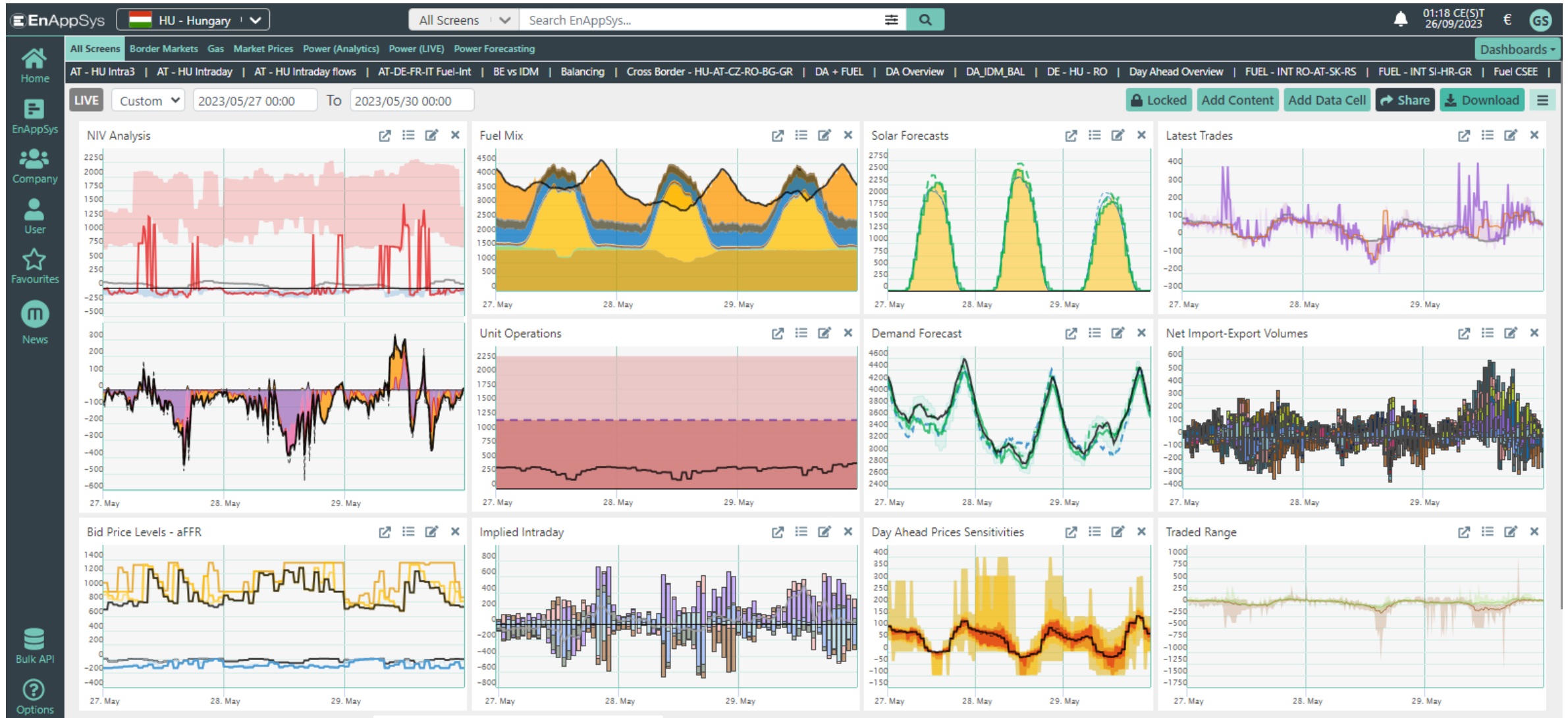
- aFFR neg. bids limited

Hungary Intraday Market vs Balancing Market



- Comparison with the effective NL intraday and balancing market
- Imbalance prices lack negative depth, two markets still seem decoupled in HU
- Not enough incentive for the intraday market to trade negative price territory
- >margin between upward imbalance prices and intraday market create opportunity for the traders

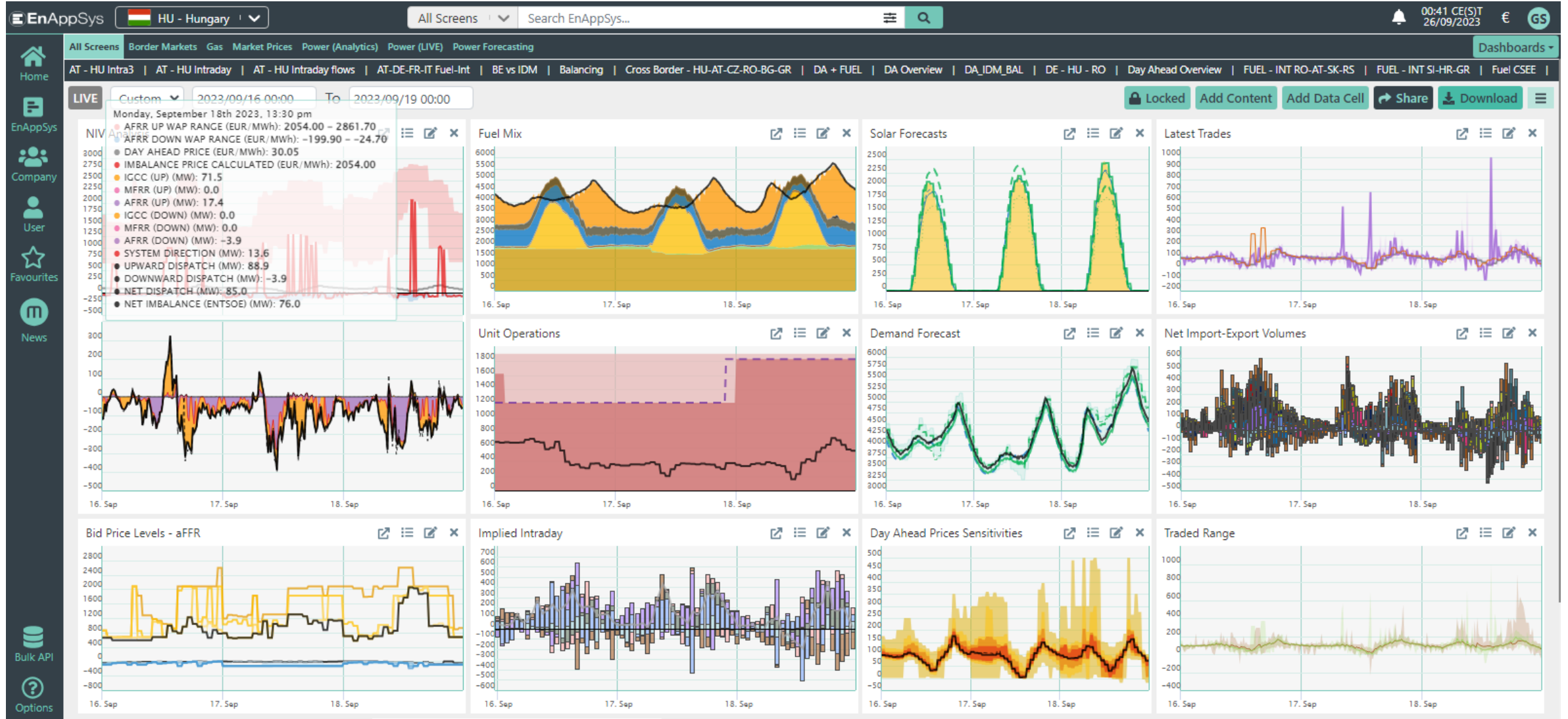
Case study: Pentecost May 2023 – Paks in mFFR down



Case study: 13.08.2023 - Highest down balancing



Case study: 18.09.2023 – Highest min. aFFR bid



Thank you for your attention

Q&A



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