

get enspired! **2025**



The next big battery: Revenue stacking of thermal storage assets

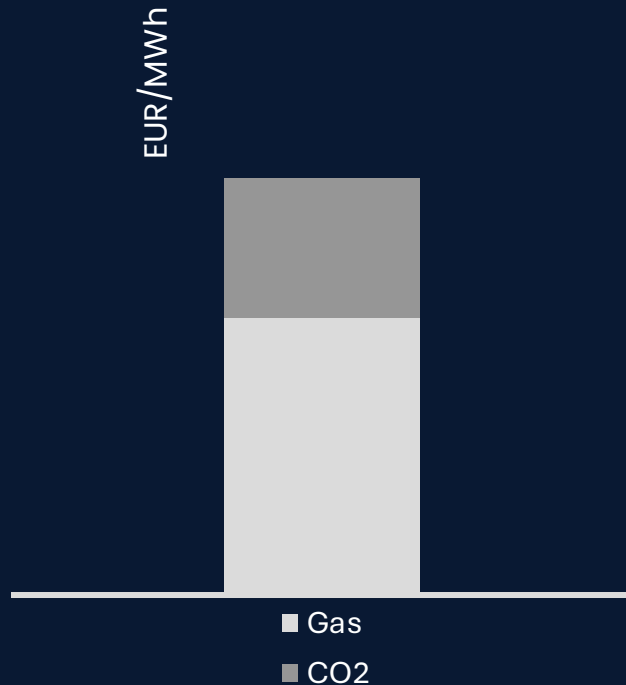


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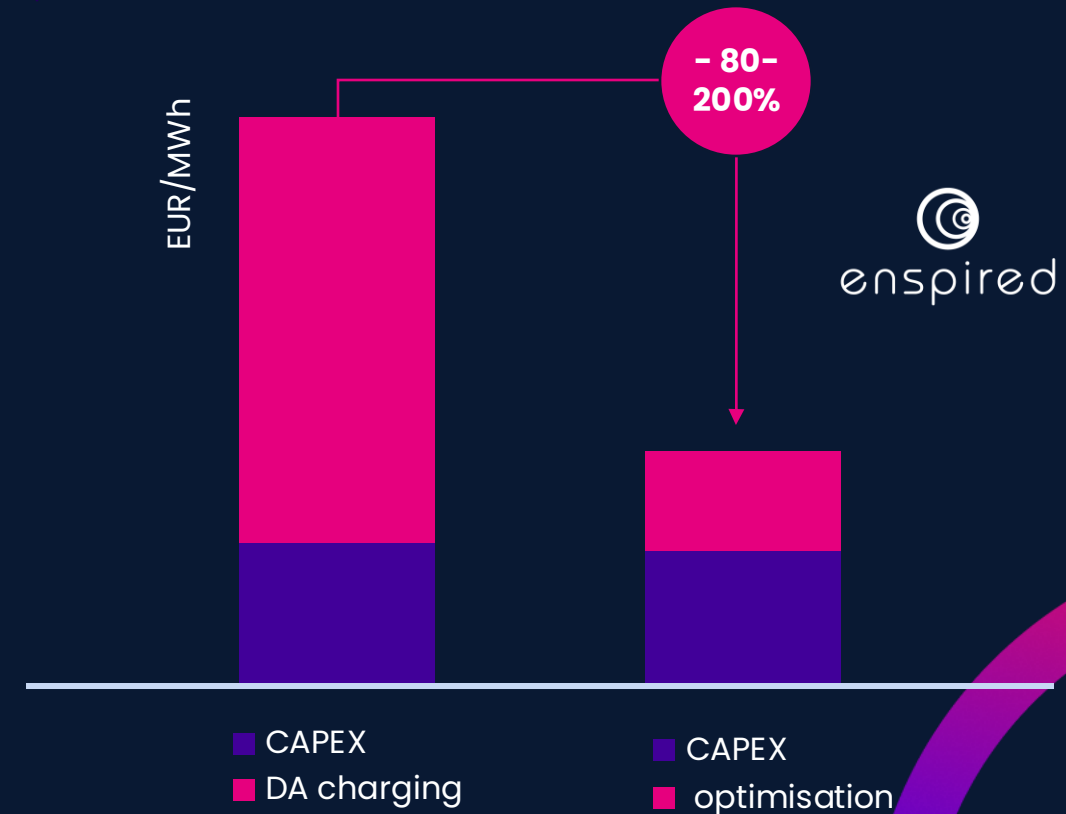
Our optimization approach makes thermal storage assets more competitive than gas

↑ LCOE of gas

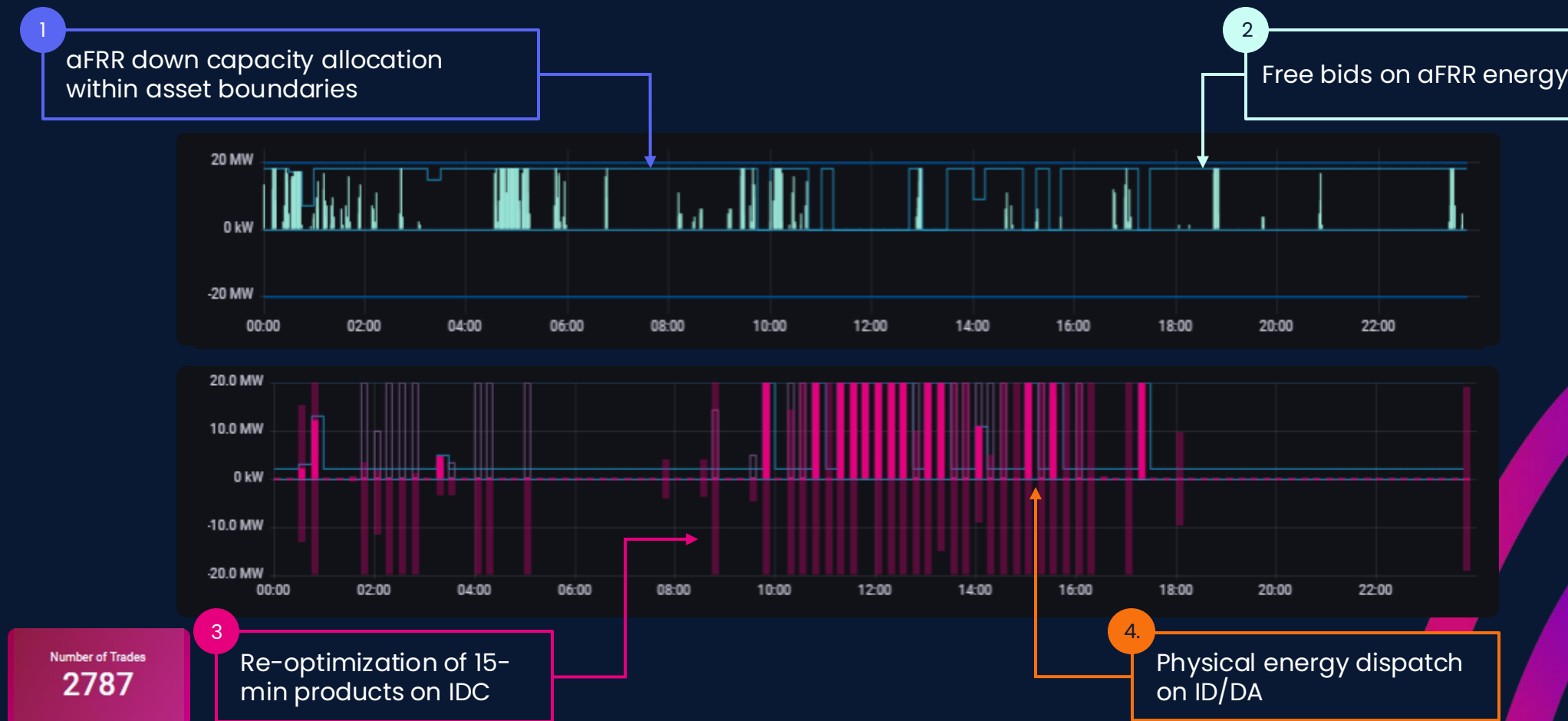


VS

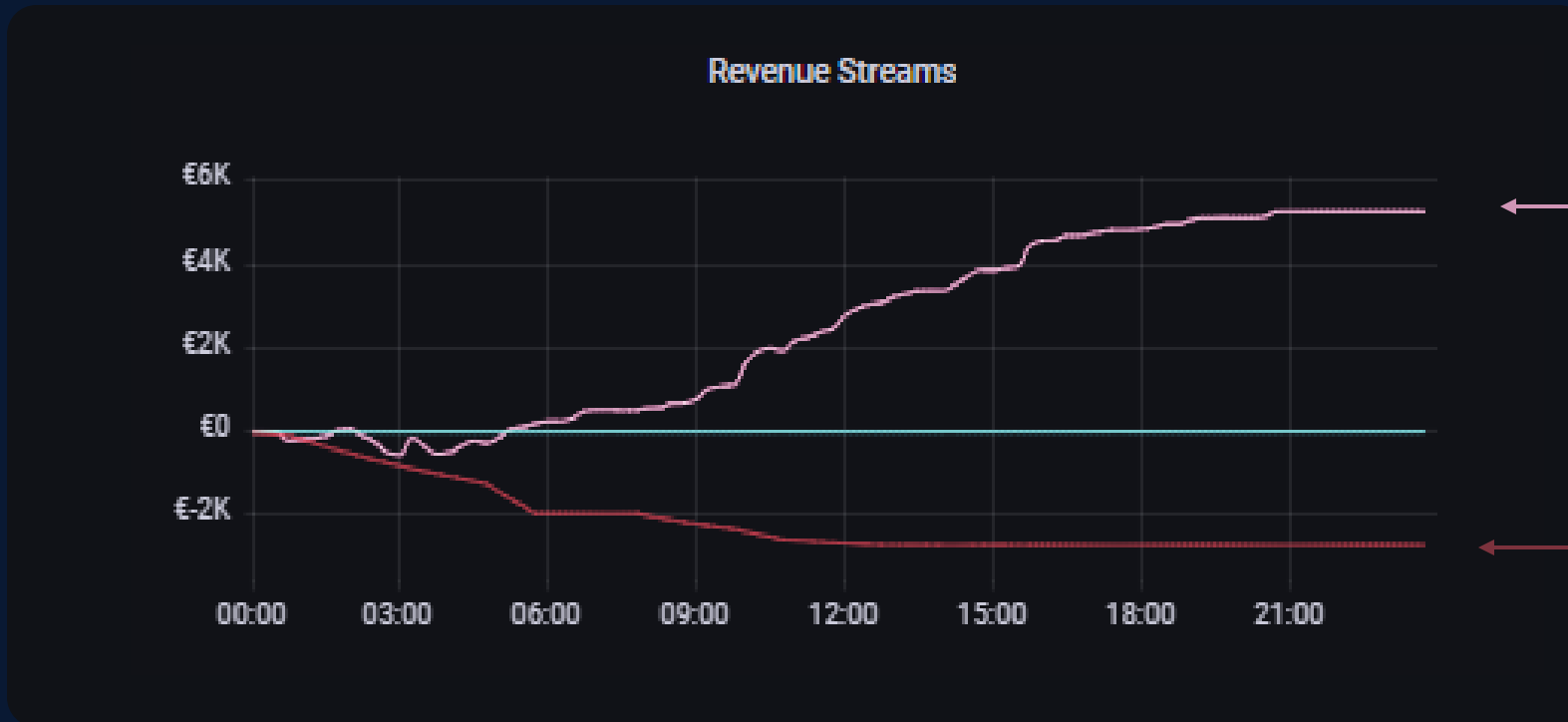
↓ LCOE of thermal storage



X-market optimization on WS + aFRR markets as an alternative strategy



Turning costs into profit



Profit of +27EUR/MWh
by x-market optimisation

Cost of -14EUR/MWh
by DA charging

Exemplary day of 20 MW, 4h thermal storage asset in summer 2025 with flat heat demand profile

Live simulation of 20 MW thermal storage



20 MW, 4h thermal storage asset from July to October 2024

And contribute to removing CO2 emissions + stabilizing the grid



**Enabling the
business case**



**Up to 40% of CO2
emission savings**



**Stabilized grid by AS
participation**

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Thank you!

Let's connect on thermal storage



Questions for panel

- An TED: Is a x-market optimisation, as offered by enspired, really necessary to operate a heat storage system?
 - Verweis auf Aurora Bsp + enspired pitch
- An TED + TIM: Which political barriers should be removed to acceleraerate the decarbonisation of the heat sector with thermal storage systems ?
 - Hinweis auf smarte Netzentgelte + flexible grid agreements + public funding
- An ALLE: How does TES differ from BESS?

Questions for audience

- Do you consider TES an interesting investment opportunity?
 - o Scale 1-10 (would never invest my money – already now more attractive than BESS)
- What do you consider as the main barriers for TES to become as successful as BESS? (multiple choice)
 - o Technology readiness
 - o Competitiveness against conventional fuels e.g. gas
 - o CAPEX
 - o Legislative hurdles e.g. grid fees
 - o Lack of education
 - o Different offtake persona (TES for industry)

Interview

1) Why do we see thermal storage as an interesting business case?

Potential to decarbonise 40% of global emissions (all emissions from industrial heat processes)

More competitive than gas (thanks to enspired optimisation)

2) What market conditions are crucial to even the path to success for thermal storage?

To enable the business case it requires support from governments + TSOs

i.e. 1) CAPEX subsidies to de-risk investment + kick start the bend of the cost curve similarly ,to BESS

2) Exemption of grid fees or favourable grid fees - flexibilise grid fees scheme like the one proposed in GER might already help

3) What are the differences between optimizing thermal and battery storage?

BESS can benefit from almost all markets, TES is restricted to downward only markets i.e. ID/DA + aFRR markets on AS
BUT since no warranty terms exist → no cycle limitations, no SoC management restrictions, no degradation etc etc.

4) What's the feasibility of thermal storage use cases compared to BESS?

We can improve the Feasability of the project by utilising our highly sophistacted optimisation which can be adapted to any type of asset. This flexibility allows us to get the best out of thermal storage and make it competitive

As simple, if not simpler than BESS since it is a mechanical battery rather than battery storage

Technology is cheaper than Battery storage, also more simple (comparable to a water kettle / brick + toaster)

5) What opportunities and potential setbacks lie ahead for co-location setups in the upcoming years?

- Co-located BESS can save RES which are facing decreasing capture prices since are struggling to be built /invested in
- Utilise existing grid access, spare the fight for grid
- Topic of grid fees needs to be clarified since there is a lot of unclarity if they're applicable or not e.g. in GER, majority of the lawyers read that BtM / co-location are exempt however in practice there seem to be a more divergent opinion
- contractual aspects need to be clarified esp. in relation to PPAs i.e. will there be separate contracts or together

6) How does enspired make co-location projects feasible?

X-market optimise co-location similarly to stand-alone (only max. 3% of revenue impact) – improves overall projects bankability (RES+BESS)

PLUS we will be able market the co-located RES asset – to offer a turnkey solution

7) What is the realistic difference in revenue between standalone and co-located projects (in %)?

We see many numbers floating around but often we don't know what's behind

As said, 5% appear realistic

15-Sep-25

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