



RENMAD 2023 - TOLEDO

Storage-as-Transmission-Assets (SATA)

for increased system reliability and grid utilization

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OUR MISSION

Transform the way we power our world to create a more sustainable future.

PURPOSE-BUILT



PURPOSE-DRIVEN



ENERGY STORAGE SOLUTIONS⁽¹⁾



6.2+

TOTAL GW



225+

PROJECTS

SERVICES⁽²⁾



4.1+

TOTAL GW

CLOUD-BASED SOFTWARE⁽³⁾

MOSAIC

9.3+

GW OF AI-OPTIMIZED
BIDDING OF RENEWABLES
AND STORAGE



NISPERA

8.6+

GW OF RENEWABLE AND
STORAGE ASSETS UNDER
MANAGEMENT

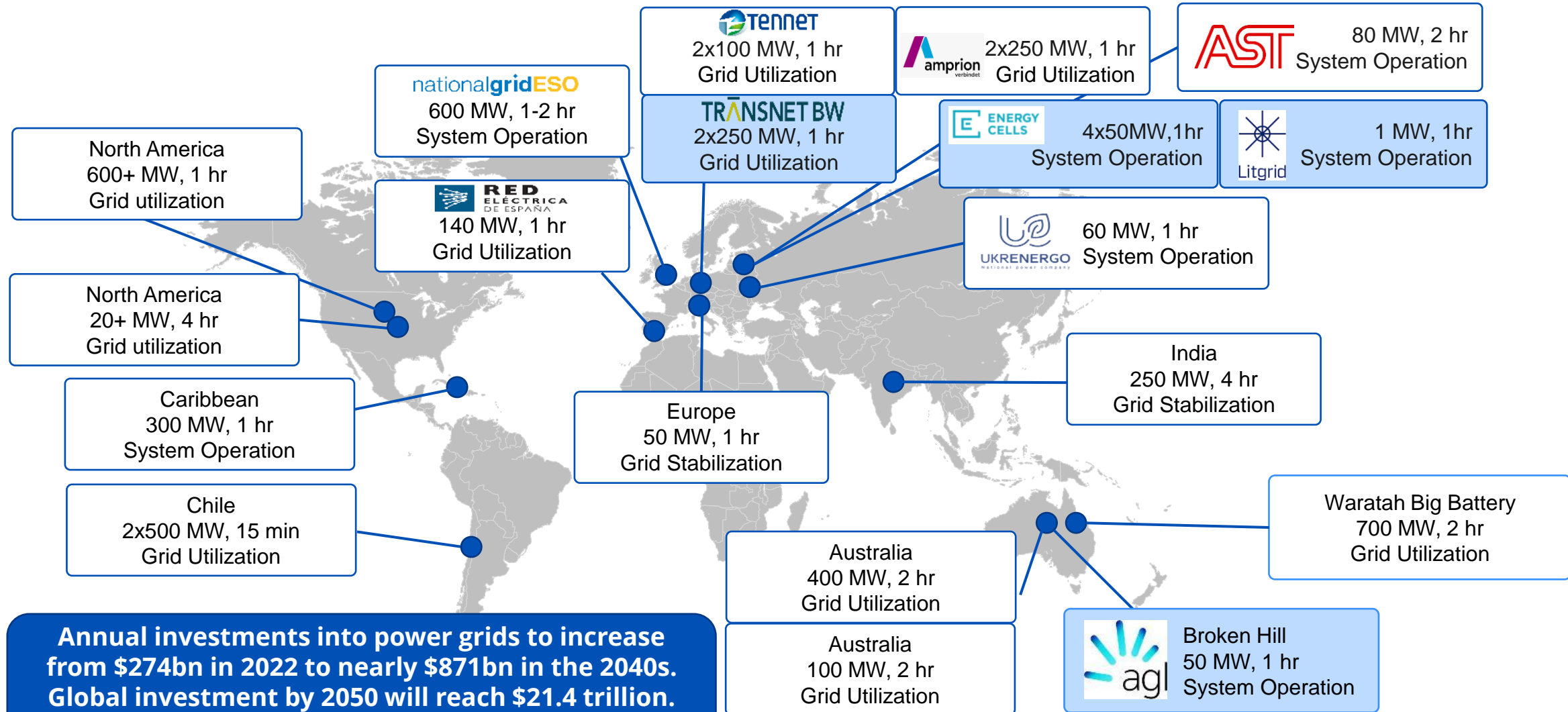
(1) Deployed and contracted as of December 31, 2022

(3) Assets under management or contracted as of December 31, 2022

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SATA is rapidly growing to support TSOs globally

S&P Global forecasts 17 GW /50 GWh of SATA solutions by 2030



Annual investments into power grids to increase from \$274bn in 2022 to nearly \$871bn in the 2040s. Global investment by 2050 will reach \$21.4 trillion.

- BloombergNEF



Enabling the Future Grid with Next Generation Energy Storage

Two primary value drivers for System Operators and Network Owners



Transmission Network Utilization Enhancement

Applications Required:
Contingency support,
congestion management,
emergency power contribution

Key value proposition

Reducing redispatch or curtailment costs
and optimizing system-wide dispatch by
increasing line utilization



Advanced System Operation Stabilization

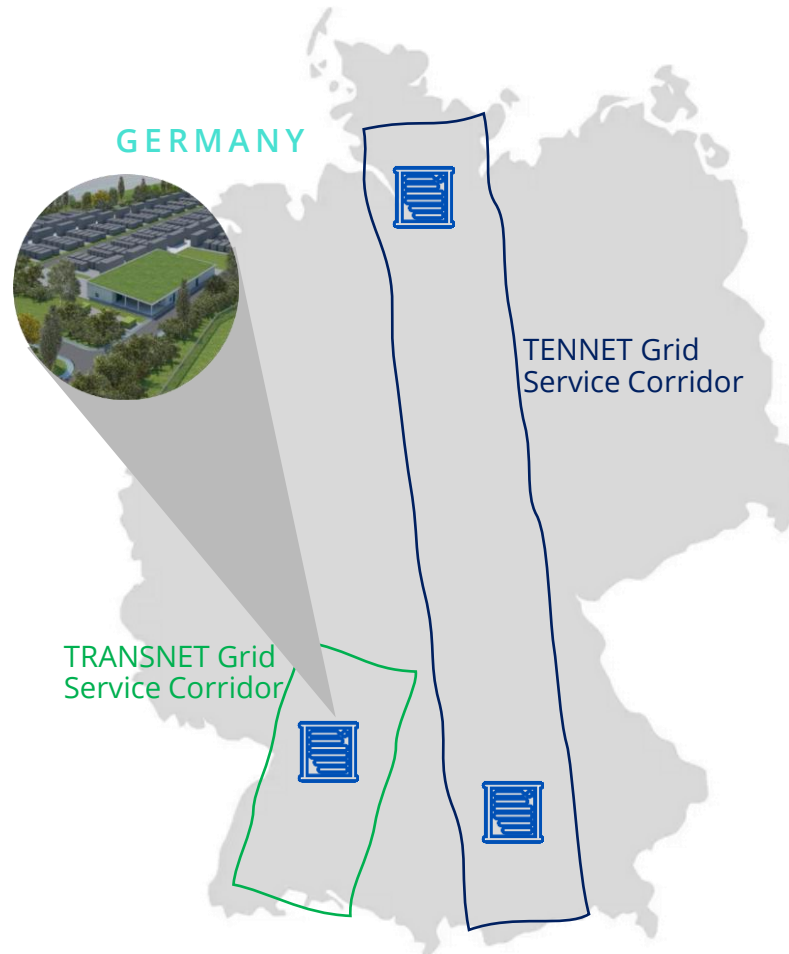
Applications Required :
Synthetic inertia, virtual synchronous
machine, oscillation damping, black
start, system strengthening

Key value proposition

Providing extensive set of next
generation Ancillary Services from TSO
owned or operated resources

Case Study #1: network-owned SATA in Germany to increase utilization of existing transmission lines

Fluence is a first mover in the German TSO segment with success at TransnetBW



Projects launched as part of Gridbooster program

TRANSNET BW

Tennet

Size : 1 x 250 MW / 1Hr

COD : Q2 2025

Project status:

Awarded to Fluence

Size : 2 x 100 MW / 1Hr

COD : Q3 2025

Project status:

Govt. Approval in process

Benefits

- Reduce need for conventional reinforcement, operating costs & avoid derating of lines
- Ease bottlenecks stemming from moving wind energy from northern Germany to southern load centers
- Overall, reduces re-dispatch costs and lowers end user costs

International experience

- Germany: 450 MW Grid Booster Projects
- Australia: 700 MW Waratah Big Battery
- Chile: 2 x 500 MW SATA tender

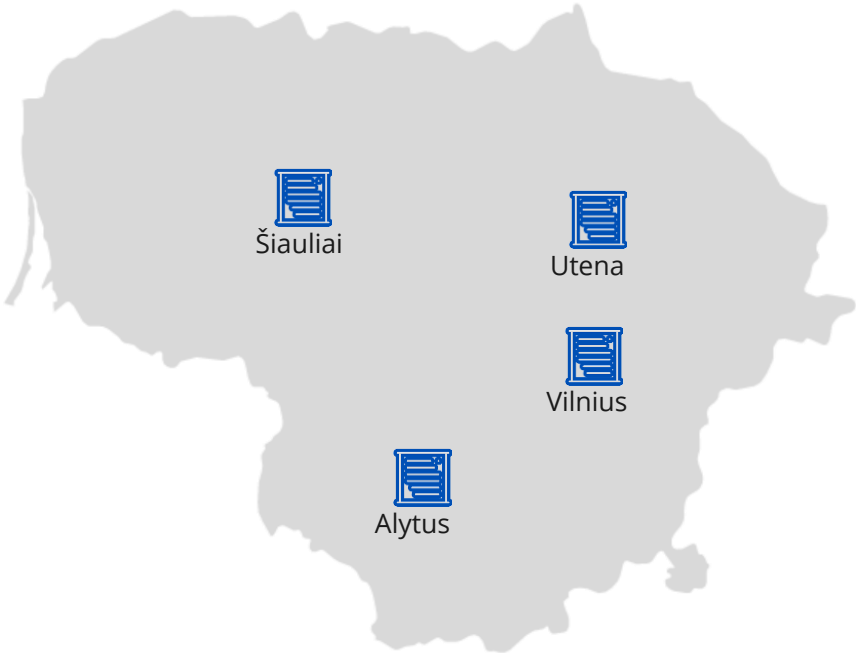


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Case Study #2: network-owned SATA in Lithuania to benefit from several advanced energy storage services

Enabling Lithuania’s renewable energy transition and grid synchronization with the Continental European Network

LITHUANIA



Size: 4 x 50 MW / 1Hr
COD: Q4 2022
Project status:
Awarded to Fluence



Litgrid

Size: 1 MW demonstrator
COD: Q4 2022
Project status:
Awarded to Fluence



Benefits

- Supports disconnection from Russian and connecting with continental Europe synchronous grid area
- Acts as instantaneous energy reserve for Baltic grid
- Started as a 1MW demonstration project. Helps Lithuania pivots towards 90%+ renewable energy by 2050.

International experience

- Great Britain: 600 MW Stability Pathfinder projects
- Australia: 50 MW Broken Hill Project



Storage system co-located at Substations

Unique customer requirements drive technology innovation

Purpose built architecture and applications meet the unique operational needs of T&D asset owners



Flexibility

Cost effective solution with rapid installation compared to alternatives



Scalability

Supports 50MW+ system sizes and complex grid requirements



Technology

Advanced grid services and critical asset IT security



Architecture

Fast system response and redundant controls



Availability

99%+ asset uptime and availability



Sustainable

Supports rapid grid transition to renewables



Thank you

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