Quantifying the operational impact of curtailment for performance optimisation

A case study of Equans with SynaptiQ

3E

EQUANS

The client

Company

Equans

Industry

EPC

Presence

Global

Asset types

Solar PV + energy storage

Portfolio size

2 GW + 550 MWh

SynaptiQ application used

Asset Operations & Solar Analytics

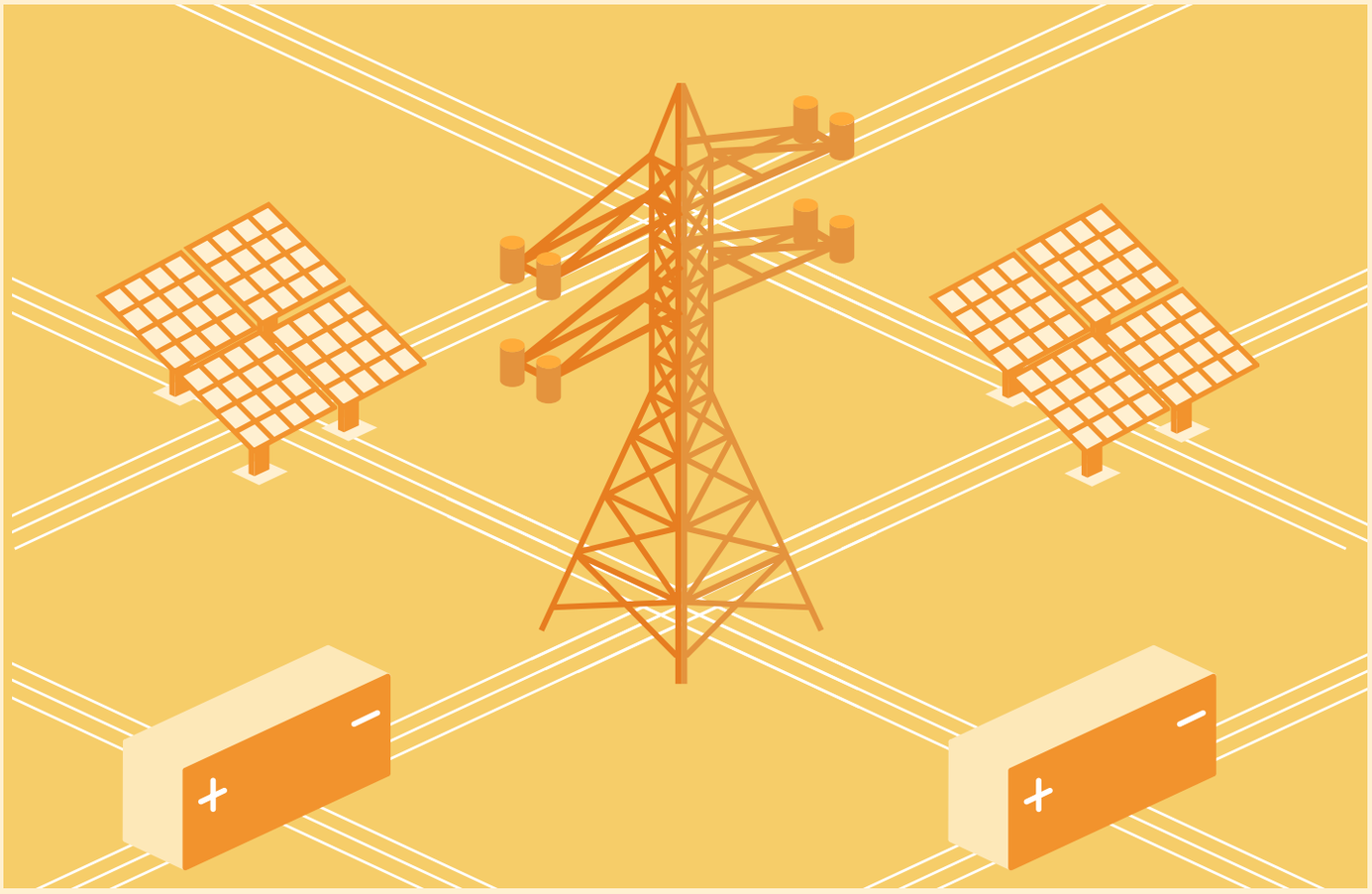
About Equans

With over 10 years' experience, Equans Solar & Storage is the one-stop partner for integrated, high-performance, large-scale solutions for solar and storage projects. Their mission: to serve the energy transition and a low-carbon world by promoting the deployment and integration of solar and energy storage solutions. They provide solutions for solar photovoltaic and hybrid power plants, energy storage and innovative projects. Present in 14 countries, with a team of 1,500 experts dedicated to solar and high voltage, Equans Solar & Storage has installed 6.5 GW of capacity in solar power and 2 GW in operation & maintenance, and has a portfolio of 2.5 GWh in battery storage (of which 600 MWh in installed capacity + 1.9 GWh under construction).

About SynaptiQ by 3E

SynaptiQ is a comprehensive software platform developed by 3E that empowers renewable energy stakeholders with advanced analytics, real-time monitoring and actionable insights. Backed by 25 years of expertise, SynaptiQ helps optimise the performance and scalability of solar, wind and storage assets worldwide.

The challenge



Operating across a globally diverse portfolio, Equans encountered increasing operational complexity in markets where curtailment is driven by regulatory and market constraints, particularly in the Australian National Electricity Market (NEM). Key challenges included:

① **Invisible curtailment events**

Traditional SCADA and OEM tools lacked the granularity to distinguish between operational underperformance and externally imposed curtailment, particularly in NEM-governed sites.

② **Underreported performance impacts**

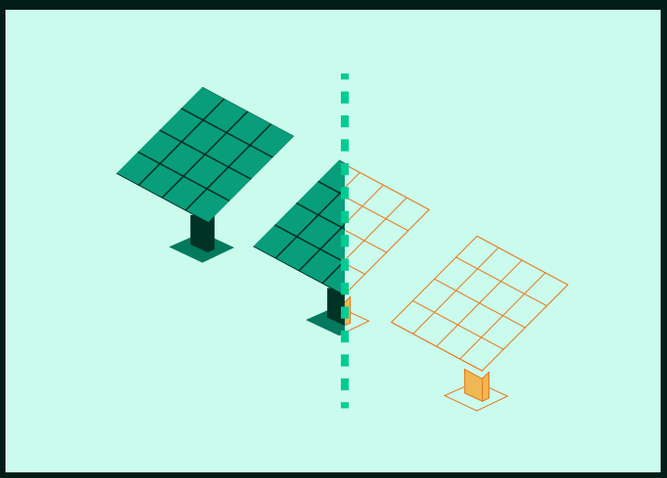
Without proper isolation of curtailment losses, energy yield shortfalls appeared as performance degradation, threatening contractual guarantees and bonus calculations.

③ **Time-intensive analysis**

Manual post-event analysis to assess curtailment losses consumed valuable engineering time and delayed corrective action.

The solution

To address these gaps, Equans deployed SynaptiQ's Curtailment Analytics and Digital Twin technology to pinpoint the direct impact of curtailment on plant performance. Key components included:

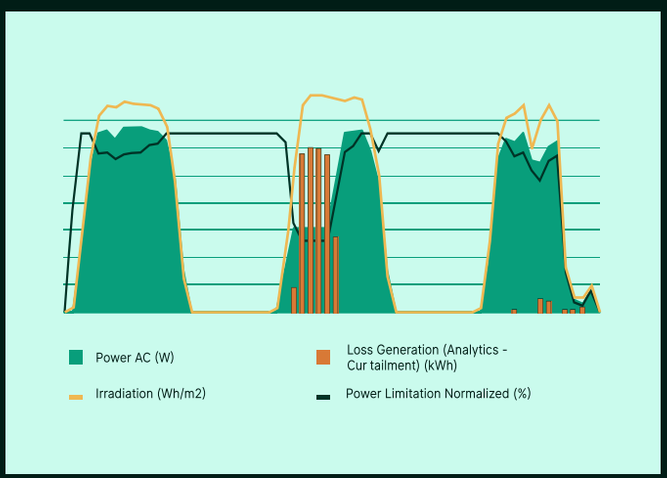


Model-based energy baselines

SynaptiQ's digital twin continuously simulates the theoretical (unconstrained) energy yield, enabling real-time benchmarking against actual performance.

Integration with NEM dispatch signals

A tailored data pipeline ingests and decods AEMO dispatch instructions, allowing for precise detection and timestamping of curtailment intervals.



Automated loss attribution

Curtailment-related energy losses are automatically isolated and quantified, enabling plant teams to distinguish between internal inefficiencies and external constraints.

Performance KPI adjustment

Curtailment-adjusted KPIs allow for more accurate performance tracking, contract compliance and incentive validation.

The results

The deployment of SynaptiQ resulted in measurable improvements across Equans' NEM-based solar assets:

① Clear quantification of curtailment losses

Equans can now quantify how much energy is lost due to curtailment, plant by plant, day by day.

② More accurate performance reporting

By subtracting curtailment impacts, true asset performance can be isolated and better benchmarked

③ Enhanced decision-making

O&M teams can prioritise interventions based on validated, non-curtailment-related underperformance, reducing unnecessary site visits.

Why SynaptiQ?

Tailored for curtailment visibility

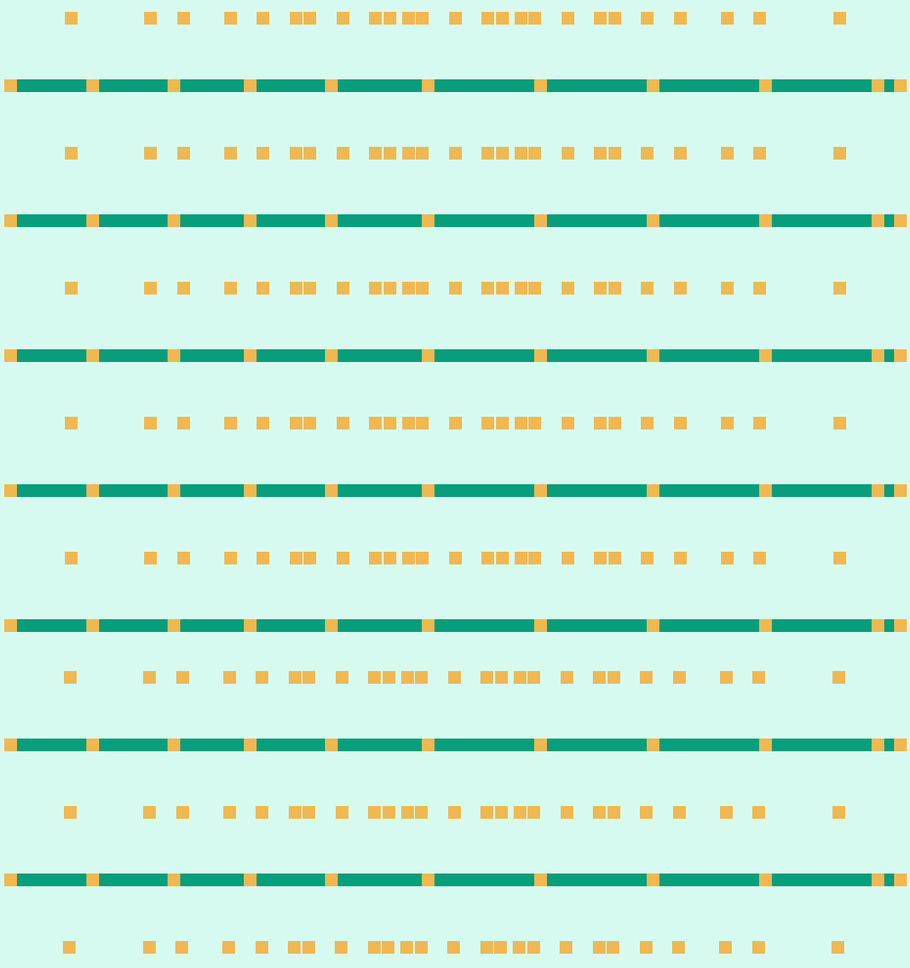
Unlike generic asset management tools, SynaptiQ offered specific functionality for curtailment analytics, especially for complex markets like the NEM.

Scalable across regions

The model-based approach allowed consistent application of methodology across multiple geographies and asset types.

Stakeholder transparency

Automated, customisable reports enabled real-time sharing of curtailment-adjusted performance with investors, clients and internal teams.



About 3E

3E is a market-leading SaaS and advisory company for the renewable energy sector

Our team of over 180 experts works with developers, asset managers, operators, investors, public entities, EPC contractors and IPPs. Our job is to enable them to make informed decisions across the full lifecycle of their projects – whether that's solar, wind or energy storage.

Based on our 25+ years of global experience, we provide both digital solutions and expert advisory services, which is unique in the sector. Our SynaptiQ platform offers a comprehensive suite of SaaS solutions that optimises the development and operations of renewable assets.

In parallel, our advisory team delivers technical, engineering and strategic advice to ensure bankable projects.

Powered by collaborations with universities and industry pioneers, we drive innovation and deliver the industry's most advanced energy intelligence solutions.

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