ARSOS

Automation Suite

Utility Use Case

GREEN EAGLE SOLUTIONS

Maximizing Renewable Generation and Managing TSO Curtailments at Scale with ARSOS Automation Suite

Context: Producing More Power Amid Grid Constraints

This case reflects a typical situation among utilities that manage large renewable portfolios while facing frequent curtailments from the TSO/DSO. Through this representative example, we show how ARSOS can transform day-to-day operations, ensuring compliance and optimizing market performance.

Only Renewables is a global renewable utility operating more than 12 GW of installed capacity across 160 wind and solar plants in Europe and North America. As part of its growth strategy, the company aimed to double its managed assets within five years — but without doubling the size of its control room staff.

While Only Renewables had invested heavily in generation capacity, its operational processes hadn't scaled at the same pace. Each event or alert required operators to manually:

- Interpret turbine alarms from multiple OEM SCADAs.
- Decide whether to reset a turbine, escalate to field technicians, or wait for conditions to normalize.
- Apply TSO/DSO curtailments in a coordinated manner with regulation requests from different market agents.

The result: a control room under constant pressure. Operators were spending most of their shifts reacting to alarms, rather than optimizing performance.
The company needed a way to scale its operational capacity exponentially — without increasing headcount.

Operational Challenge: Manual Decision-Making and Resource Bottlenecks

At the time, Only Renewables managed operations with a patchwork of tools and systems. Each control room operator supervised hundreds of turbines and solar inverters, relying on manual workflows for decision-making.

Key inefficiencies included:

- Slow fault response: Operators manually assessed alarm context (wind speed, temperature, voltage, etc) before deciding whether to reset or escalate.
- Human-dependent escalations: Field technicians were often dispatched based on incomplete data, increasing O&M costs.
- Delayed TSO/DSO compliance: Curtailment commands took up to 8-12 minutes to execute across multiple systems, leading to regulatory penalties.
- They were losing money by operating at negative prices.
- Limited scalability: Adding new plants meant hiring more operators — a linear cost growth model that no longer made sense.

Only Renewables needed a solution that could automate operational decisions, integrate directly with TSOs/DSOs and OEM systems, and give its team full visibility across technologies and regions.

The Solution: Automated Control and Compliance with ARSOS Automation Suite

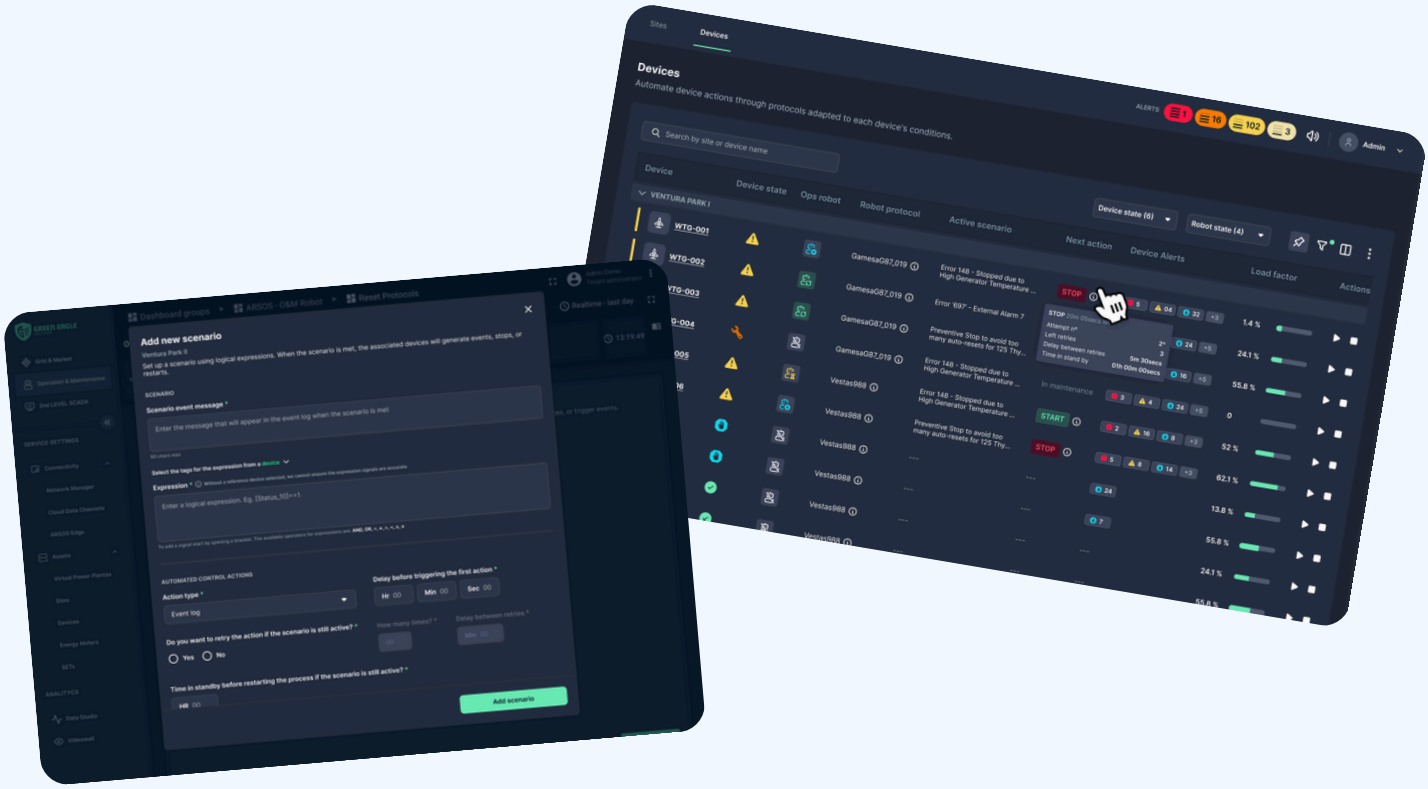
Only Renewables implemented ARSOS Automation Suite to centralize and automate its operations, creating a unified digital control layer for all assets.

Within weeks, ARSOS became the core orchestration platform connecting every part of Only Renewables' operations — from turbine fault handling to market-driven dispatch.

Automated Fault Detection, Resets and Escalations

- ARSOS enables full automation of wind turbine fault handling, eliminating manual intervention and significantly reducing downtime.
- It continuously monitors assets across all sites, detecting faults and executing preconfigured operation protocols in real time.
  - Configure alarm books and operation protocols with defined actions and wait times.
  - Assign tailored protocols to each turbine for condition-based operation.
  - ARSOS analyzes context and acts automatically — for example, performing a turbine reset — reducing downtime from 30 minutes to under five.
  - In complex or critical cases, it notifies operators with complete event details.
  - Each turbine follows its own operational logic, based on age, maintenance history, or technology — enabling true 1:1 asset care at scale.
- If a reset fails or a work order exists in the CMMS, ARSOS automatically switches to manual mode, escalates the incident, and notifies the appropriate technician — no operator action needed.
- ARSOS provides KPIs and reports to optimize and refine protocols, driving greater operational efficiency.

Impact: Up to 80% fewer manual actions in the control room.



Real-Time Global Monitoring and Troubleshooting

- A unified ARSOS dashboard consolidates alarms and operational data from all sites and OEMs.
- Event timelines enable in-depth incident analysis, enhance operational protocols, and track the operations robot's performance through two main features: an interactive timeline that synchronizes device states, robot actions, notifications, and other concurrent events; and a graphical signal view that overlays device signals within the same time range to reveal causal relationships between behaviors and events.

Automated Curtailment Management

- ARSOS connects directly with TSOs/DSOs to receive curtailment orders and executes them automatically.
- Curtailments can be planned in advance.

Result: Instant compliance and complete elimination of TSO/DSO-related penalties.

Resilient On-Site Automation & Control

ARSOS can be connected to on-site systems—making automation and control resilient, even when connectivity fails.

It is generally installed on edge and acts as a local orchestrator across technologies, connecting PPCs and enabling seamless multi-technology coordination at the site level. It runs lightweight SCADA visualizations locally and executes automation protocols in real-time, reducing dependence on cloud or OEM SCADA systems. This allows to:

- Enable fault resets, curtailments, and setpoint dispatch even under cloud or VPN loss.
- Store and forward telemetry to maintain data continuity during communication outages.

Scalable Integration

- The self-onboarding workflow allows new plants to be added at the client's own pace.
- Multi-brand and multi-technology compatibility ensure uniform monitoring across all OEMs and asset types.

Environmental Compliance

- ARSOS integrates environmental protection protocols, automatically stopping turbines when bird or bat activity is detected near protected areas.

Cybersecurity

- The platform meets NIS2, ISO/IEC 27001, IEC 62443, and SOC 2 Type II certifications, and is compliant with NERC-Rules providing enterprise-grade cybersecurity resilience.
- It works on Cloud or it can be installed On Premises.

Projected Results

KPI	Before ARSOS	With ARSOS (Projected)
Imbalancing costs	1% of Annual Revenue	0% of Annual Revenue
Average escalation time	5 min	<1 min
Average fault resolution time	30 min	<5 min
Turbine Operational Capacity by Operator	1000	3000

Conclusion: Scaling Renewable Operations Intelligently

With ARSOS Automation Suite, Only Renewables turned operational overload into a model of intelligent efficiency.

The company now operates like a digital utility — one where automation handles the complexity, and human expertise focuses on optimization.

Only Renewables can now:

- Scale to manage more assets with the same team.
- Ensure immediate TSO/DSO compliance and eliminate penalties.
- Respond automatically to alarms and faults across technologies.

ARSOS enabled Only Renewables to achieve enterprise-level scalability without increasing headcount, proving that intelligent automation is the foundation of the next-generation renewable utility.

Disclaimer:

The figures and scenarios described are based on estimates from comparable ARSOS implementations. Actual results may vary depending on each organization's operational profile.

Request a demo to see how ARSOS can transform your operations.

Want to see how ARSOS can transform your operations?

Let’s Talk!