Case Study: How Energy Twin Supports Scalable Portfolio Energy Management

This case study illustrates how Energy Twin helped Tatra bank, one of Slovakia's leading financial institutions, uncover energy savings opportunities across a portfolio of 63 branches. By leveraging only main electricity meter data, the bank was able to gain actionable insights without additional investment or complex infrastructure.

Summary

By collaborating with Energy Twin, the bank achieved a **5.4% reduction in electricity consumption** across the portfolio, in the first year of the collaboration, **using only main meter electricity data.** The project delivered fast results, measurable savings, and established a **long-term framework to ensure that optimised building operation is maintained over time.**

Energy Twin®

TB
TATRA BANKA
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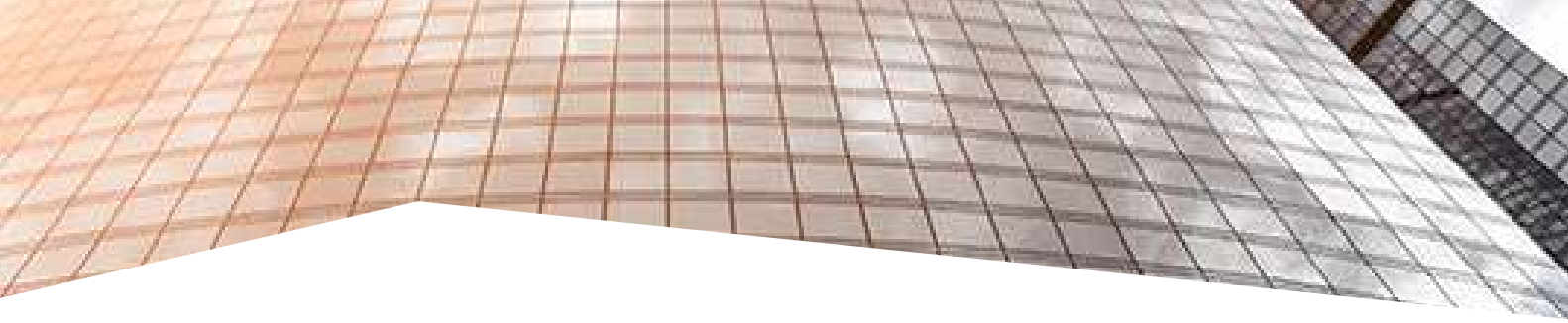
Website **energytwin.io**



Challenge

With **63 branches** distributed across the country, Tatra bank faced a classic portfolio-management challenge, **how to identify underperforming sites early,** prioritise the biggest savings opportunities, and ensure that improvements actually translate into sustained reductions in consumption.

While some inefficiencies were suspected, there was no unified, data-driven approach that would allow the team to:

- Benchmark performance across the entire portfolio
- Detect operational anomalies remotely
- Validate whether corrective actions truly delivered savings

Tatra bank had smart meter data available for all branches, but turning this raw information into actionable insights was not straightforward. **The sites differed in size, location, climate conditions, and operating schedules,** making fair performance comparisons difficult and causing inefficiencies to remain hidden.

A key challenge was scalability: many branches were small, and spending too much time analysing each one could quickly erode the potential payback. The team knew the data held optimisation opportunities, but without a systematic, portfolio-wide approach, it was hard to identify where to focus and ensure that efforts delivered measurable value.

Solution

Energy Twin structured the project into two clearly defined phases:
Phase 1 - Portfolio - Wide Operations Assessment
Phase 2 - Continuous Monitoring & Sustained Optimisation

Phase 1 - Operations Assessment

The main objective of this phase was to identify the underperforming branches within the portfolio and provide a data-driven assessment. Energy Twin deployed **a machine-learning model for each branch** using historical main electricity meter data, weather information, and operating schedules from January 2023 to October 2024 as the training period. Within just days of data delivery, the bank received:

Performance models for every site

Portfolio-level KPIs

A ranked overview of underperforming branches

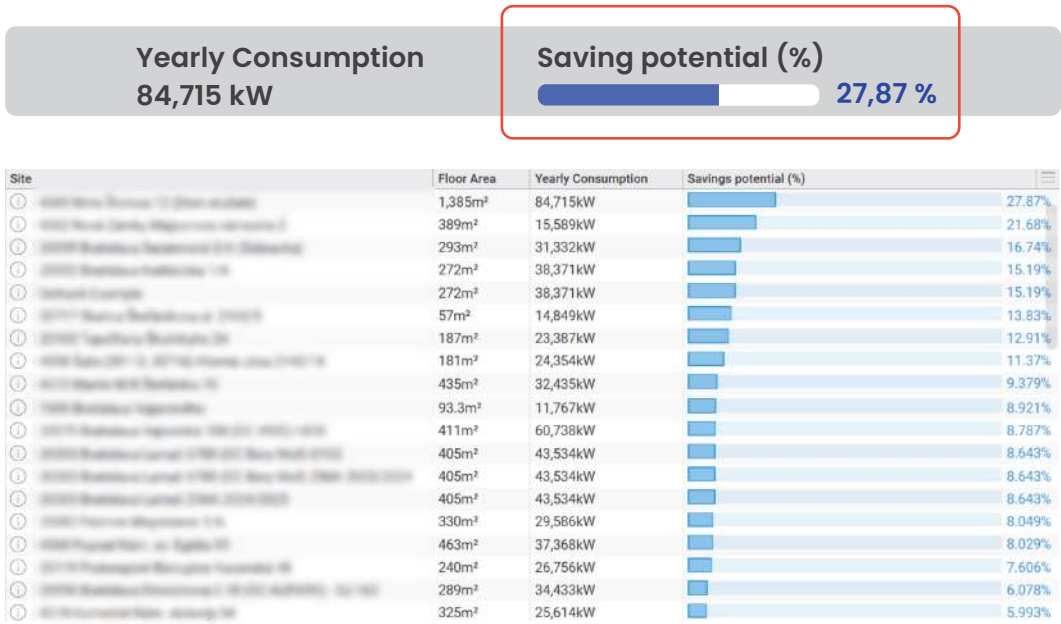


Image 1: Individual branch savings potential.

This immediately gave the facilities team a clear, prioritised roadmap of where to focus first. This phase also revealed a recurring issue across multiple sites: HVAC systems failing to enter proper night or weekend setback modes. In many cases, these losses were not caused by faulty hardware, but by outdated or misconfigured control schedules within the local BMS.

Website **energytwin.io**

Real-world Example
Revision at a High-loss Branch

At one representative branch, **daily peak demand averaged around 7 kW**, yet **night-time** consumption remained unusually **high at 4.5 kW.** Compared to the rest of the portfolio, this placed the branch among the worst performers.

Night-time consumption remained unusually high at 4.5 kW

Image 2: High-loss branch post schedule control implementation

Once flagged by Energy Twin's models and model-based KPIs, the bank's technicians investigated the affected branch and implemented corrections to the local control schedules.

The impact was immediate and measurable:

- Night-time loads dropped sharply
- HVAC setbacks became consistent
- Cumulative energy savings reached 18% at this single site

Crucially, these **savings were achieved without any hardware replacement or capital investment,** purely through data-driven operational correction.

Phase 2 - Continuous Optimisation

After the initial assessment phase, the project transitioned into continuous monitoring and optimisation. Regular remote monitoring sessions were held between Energy Twin and the bank's facilities team, focusing on:

- Detection of new anomalies
- Verification that implemented changes remained effective over time
- Tracking the resolution status and impact of previously identified anomalies

Image 3: Weekday anomalies detection.

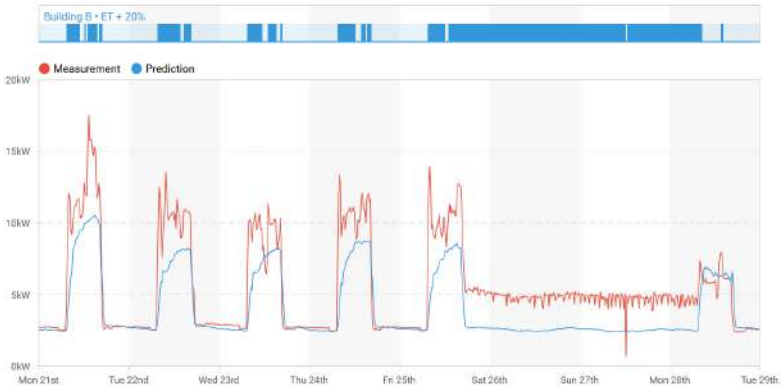


Image 4: Weekend anomalies detection.

Above are examples of detected anomalies across several sites. The red line shows actual meter measurements, the blue line models expected energy consumption provided by ML models with respect to time of the week and current weather, and the binary signal above the chart indicates when anomalies were flagged.

By continuously comparing predicted consumption (model baseline) with real meter data, Energy Twin was able to flag deviations in near real time and quantify avoidable consumption portfolio-wide. This allowed the team to prioritise interventions based not only on technical severity, but also on financial impact.

Results

After the initial assessment and during the continuous optimisation, the results were clear:

5.4% reduction in electricity consumption across 63 branches

No capital investment required

Sustained savings ensured through continuous optimisation

Beyond the numbers, the facilities team gained a new level of operational control and confidence. They gained a prioritised roadmap, based on data where to focus their effort.

Site	Rule	Duration	Avoidable Energy	Nov	Dec
	ET + 20%	20.63day	3,904kWh		
	ET + 20%	38.91day	3,838kWh		
	ET + 20%	37.14day	1,175kWh		
	ET + 20%	30.34day	829kWh		
	ET + 20%	10.68day	471kWh		
	ET + 20%	12.95day	410kWh		

Image 5: Overview of detected anomalies and avoidable energy estimate for prioritization.

Conclusion

This case demonstrates how large building portfolios can unlock significant energy savings solely through smarter use of already existing data. Energy Twin's model-driven methodology enabled Tatra bank to move to data-driven proactive energy optimisation achieving a 5.4% reduction in electricity consumption across the portfolio in the first year of the ongoing collaboration, without costly hardware upgrades or major capital investments.

Equally important was the bank's strong internal engagement: the facilities team set ambitious goals, actively worked with the insights, and implemented recommendations efficiently, establishing a robust framework to sustain and further expand these improvements over time.