



Case Study

Lightning Fast: ActiveViam for Energy Markets





Introduction

Energy companies trade on the commodity markets in much the same way as banks and asset managers – and like them they have to calculate and manage market risk. What is specific to them however is how the variations of supply and demand in the underlying physical markets (oil, gas, megawatts...) introduce additional volatility to their trading.

French energy conglomerate Engie needed a solution to handle large volumes of data from volatile, global commodity markets with the ability to quickly deliver end-of-day market risk figures and reconcile PnL in their large energy trade portfolio. Engie chose ActiveViam's ActivePivot technology for its speed in performing calculations and for its ability to handle large data volumes and drill down to a particular trade. ActivePivot today is the aggregation engine powering atoti and Atoti+.

“We are able to do things with ActivePivot that we were not able to do before,” explained Matthieu Tisserand, Head of Risk & PnL IT for Engie. ***“If something was incorrect we needed to recompute the entire portfolio, now we just have to recompute the specific measures such as PnL on a small number of trades and ActivePivot does the aggregation on-the-fly for us.”***



Part 1: Market Risk Management at a Global Energy Company

As a provider of natural gas, electricity and energy services to businesses and consumers in more than 70 countries across five continents, Engie's Global Energy Management Group (GEM) trades energy in various forms on the global markets and does business with hundreds of energy producers across Europe and Asia-Pacific. Formed in 2008 by the merger of Gaz de France and Suez, Engie is one of the five largest energy companies in France and considered mid-size at the global level.

Engie's trading portfolio is comprised, on average, of about five million energy market trades across Europe and Asia in oil, natural gas and carbon emissions certificates with maturity dates spanning from one day to five years.

GEM is responsible for hedging the risk of that portfolio across 40 countries through four trading floors in Paris, Brussels, Rome and Singapore.

In addition to its need to hedge energy market risk, Engie holds a unique designation as a regulated Investment Service Provider, supervised by the French Prudential Supervision and Resolution Authority, France's banking regulator. As such, Engie is among the energy companies required to meet global banking regulations such as the Basel requirements and Europe's Markets in Financial Instruments Directive II (MiFID II).

"We operate just like an investment bank in terms of market making, but a bank that would trade barrels of oil and megawatts of electricity instead of stocks," Mr. Tisserand explains. "Our activities are very close to that of an investment bank. We need to generate a daily PnL."

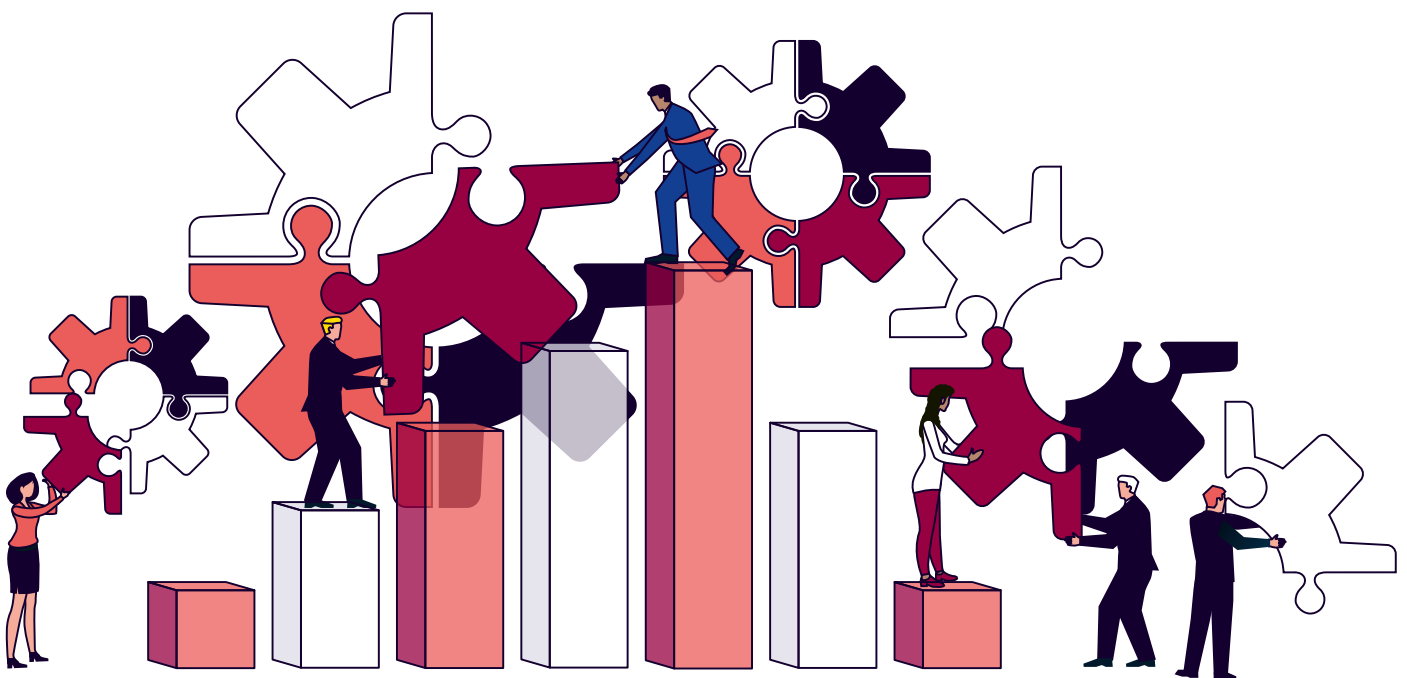
Engie and ActiveViam's First Project

Engie first began using ActiveViam in 2016 when it rewrote its internal pricing library from scratch. The company needed a solution that allowed its risk managers to prove that the new pricing engine was producing accurate indicators (values and Greeks in particular). Furthermore, they wanted to provide internal stakeholders, all the way up to the C-suite level, with fast, accurate, actionable information on market risk.

ActiveViam's ActivePivot outclassed its competitors by its greater speed in aggregation calculations and by its unique support for incremental updates.

"We wanted to aggregate exposures from the trade system, to analyze them and also to have the capability to analyze the Greeks. We needed to go into detail in dimensions that we have not done before – maturity, trade date, client, contract..." said Laurent Mejane, Head of Risk and Finance, UK, Eastern and Southern Europe and product owner for VaR implementation.

ActiveViam allowed Engie users to drill down to the most granular level detail, pinpoint a data issue and update a report on-the-fly.



Three weeks to market

Within three weeks, Engie created an ActiveViam environment that calculated VaR from both the old and new pricing engines and displayed results side-by-side on the integrated user interface so analysts could compare and validate the new numbers. The risk methodology team also designed comprehensive, interactive dashboards to track and resolve the differences between the new and old systems. The project was built out from there. It took another six months to create a larger environment for more in-depth market analysis, then another year to add more features. ActivePivot was then fully up and running and deemed ready to provide “official” end-of-day numbers.

Under their previous setup, Engie was limited in their understanding of their own data. ActiveViam enabled them to make the most out of their investment in a new pricing library, enriching their data with additional analytical dimensions such as trade attributes, clients and contract details. It allowed for a deeper, more precise analysis over longer histories.

The role of ActiveViam for Market Risk at Engie Today

Since 2016, Engie has expanded its use of ActiveViam technologies to meet business and regulatory requirements in their front office as well as analyze PnL, VaR, and sensitivities for the trading portfolio in the market risk department and provide detailed reports to the C-suite. Recently, Engie developed a new cube for decomposing PnL Explain into buckets which represent the combined effects of market data changes for analysis and regulatory reporting.

Engie also developed a back-testing tool to compare VaR with PnL day-over-day to validate their VaR model and ensure regulatory compliance.

I. In the Front Office

In the front office, at the start of each day the ActiveViam application loads an end-of-day position file provided by an overnight batch that calculates PnL, VaR and sensitivities for 5 million trades.

II. In Risk Control

In the market risk department, ActiveViam's analytics platform is the core system for monitoring and investigating any shift in Engie's market risk exposure.

ActiveViam aggregates data for the calculation of VaR and then analyzes it against PnL and sensitivities at different levels of Engie's internal legal entity structure and internal book structure, both on a day-to-day and (as-needed) historical basis.

Before the ActiveViam deployment, the market risk team was only able to check risk metrics at the portfolio level. Now they can view the metrics at any level, down to individual trades. This makes it much faster to pinpoint concentrations, outliers or discrepancies.

“ActiveViam is providing the service we wanted it to offer and flexibility around the multiple dimensions we have,” Mr. Tisserand said.

III. For Top Management

ActiveViam effectively re-aggregates data from upstream systems, such as pricing engines, only for trades which have updated rather than for all the data, as most other systems do (which requires hour-long batches).

This allows GEM group to pinpoint specific trade details, keep them updated and very quickly create detailed and interactive reports for GEM's internal C-suite clients (Chief Risk Officer, Head of Desk, Chief Executive Officer).



Part 2: Optimizing Energy Supplies

Like other energy companies, Engie does not trade on the commodity market merely for the sake of it: the commodities the company purchases and sells are eventually consumed for actual power generation. ActiveViam is also deployed at Engie to play a key part in this process: providing the analytics platform for the allocation of supplies to its power plants.

The time-sensitive nature of this function is obvious: power must be delivered immediately on demand for the lights to stay on. **“Every fifteen minutes Engie has commodity volumes that need to be delivered,”** said Benjamin Beke, Head of Deal Management and Physical Operations for Engie’s Global Energy Management Group in Brussels. Mr. Beke and his team’s mission is to ensure that Engie continuously delivers the precise amount of their commodities to specific locations at the right time.

The Spark Spread and the Nominations Process

Electricity markets in particular are prone to extreme volatility especially because the “spark spread” (the spread between the price of natural gas as a fuel for power generation and the cost of generating a megawatt hour of electricity) can quickly widen. Mr. Beke relies on ActivePivot for the “nominations” process, whereby an energy supplier needs to quickly inject or retrieve a certain amount of an energy commodity from specific points at a specific time under contractual terms. **“This is a highly critical process that runs 24/7,”** Mr. Beke said, **“because if anything happens to a power plant, you will have a lack of power. The booking and retrieval of positions has to be precise.”** Any slight deviation from the amount nominated and the amount delivered or retrieved can lead to a supply imbalance in the system, which in turn can result in monetary penalties. For this reason, nominations go through a careful validation process.

Essential to performance and profit

The goal is to accurately and efficiently allocate the fuel from the “best” currently available deals to the place of consumption that needs it to meet demand. To achieve this goal, Engie uses ActivePivot to aggregate on-the-fly all of the dimensions that relate to the hundreds of thousands of deals (delivery point, counterparty, book, etc.) in its portfolio, resulting in a detailed view of the volumes available and a precise calculation of pricing from which analysts at Engie can make the best decisions.

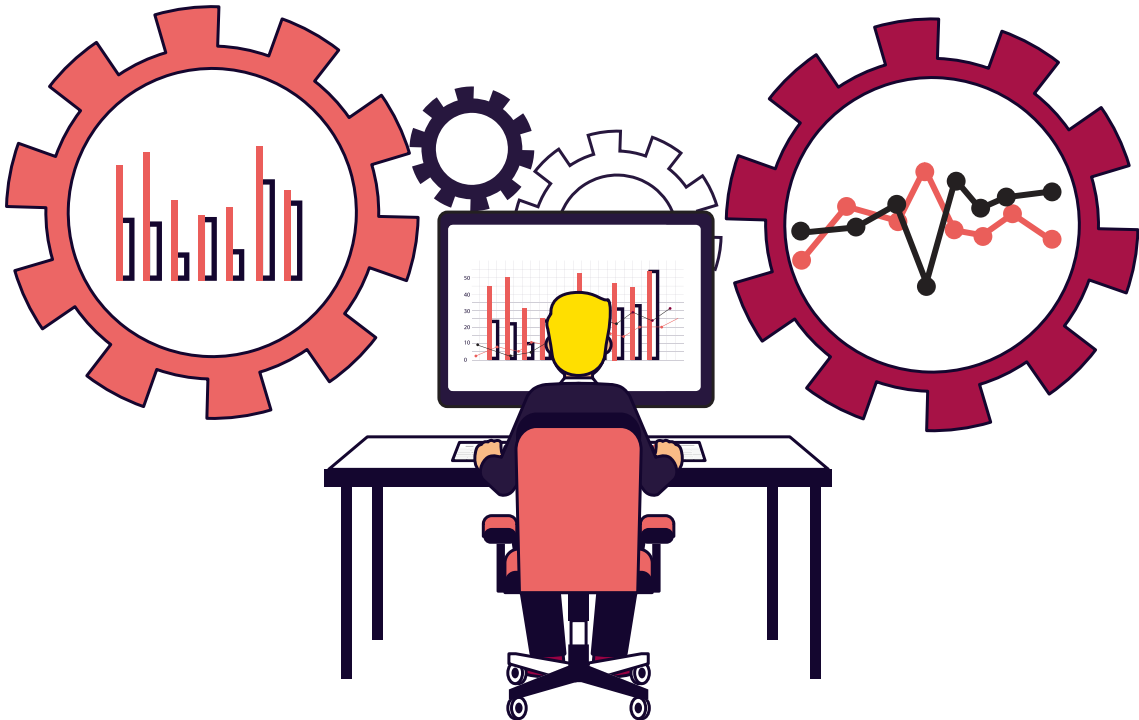
The repository of deals in ActivePivot can be tapped to request a specific scope on-the-fly, retrieve all deals from all systems and provide analysts with notifications about updates. At all times, ActivePivot stores deal information from six months in the past to all expected deliveries one year in the future. ActivePivot is the one-point-of-truth for up-to-date information from the first forecast to the actual bidding process. This is absolutely essential to Engie’s performance: the company’s ability to produce energy at a lower cost than market price is how it makes its profit.

Before ActivePivot, Engie was using a data repository and a high-performance database but **“ActivePivot is about 20-to-100 times faster than our previous system,”** Mr. Beke said. Now, they can run up and down the entire supply chain to retrieve the right position in less than a minute.

Tying it Together

Engie leans on ActiveViam’s time-tested technology to manage and run their multi-billion-dollar energy business. As a global energy company Engie needed a solution that delivered precision analytics for both market risk and rapidly changing physical energy markets. ActiveViam solved both of those needs in one platform – through separate deployments – by allowing Engie’s risk managers to seamlessly pinpoint data, meaningfully aggregate it and create actionable information in a time efficient and cost-effective manner.

Ultimately, the ActiveViam projects at Engie enabled the company to acquire a much more precise control of its market risk, freeing assets to generate more revenue, and to significantly optimize its operations, making them leaner, more efficient and more beneficial overall.



About ActiveViam

ActiveViam provides precision data analytics tools to help organizations make better decisions faster.

ActiveViam started in 2005 with the vision of leveraging in-memory technology to create an analytics platform where businesses could leverage the largest data sets without restrictions, keep them up-to-date in real time and use them to empower their decision makers.

Our goal at ActiveViam, is to let organizations not only make decisions faster, but better; to not only reach their data, but their potential; to not only see their data, but find their way into the future.

ActiveViam is a privately owned company with offices in London, New York, Paris, Singapore and Hong Kong.

For more information please visit: www.activeviam.com

LONDON

6th floor,
Shaftesbury House
151 Shaftesbury Avenue
London WC2H 8AL
Tel: +44 20 7836 8820

NEW YORK

550 Seventh Avenue,
19th Floor
New York, NY 10018 USA
Tel: +1 646 688 4442

PARIS

46 rue de l'Arbre Sec
75001 Paris, France
Tel: +33 1 40 13 91 00

SINGAPORE

80 Amoy Street
#02-01
Singapore 069899
Tel: +65 6816 4988

HONG KONG

21/F, On
Hing Building,
1 On Hing Terrace
Central, Hong Kong