

EnergyRisk **Software** **Rankings 2021** **Winner**

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Lacima's models stand the test of major risk events

Lacima 
Be Confident. Energy Analytics.

Lacima's models stand the test of major risk events

Lacima's consistent approach between trading and risk has allowed it to dominate the enterprise risk software analytics and metrics categories for nearly a decade

Major risk events such as the Covid-19 pandemic, the oil shock and the liquefied natural gas (LNG) price hike earlier in the year have focused commodities traders' attention on trying to better understand their valuation and risk models. However, many existing systems are very poor at providing insight into what is driving the level of the numbers, and how they are changing from one day to the next.

Lacima has seen a lot of interest in this area because it can offer a toolset relevant to an entire portfolio. Its ability to seamlessly quantify and incorporate risks outside of price risk is reflected in the fact it has dominated the analytics and metrics categories of the enterprise risk software section in the 2021 *Energy Risk* Commodity Rankings for nearly a decade. This year, Lacima also came first for model valuation under commodity/energy trading and risk management (C/ETRM) software. Its edge is in having developed a single set of integrated analytics engines with different interfaces that can be accessed across a trading organisation, making it truly applicable across all the various energy and commodities areas in all geographies.

Energy Risk speaks to Lacima's chief executive, Chris Strickland, about how the firm is modelling flexibility and optionality for LNG contracts, optimising shipping operations for annual delivery programme (ADP) planning, why it is looking at potential collateral management in addition to counterparty exposure, and the need to capture the joint relationship between renewables generation and impact on price.

Energy Risk With black swan events becoming more frequent and firms needing to deal with more issues outside market risk – for example, climate risk, cyber risk or weather events – has Lacima seen more firms engaging in enterprise risk management in addition to, or at the expense of, traditional risk management? How do you see the relationship between the two disciplines?

Chris Strickland: Black swan events happen very infrequently, so there are not many observations of them. By their nature, it is hard to quantify the effect these events will have, except that it is very large. Therefore, typically, people look at heat maps and scenario analysis to characterise the probability of a major cyber event, for example, or an event that would affect a company's brand name, and the potential monetary effect of the event.

The definition that we use with our work with clients for enterprise-wide risk is narrower than what you have defined, but broader than the typical concept of market risk. I think people typically associate market risk with only price risk, and yet there are companies with massive physical positions that still just look at price risk when calculating their favoured risk metric.

For companies with physical assets in their portfolios (such as thermal, wind, hydro and solar power plants, gas storage facilities and oil refineries), the variability in the company's cashflows is partly driven by price variability. But there are lots of risks outside of market price that are quantifiable and can be straightforwardly incorporated.



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Chris Strickland, Lacima

For example, volumetric uncertainty, uncertainty in cashflows that accrue from the variability in temperatures and wind speeds, hydrological flows, solar irradiance and generation levels. Risk managers can look back at historical weather events over different periods, such as February in the US last year, and see how they affected the portfolio and can then apply those to future possible events. More and more people are performing versions of this non-price risk analysis.

This kind of analysis drives asset-heavy organisations, with an eye on reporting their enterprise-wide risk, to increasingly look at more cashflow-based metrics such as gross-margin-at-risk and earnings-at-risk, rather than such value-based metrics as value-at-risk (VAR).

Energy Risk Why did Lacima perform so well in categories such as analytics and metrics – what is your edge here?

Chris Strickland: We have won the analytics and metrics categories in the *Energy Risk* Software Rankings now for the ninth straight year – so we have a long history here, and it is something I am incredibly proud of. There are a number of reasons for this longevity, but I think, mainly, it is because we give our clients confidence in the values and risk metrics that they calculate with our software solutions, by offering key insights into them. It helps enormously that we offer a complete front- and middle-office solution and have developed a single set of integrated analytics engines with different interfaces that address the different needs of the various groups. A lot of market participants will structure and price a new trade using one set of analytics and then subsequently risk-manage the trade, using a completely different set of analytics. Inevitably, there are major inconsistencies between how the front and middle offices view how the daily profit and loss is changing, or the overall risk in the portfolio. With Lacima, you do not have this issue; with unified analytics engines powering all our solutions, the same models and methodologies are employed to provide consistent results for the values used to trade a deal through to those used to manage risk.

Additionally, our set of integrated engines is developed by proven quantitative developers. A lot of vendor solutions and in-house quant teams do not necessarily have the kind of firepower we do, so our calculation and run times are much faster than theirs.

In terms of the rankings, the natural competitors to us are the wider C/ETRM firms. They sell themselves as all-singing, all-dancing, all-commodities and able to handle all geographical regions. However, they typically start in one area (for example, agricultural products, oil, natural gas or power), which they are very strong at. But when they broaden out into a wider commodity space, they are not nearly as strong and end up with major limitations.

In terms of risk measurement, which is a key step in the risk management process, a lot of systems can only calculate VAR, which is only really applicable to a financial book. For the majority of non-banking market participants, the risks they face come from the physical assets exposures as well as the financial book. We have a lot of clients that own and operate physical assets and we have developed a lot of capabilities to optimise, value and risk-manage those assets. This gives players a complete toolset that is relevant to their whole portfolio

and is an area that is almost completely lacking in most ETRMs.

In the whole area of analytics and metrics, you are essentially looking at trying to derive values and risk characteristics for portfolios. One of the things I think has really helped us to do so well in these categories is that we do not just calculate the numbers, we give people the ability to have insights into what is driving those numbers, how they are changing one day to the next and what are the hotspots.

Energy Risk Lacima is well known for complex asset and deal valuations – particularly in the gas and renewables markets. Could you talk about your work in these fields – what major trends are you seeing?

Chris Strickland: Functionally, the major new areas are in renewables and LNG. Nearly everyone that has a serious gas desk is also moving into LNG. Producers and suppliers of gas are now liquefying it and shipping it, with commodities trading companies looking to trade it. This is a real growth area, and it is a highly material business. A medium-sized LNG company might have an ADP of, say, 250 cargoes, or the equivalent of about 750 million British thermal units of gas. Looking at 2022 with market prices at Henry Hub of, for example, \$3, plus \$2 for liquefaction, then this implies an annual cost basis of about \$3.75 billion. Buying gas at \$3 and selling in Asia for \$10 and incurring \$1.50 in shipping costs, implies annual profits of more than 2 billion dollars.

There are currently two main areas of concentration for us in the LNG space. The first is to be able to handle the complexity of the deals themselves. LNG deals used to be milk runs, which involved filling up a ship with gas in Nigeria, for example, and sending it to Japan and turning the ship back around to Nigeria to fill it up again. Now, typical structures involve strips (for example, monthly) of cargoes for one to three years. Each cargo potentially has a lot of embedded flexibility in terms of cancellation rights for the buyer, as well as extension rights for the seller. Contracts, in addition, often give the buyer the flexibility to divert the cargoes to different ports and pricing bases, as well as containing volumetric uncertainty and seasonal flexibility. All of these embedded flexible features make these contracts very complex to value and, because each ship holds millions of dollars worth of gas, correct valuation is very important.

The second major business problem that we have focused on is finding the optimal shipping schedule and nomination decisions for an LNG portfolio consisting of vessels, lift and delivery contracts, with a given set of prices and the physical parameters and constraints of the portfolio. Here we are answering such questions as: What is the optimal portfolio that delivers the most value while meeting the physical constraints of the portfolio? What is the optimal shipping schedule (the ADP) for each calendar year, and how do I make nominations to buyers and seller against this programme? We know from working with some of our clients that how you optimise the shipping operations usually makes millions of dollars of difference.

Another area on which we have spent a reasonable amount of time is modelling in the renewables market. Being able to model the wind generation, as well as capture the joint relationship between wind generation and solar irradiance, and the impact on the price is important.

Energy Risk You also ranked first in credit risk. Credit became of particular concern during the early months of the pandemic last year – did you have to revise the credit risk in any of your valuations?

Chris Strickland: Not really in the valuations themselves. I think what really happened during the pandemic (and other risk-related events in power, oil and LNG) is that people became much more focused on the importance of measuring credit exposures and understanding how to manage those exposures.

A lot of systems focus on what I call the paper side of credit. These systems deal with onboarding counterparties, knowing your counterparty, credit scoring, tracking legal hierarchies of parent companies and subsidiaries, and collateral management, and so on. What we focus on is credit exposure measurement. During the pandemic, measuring your exposure against those counterparties gained importance.

Counterparty credit risk management is mainly applicable for bilateral, over-the-counter (OTC) trading where your exposure is to a particular individual counterparty. As trading has been moving away from bilateral OTC trades and more to trading on exchanges, the focus is shifting from measuring the exposure to counterparty risk and more to how much potential margin the treasury group might need to post in the future. This 'potential collateral management' calculation is similar in style to 'potential future exposure', and is becoming more of a focus for some companies.

Energy Risk Tell us about the energy transition – specifically the increase in renewables. Is it possible to gain insight into how increasing amounts of renewables are going to impact asset valuations going forward?

Chris Strickland: Obviously, many organisations are looking to value different types of assets compared with even a few years ago. Although they might be valuing fewer coal-fired generation assets and more wind and solar assets, the fundamental underlying techniques of how you value an asset have not changed. You still need to model the uncertainty in all

the underlying variables through time. With thermal assets, that typically is primarily the prices of power and fuel, but with renewable assets the fuel price is replaced with non-price variables such as wind speeds, solar irradiance and hydrological flows.

However, as renewables increase, their generation levels are having an impact on the power price series itself. The intraday shape we typically see in power prices is changing over time. As the level and percentage of renewable generation increases, there can be sharp increases in the supply (generation levels) when the wind blows and the sun is out. This increase can dampen the price levels. Models that handle the interrelationship between wind speed and price (correlation is a very weak way of linking these variables) are therefore increasing in importance. Another important consequence that we observe for regions where there is a lot of renewable generation is the observation of negative prices – and there are a lot of models where negative prices are problematic.

We are also developing dispatch algorithms that handle wind generation, solar and batteries – modelling when and how much to charge and discharge the battery. This leads to questions about models that realistically capture peak/off-peak spreads. What do you need to capture that charge and discharge optimisation? These are the kinds of questions we are answering on a day-to-day basis.

Energy Risk What other trends is Lacima seeing within its work?

Chris Strickland: Major risk events such as the pandemic, the oil shock and the LNG price hike have focused organisations' attention on trying to understand what is happening in their models. It is at these times senior management teams demand more from their risk groups and start questioning why the risk number has changed from one day to the next. Trading operations often trade tens or hundreds of curves, as well as hundreds of thousands of contracts, and so senior management want to know what is driving the change. Is it a particular region, a particular commodity, a particular book, a particular asset type, a trader?

It turns out that most risk systems are not very good at giving insights into what is driving the numbers that they produce. The amount of time risk groups spend trying to get some insight out of the C/ETRM into why a number has changed is a ridiculous waste of time and energy. Unfortunately, it is not hard to implement a poorly designed risk system. Stress-testing, scenario analysis, what-if analysis, the ability to slice and dice the results in multiple different ways, the ability to drill down into the calculated parameters, and view individual simulations are the core things the vast majority of risk groups would like to do every day, and very little of this is handled well by most systems.

Ten years ago I would have said, as a business, we should not even bother looking at VAR because everyone produces it, but it turns out no one produces it very well. You would be surprised how many players, from the smallest to the largest, still struggle with VAR, even though it is a 30-year-old metric. Some of the stuff we do is rocket science, but this is not. It is just giving people the ability to understand what is driving the numbers – something that seems to be seriously lacking in the majority of systems. ■

Methodology

The survey went live on February 1, 2021 and closed on March 5, 2021. It received 227 valid responses. To compile the Software Rankings, respondents were asked to vote for their preferred software vendor, data management firm, data provider and technology adviser in a variety of categories. All votes were carefully checked and invalid votes stripped out. Examples of votes considered invalid are people voting for their own firm or using a free internet-based email address, multiple votes from the same person or IP address, and voters who choose the same firm indiscriminately throughout the survey.

Following closure of the poll, the results are subject to an internal review process, which can result in categories being dropped if they do not have enough votes. The outcome of the review is final.

Enterprise risk software

Best enterprise risk management software system

2021	2020	Vendor
1	—	Lacima
2	—	CubeLogic
3	—	Hitachi ABB Power Grids
4	—	Beacon

Best metrics

2021	2020	Vendor
1	1	Lacima
2	—	Ion Commodities: Openlink
3	2	Hitachi ABB Power Grids

Credit risk software

2021	2020	Vendor
1	3	Lacima
2	1	CubeLogic
3	2	Hitachi ABB Power Grids

Integrated risk management development platform

2021	2020	Vendor
1	—	Lacima
2	—	Hitachi ABB Power Grids
3	—	Beacon

Integration capability

2021	2020	Vendor
1	1	Hitachi ABB Power Grids
2	—	Lacima
3	—	Beacon
4	—	Enuit

Analytics package

2021	2020	Vendor
1	1	Lacima
2	3	Ion Commodities: Openlink
3	2	Hitachi ABB Power Grids

Market risk reporting and management package

2021	2020	Vendor
1	1	Lacima
2	2	Hitachi ABB Power Grids
3	3	Ion Commodities: Openlink

Best open source code offering

2021	2020	Vendor
1	—	Lacima
2	—	Beacon

Enterprise-wide data capture and storage

2021	2020	Vendor
1	1	Hitachi ABB Power Grids
2	—	Lacima

C/ETRM software providers

Derivatives software

Oil

2021	2020	Vendor
1	1	Ion Commodities: Openlink
2	3	Hitachi ABB Power Grids
3	5	Ion Commodities: Allegro
4	2	Lacima
5	—	Ion Commodities: Aspect

Power

2021	2020	Vendor
1	1=	Hitachi ABB Power Grids
2	3	Ion Commodities: Openlink
3	4	Ion Commodities: Allegro
4	5	FIS
5=	—	Enuit
5=	1=	Lacima

Gas

2021	2020	Vendor
1	2	Hitachi ABB Power Grids
2	3	Ion Commodities: Openlink
3	1	Lacima
4	4	Ion Commodities: Allegro
5	—	FIS

Best energy derivatives software

2021	2020	Vendor
1	—	Hitachi ABB Power Grids
2	—	Ion Commodities: Openlink
3=	—	Beacon
3=	—	Lacima

C/ETRM software providers (continued)

Front- and middle-office functionality

Pre-trade analytics

2021	2020	Vendor
1	3	Hitachi ABB Power Grids
2	2	Ion Commodities: Openlink
3	—	Ion Commodities: Allegro
4	1	Lacima

Market risk: stress-testing

2021	2020	Vendor
1	2	Hitachi ABB Power Grids
2	3	Ion Commodities: Openlink
3	1	Lacima

Portfolio optimisation

2021	2020	Vendor
1	2	Hitachi ABB Power Grids
2	1	Lacima
3	—	Ion Commodities: Openlink

Credit risk

2021	2020	Vendor
1	1	Hitachi ABB Power Grids
2	3	Ion Commodities: Openlink
3	2	CubeLogic
4	—	Lacima

Risk and analytics visualisation

2021	2020	Vendor
1	2	Hitachi ABB Power Grids
2	1	Lacima
3	3	Ion Commodities: Openlink

Market risk: analytics

2021	2020	Vendor
1	2	Hitachi ABB Power Grids
2=	1	Lacima
2=	—	Ion Commodities: Allegro

Market risk: management and reporting

2021	2020	Vendor
1	2	Hitachi ABB Power Grids
2	3	Ion Commodities: Openlink
3	1	Lacima

Position management

2021	2020	Vendor
1	1	Hitachi ABB Power Grids
2	2	Ion Commodities: Openlink
3=	3	Lacima
3=	—	FIS

Model valuation

2021	2020	Vendor
1	1	Lacima
2	—	Ion Commodities: Openlink
3	2	Hitachi ABB Power Grids

Data management firms

Analytics tools (charting, dashboards, etc.)

2021	2020	Vendor
1	—	Lacima Risk Analytics
2=	2	Enverus
2=	1	ZE PowerGroup
4	—	Morningstar

Technology advisory

CTRM software implementation

2021	2020	Vendor
1	1	KWA Analytics
2	–	Lacima
3	3=	capSpire
4	3=	Baringa

Understanding client needs

2021	2020	Vendor
1	2	KWA Analytics
2	1	Lacima
3		Beacon

Best at being within budget

2021	2020	Vendor
1	1	KWA Analytics
2	3	Lacima

Analytics development

2021	2020	Vendor
1	2	KWA Analytics
2	1	Lacima

Ease of working relationship

2021	2020	Vendor
1	2	KWA Analytics
2	1	Lacima
3=	–	Beacon
3=	3	capSpire

Best value for money

2021	2020	Vendor
1	1	KWA Analytics
2	2	Lacima
3	–	Beacon