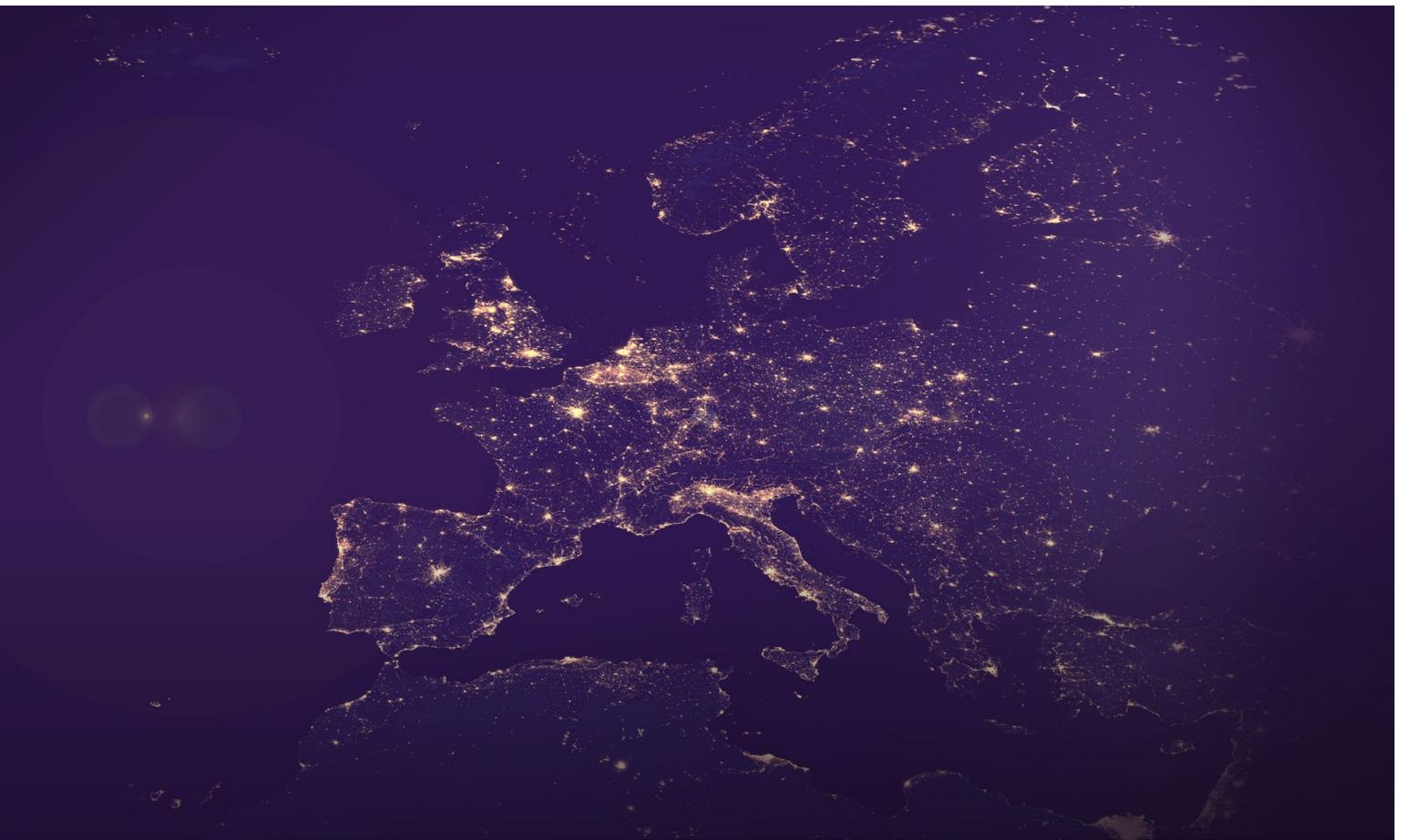


EUROPEAN POWER LOGISTICS

THE NEXT STEP IN REDUCING OPERATIONAL RISK



BRADY.

**Commodity
Technology
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CTRM Market Research, Analysis and Insights

INTRODUCTION

European power markets remain in flux driven by many factors ranging from the EU's objective to move to a single market and new regulations to progressively support that initiative, the rapid march of renewable generation and intraday trading, changes in infrastructure and indeed, in the needs of the consumer impacting demand. Essentially, we are observing the transition from national or subnational markets through to regional markets with significant cross border trade activity across all tenors. Of course, these changes have an impact on Energy Trading and Risk Management (ETRM) solution requirements and have already helped to create a new subcategory of ETRM for intraday trading. However, perhaps an overlooked impact is on the need for communication with the various European entities around scheduling, bidding, capacity, moving and managing power around the continent.

Power logistics solutions have emerged over time somewhat separately from ETRM solutions in Europe. While some ETRM's do offer logistics for specific local markets, increasingly a true pan-European logistics solution is needed but this has proven to be quite

complex to achieve due to the large number of markets, entities, communication standards and formats that exist across Europe. Only a few such solutions are offered on the market and this paper will look specifically at the solution offered by Brady PLC.

EUROPEAN MARKETS ARE CHANGING

European power trading is changing. Today, trading margins are harder to find, and operational risks need to be managed in order to ensure that those meagre profits are not lost through penalties and/or inefficiencies. This means managing the trading business more effectively, driving costs out of the business process, and guarding against errors and oversights that can create additional costs.

With political objectives and targets to reduce CO2 emissions, the EU has actively encouraged a move to renewable generation (and aided somewhat by Germany's abrupt decision to exit nuclear generation in the wake of the Fukushima disaster). As renewable generation is less predictable, largely depending on wind and solar in most locations, this transition has required the development of intraday markets where 15-minute trading increments can help to smooth out some of the supply/demand volatility. At the same time, the EU has been pushing for a single market across Europe and has made significant progress toward this objective via market coupling initiatives. Of course, in moving to coupled markets, quite a bit of pricing basis has been eliminated impacting trading strategies and returns. In terms of demand, regulations and incentives to move toward a lower carbon footprint is also changing consumer behavior and altering demand profiles, for example the greater use of electric vehicles and off-peak appliance usage are some of the trends that will undoubtedly continue.

Such radical change over a short period of time inevitably strains the system and requires careful planning and

execution. Impacted infrastructure will require the inclusion of batteries or other power storage strategies in the generation mix to ensure power supply security when the sun doesn't shine and/or the wind doesn't blow. Greater usage of residential or commercial scale solar and wind will require the power grids to allow for two-way flow, smart meters, and smart grid management devices as well as enhanced cross border capacities and smart grid development will demand that data and communication standards and protocols are harmonized to ease integration and minimize issues and costs. Other issues include resistance or delayed adoption in certain national markets via regulatory or administrative procedures, price distortions due to artificial support and incentives for what might otherwise be uneconomic renewables and physical limitations in cross-border capacity.

Despite this, we do continue to see significant and growing interest in intraday and cross border trading. The growth in cross-border trading of electricity has and continues to allow for more flexible integration of renewable generation while improving the grids ability to balance demand and supply variations.

Markets are moving inexorably towards continuous implicit allocation with capacity pricing based on grid congestion, and with cross-border capacity reservation and nomination performed automatically by the clearing house. These continuous intraday markets allow for trading closer to real-time where an increasing volume of trading is performed automatically using robots. Here too, many challenges remain including,

- The coordination, synchronization and harmonization of operational procedures and communication protocols,
- Interconnection capacity calculations and gate closure times,
- Establishment of a fair and transparent capacity allocation mechanism through the exchanges, amongst others.

Other changes taking place that are critical components in developing the European-wide market include moving to a flow-based capacity calculation that better reflects the actual situation on the grid and maximizes the available capacity. Indeed, in May 2015, the Central-Western European Region implemented such a flow-based capacity calculation for the first time in Europe. At the same time, the coupling initiatives continue and in recent years the cross-border Intraday Market was extended via EPEX Spot and the XBID (European Cross-border Intraday Markets) was launched, the first step is planned to be several future waves of deployment. Also, the five Nordic TSOs agreed to follow a common roadmap for implementation of the new balancing concept and common balancing markets, with first step being the procurement of automatic Frequency Restoration Reserve (mFRR) in 2019.

IMPACT ON EUROPEAN LOGISTICS SOLUTIONS

For those participating in trading electric power in Europe, all of these changes and trends not only impact their business and its processes but also their systems, particularly ETRM and logistics. Keeping these solutions up to date and anticipating future needs is a considerable challenge that should not be underestimated.

From a logistics standpoint, there are several overarching needs,

1. To support the increase in cross-border trading, a logistics solution needs to be pan-European, supporting all or most European markets for power,

not limited to a couple of national or subnational markets,

2. As trading moves closer to real-time, the logistics solution needs to be high-performing - able to manage transactions and communications much

more quickly than in the past,

3. The logistics solution needs to be intuitive and easy to use to minimize user error with a full audit trail,
4. Simple to deploy, cost effective to use and able to integrate with any ETRM solution whether commercially provided or custom developed,
5. Constantly supported and maintained by a reliable vendor to keep up with market changes and shifts with regular updates.

In fact, over the last few years, ComTech has seen the

market shift from ETRM software providers offering logistics support for a small number of markets towards the emergence of stand-alone logistics solutions that attempt to offer a pan-European solution. Today, many ETRM software providers expect their customers to select a third-party logistics solution and no longer offer logistics functionality. In this group of providers supplying logistics solutions, differentiation is increasingly focused on their ability to support all markets across Europe and manage near-real time trading and scheduling, while ensuring ease of use.

THE BRADY ENERGY LOGISTICS SOLUTION

To ensure their solutions are kept up to date with market needs, Brady utilizes agile development processes and provides updates to users at least once per year. With a brand new and intuitive user interface and pre-configured position rules and TSO settings, Brady has made the solutions quick to implement and easy to use.

Brady's solution has an impressive range of coverage of markets for power and are essentially truly offering pan-

European logistics coverage (Table 1).

Table 1 – Brady Logistics Market Coverage

Power Operators



Interconnector Operators

- IFA – Damas
- BritNed – Damas
- Nemo Link – Damas

Market Operators

- EPEX SPOT - ETS
- CASC/JAO – ECAN

Brady's solution is also fully integrated or can be used stand alone. Brady's Balancing functionality provides users with intuitive and real-time balancing functionality, cross border capacity management and spot bidding capabilities; Brady's physical energy trading solution supports power nominations, multi-market scheduling, counterparty reconciliation and reserve bidding. Brady states that use of their logistics solutions can save around 3 to 4 hours of a scheduler's time per day in administrative tasks – per commodity, by automating the entire scheduling workflow process. Other benefits that Brady identify include,

- Reduces business risks involved in data exchange processes as a result of automated scheduling and balancing workflow processes,
- Easy implementation of market-specific rules across multiple borders, helping users close physical power

positions in a timely manner, accelerating financial settlements and profits for traders,

- Avoid (or minimize) the impact of costly imbalances as schedulers can react more quickly to information from TSOs,
- Easy integration within any IT landscape and with any ETRM system reducing implementation time and costs,
- Supports compliance with the ability to log all activities, communications and messages for traceability and audit purposes.

However, for ComTech, the key differentiators of the Brady Logistics solutions are comprehensive pan-European coverage for power, coupled with an ability to support users in what is a difficult and time constrained job via its performance and user interface.

SUMMARY

As European power markets continue to migrate towards a single marketplace with greater automation, closer to real-time activities and increased reliance on cross border trade, users will require well-supported logistics solutions that provide comprehensive market coverage, high-performance for operations in near real-time markets, and are easy to use. Further, given the high-levels of ongoing support and maintenance required to keep these products current with rapidly changing and complex markets, these logistics capabilities are

generally best served by software solutions separate and apart from broad ETRM systems.

Given that Brady's logistics solutions address these criteria, we do believe that the firm has fielded highly competitive products that should be in consideration for anyone seeking to improve their ability to compete in the rapidly changing and increasing complex European power markets.

ABOUT BRADY PLC

Brady is the largest European-headquartered provider of trading and risk management solutions for the energy and commodities industries. Our mission is to help you to trade, move and manage commodities more profitably.

With over 30 years' experience, Brady products have more than 10,000 users at over 200 companies globally, including some of the largest trading companies, utilities, brokers, financial institutions, producers and corporates.

Brady solutions support the full trade lifecycle from deal capture to physical delivery and can be deployed as stand-alone or integrated to complement your existing architecture, on premise or cloud-hosted.

With a work force of ex traders and industry experts, you can rely on our wealth of experience and deep industry

knowledge to derive the best value from our multi commodity trading and risk management solutions.

Our solutions help you to automate many of your operational processes, improving efficiency and reducing costs. Advanced APIs enables effortless integration with other systems. We provide the ability to construct reports and BI dashboards in a flexible manner to provide real-time information on trading performance, risk metrics and business P&L to support management decision making.

For more information, visit bradyplc.com

The logo for BRADY PLC, featuring the word "BRADY" in a bold, yellow, sans-serif font. The letter "Y" is stylized with a purple dot at the bottom right.

ABOUT

Commodity Technology Advisory LLC

Commodity Technology Advisory is the leading analyst organization covering the ETRM and CTRM markets. We provide the invaluable insights into the issues and trends affecting the users and providers of the technologies that are crucial for success in the constantly evolving global commodities markets.

Patrick Reames and Gary Vasey head our team, whose combined 60-plus years in the energy and commodities markets, provides depth of understanding of the market and its issues that is unmatched and unrivaled by any analyst group.

For more information, please visit:

www.comtechadvisory.com

ComTech Advisory also hosts the CTRMCenter, your online portal with news and views about commodity markets and technology as well as a comprehensive online directory of software and services providers.

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