FIS' ENERGY TRADING AND RISK PLATFORM - ALIGNE

FIS' Cross Asset Trading and Risk
Energy and commodities markets are constantly embroiled in change. Supply and demand imbalances influence commodity prices, and lack of comprehensive information around markets can potentially exacerbate price volatility. An increasingly globalized economy makes commodity market dynamics difficult to understand even for the most seasoned traders and marketers, and even harder to predict.

Emerging regulatory environments vary in intensity and enforcement from country to country. Constantly shifting and increasingly complex multimodal supply chains, necessary to convey commodities from established and emerging sources to a multitude of markets, require constant monitoring and recalibration to ensure profitability from one day to the next.

It all adds up to complexity
Though these and numerous other shifting business challenges can be difficult and costly to address, the most successful traders and marketers, regardless of the commodity, thrive in dynamic markets, seeing opportunity where others see challenges. The ability to meet these challenges is dependent upon having the right people, processes and systems in place.

Today’s global traders and marketers seek solutions that can:

- Streamline trading processes for timely and well-informed decision-making
- Provide compliance support for audit and regulatory reporting
- Provide comprehensive analysis of financial and physical risk factors to optimize trading and marketing strategies

Financial traders who participate in the market for both speculative and hedging purposes deal with a broad range of asset classes and a multitude of energy financial instruments to provide diversity to their commodity portfolios.

Physical traders and marketers seek better access to sources or information, more reliability in supply and more effective asset management.

Traders and marketers need the ability to transfer complex risks for price, time, volume, counterparty and weather. They require access to electronic exchanges, instant messages and a variety of data sources to provide increased transparency for trading. They require the ability to manage risks associated with operating physical assets for customers and themselves.

FIS’ Energy Trading and Risk Platform provides the transaction backbone, reporting and decision support tools to help traders and marketers meet these challenges.
Trade and Risk Management

Effectively trade and manage energy transactions and associated risks
Our trade and risk management helps energy market participants to effectively manage the complexities of trading power, natural gas, oil, emissions and weather for both physical and financial instruments. By integrating all the data from front-to-back office trading operations, energy companies are able to efficiently and confidently identify and manage risk.

Capture and report multi-commodity financial and physical deals
FIS’ Energy Trading and Risk Platform supports gas, power, oil, coal, emissions, biomass, metals, foreign exchange and weather for both physical and financial transactions where applicable. It also supports a variety of instrument types, including spot, forwards, listed futures and options, swaps, swaptions, transmission capacity, nominated/actual volumes, and a variety of complex or structured contracts. You can manage the price and operational risks associated with environmental trading, with support for a variety of schemes such as the US ARP and EU ETS, and in renewables schemes involving GOOs, ROCs, LECs, CERs, RECAs, REGOs and carbon futures.

Manage multiple option types and pricing models
FIS’ Energy Trading and Risk Platform enables capture, price, analysis and report functionality on standard American and European options including exotic options such as Chooser, Asian, Basket Spread, Barrier, Rainbow and Swing. In addition to returning the option value, these models return a variety of Greeks to help you determine how much to hedge your portfolio and measure option sensitivities.

Measure market risks and define trading strategies
You can separate different risk exposures embedded in portfolios for an intuitive representation of potential hedging/netting and analysis for your positions allowing short-term and long-term hedging strategies to be put in place. FIS’ Energy Trading and Risk Platform helps measure and assess both performance and accuracy of VaR. The VaR Toolkit helps determine the incremental effect on VaR by adding a new asset or trade to a portfolio.

Credit related metrics including current and potential future exposure, expected and unexpected losses and credit VaR can be calculated and reported. It assists your trading decisions and assesses the impact of counterparty risk. Monte-Carlo or historic models help evaluate strategies.

Trade and risk management

Full trade lifecycle

Position management

Physical and financial trading

Pre-trade analytics

Reporting

Multi-commodity

Real-time information

Market connectivity
Valuation, forecasting and optimization
FIS’ Energy Trading and Risk Platform enables you to value, optimize, report and efficiently manage the embedded optionality in non-standard and long-term structured contracts and physical assets including swing contracts, spread options, gas storage, power generation, hydro assets and rainbow options. Plus, it also provides the flexibility to incorporate proprietary in-house valuation and optimization models. Additionally, FIS’ Energy Trading and Risk Platform can help you optimally manage multiple physical assets, matching supply, storage, transport, transmission and demand reducing imbalances and gaining efficiencies through automation.

Finally, leveraging advanced analytics, the load forecast tool can generate a forecast surface used to forecast loads with user defined factors. The load forecast can then be fed back into various processes within FIS’ Energy Trading and Risk Platform.

Trade and manage logistics
A major challenge for companies involved in power generation today is to capture risks and costs associated with coal fuel stocks. FIS’ Energy Trading and Risk Platform allows capture of physical and financial fixed, index and complex formula coal trading deals, quality specifications, contractual penalty and fees associated with the delivered coal product. It also helps you track and report on all scheduled and unscheduled volumes. Working together with FIS’ Energy Trading and Risk Platform Fuels Management, it can offer a full coal logistics solution, covering inventory management, delivery, and quality assurance.

Real-time business intelligence and ‘dashboards’ and reporting
The flexible Report Designer provides customers with the ability to create customized real-time reports and dashboards in addition to the extensive standard report library.

- Position and P&L reporting and drill down by virtually any attribute captured in the system
- Risk disaggregation for discovering and monitoring exposures
- Quick information insights in real-time, on-demand or end-of-day as needed
- Limit monitoring and exception notification

This enables you to gain in-depth business intelligence in a variety of highly presentable formats and to monitor business performance closely such that decisions can be made in a timely manner. Real-time message alerts via email and screen messages allow business process exception and limit reporting.

Regulatory compliance
FIS’ Energy Trading and Risk Platform includes comprehensive and flexible functionality to help companies meet the obligations of Dodd Frank regulatory compliance, such as:

- The ability to monitor position limits in real time such as OTC and exchange-traded deals subject to daily limits based on market open interest
- The ability to report creation and continuation data to the swap data repositories
- The ability to calculate regulatory capital requirements such as required initial margin, calculated variation margin, comparison to collateral and margin thresholds

“Valuation, pricing, and risk management in an energy context requires robust and flexible technology solutions. In addition, risk management strategies need to both cover the existing regulatory requirements and be flexible enough to cope with changes to the regulations. As a category leader, FIS offers a flexible, enterprise energy, trading and risk management (ETRM) solution that can help customers align risk with portfolio management, decision-making, and performance management.”

CHARTIS RESEARCH
Market connectivity
FIS offers seamless integration between its energy solutions and third party systems to enable true end-to-end business processes and Straight-Through Processing (STP). This results in a more efficient front office, a more accurate trade capture process, and a more complete view of trading activity. FIS provides specific interfaces from the front office to the following:

- Exchanges — APX, NordPool, ICE, NYMEX, EEX and Nodal Exchange
- Confirmations — eConfirm, eFETNET, Brokers: Trayport (e.g. Spectron, ICAP, Prebon, GFI)
- Physical Operators — Gemini (UK Gas), ESS (German/Austrian power), Producer/Shipper
- Requests and Offtakes via email, EDI Gas

The interfaces are designed to allow executed deals to electronically flow into the front office application for full reporting, valuation, and risk analysis. Additional interfaces to similar organizations can easily be created using FIS’ Energy Trading and Risk Platform integration.

FIS’ Energy Trading and Risk Platform – configurable risk analytics
FIS provides an advanced set of risk assessment and risk management tools designed specifically for energy traders and risk managers to capture, value, assess and optimize a number of key energy exposures.

A wide range of market risks can be measured with Value at Risk calculations using either non-simulation or simulation based approaches. Building on these risk calculations, the system offers stress test functionality that can help you to understand the impact of extreme market conditions. Additionally, it offers grid-enhanced VaR and EaR calculation to obtain risk metrics for timely decision-making, as well as the ability to capture, report and value standard and non-standard contracts, various option models, asset valuation and deal deconstruction.

Key features of configurable risk analytics:

- Ability to capture standard and non-standard contracts
- Option models — pricing and analysis
- Long-term structured contracts, asset valuation and optimization
- Stress testing
- Deal deconstruction
- Measurement of market risks
  - Value at Risk (VaR)
  - Earnings at Risk (EaR)
  - Cash Flow at Risk (CFaR)
  - What-If VaR Analysis Tools
- Measurement of additional market uncertainties
  - Credit VaR
  - Volumetric Risk
  - Foreign Exchange Risk
  - Interest Rate Risk
  - Portfolio optimization
- Grid-enhanced VaR and EaR

FIS’ Energy Trading and Risk Platform – profile decomposition
FIS’ Energy Trading and Risk Platform profile decomposition is the process of taking a complex illiquid load profile and attempting to hedge the volume exposure by selecting an ideal mix of hedge instruments. FIS’ Energy Trading and Risk Platform 3.0 provides a semi-automated method for determining this list of ideal hedges.
FIS provides Dodd-Frank support for exchange-traded and OTC deals

**TRADES**
- Exchanges
- OTC

**CREATION AND CONTINUATION DATA**
- Front office
- Confirmations
- Limits and alerts
- Futures equivalent using deconstruction methodology

**REPORTING TO SDR**
- FIS' Energy Trading and Risk Platform
- Real-time
- Platform risk
- Platform marging

FIS' Energy Trading and Risk Platform configurable risk analytics helps you to capture, value, assess and optimise standard and non standard contracts

- Complex structured contracts
- OTC options
- Linear trades

- Spot/Forward prices + correlation/volatility
- Spot/Forward prices + correlation/volatility
- Spot/Forward prices

- Optimization algorithm
- Valuation model
- P&L volumetric statistics

- Simulated Spot/Forward prices
- P&L position reports

- VaR, EaR, stress testing computation
- VaR, EaR, stress testing reports
FIS’ Energy Trading and Risk Platform – business intelligence and decision support

Real-time proactive monitoring and control of energy trading activities
FIS’ Energy Trading and Risk Platform business intelligence (BI) and decision support helps energy trading organizations to more effectively manage risk, optimize decisions and increase revenues. FIS’ Energy Trading and Risk Platform advanced integration framework supports an energy domain data mart bringing together transaction data from functions across the suite. FIS provides a set of reporting and BI tools that can be deployed against the common data model and database including advanced cubes. Dashboards may be used with real-time alerts and data feeds to deliver consolidated views, visual representations of the data and immediate, streaming updates to forecasts, real-time market data and projected performance metrics.

Features
FIS’ Energy Trading and Risk Platform Business intelligence and decision support offers many features:

- Provides the ability to view correlated data from existing energy trading systems and external data sources through a real-time streaming dashboard
- Permits just-in-time decision-making to change the outcome of a transaction that may still be in flight, before the transaction has been completed

Benefits
FIS’ Energy Trading and Risk Platform business intelligence and decision support provides companies with numerous benefits:

- The ability to improve profits and minimize risks through real-time visibility of forecasts, market data and business performance
- Gives traders an instantaneous view of how the business is performing
- Helps traders monitor contract positions and residuals, spot market prices and project profit and loss
- Helps increase customer satisfaction and customer retention
- Protects revenue streams through more effective real-time management of positions and transport utilization

Profile Decomposition Model: The model uses the forecast data, the list of potential hedges and prices associated with both to determine multiple ways of hedging the forecast
FIS' Energy Trading and Risk Platform – hedge accounting

Smooth out earnings volatility while tracking financial impact


Achieving regulatory compliance

Integrating hedge accounting into risk management systems helps a company take advantage of hedges to smooth out earnings volatility while streamlining the processes to track, report, and account for the financial impacts of the hedges. The tight integration between FIS' Energy Trading and Risk Platform solutions suite and FIS' Energy Trading and Risk Platform hedge accounting means that hedge information is always in sync for audit integrity. Changes to hedged positions are managed, tracked and reflected through this integration.

Process flow and reporting

User-defined rules enable automatic classification and bucketing of hedges and hedged items. Once positions are classified into buckets, the user may match hedges manually, automatically or via a combination of both. Subsequent to the match date, FIS' Energy Trading and Risk Platform hedge accounting will retrospectively calculate all hedges with either cash flow or fair value methodology for hedge effectiveness as required by the FASB or IAS. The system will alert users whenever hedges become ineffective. Matched trades can be de-designated whenever market conditions cause ineffectiveness to occur within a reporting period.

Dedesignation triggers the recording of the appropriate accounting entries and makes the unused portion of de-designated trades available to match to another transaction.

In addition to automatically documenting each hedge as required by FAS 133 and IAS 39, FIS' Energy Trading and Risk Platform hedge accounting provides several standard operational and accounting reports.

Key features

- Automated trade bucketing and classification
- Manual and automated matching of hedges to hedged items
- Tracks fair value and asset valuations
- Differentiates intrinsic value from time value for option valuation
- Supports compliance for cash flow and fair value hedge calculations
- Automatically documents each hedging relationship based on pre-defined rules
- Discloses OCI and earnings for the designated accounting period
- Automated effectiveness testing, including: short-cut, correlation, R square, value offset and regression analysis
- Retrospective hedge effectiveness calculations for several algorithms
- Supports trade de-designation
- Creates standard operational, accounting and compliance reports
- Queries deals by any deal criteria
- Provides full audit trail of all hedge accounting activities

Key benefits

- Streamlines information flow for accuracy and timeliness
- Facilitates compliance with Sarbanes Oxley, FAS 133, IAS 39 and other international standards
- Helps ensure audit integrity with one “version of the truth”
- Provides a single repository to capture, value and measure the effectiveness of trades
**FIS' Energy Trading and Risk Platform – credit risk**

**Effectively manage credit monitoring, analysis and reporting**
Counterparty credit worthiness, as well as, internal credit monitoring are becoming increasingly important for energy companies. Credit managers are seeking integrated tools to manage current and future exposure, bad debt expense and efficient cash flow. Managing acceptable levels of credit risk and terms of payments to their customers is critical in the current economic environment. Managing and enforcing the corporate credit policy is becoming more difficult in tightening regulatory environment. Risk managers need mitigation tools to support risk avoidance, structuring for reduced transaction risk and risk transfer to third parties and collateral assets.

**Credit limits & ratings**
Manage internal and external rating agencies and ratings

**Margining and thresholds**
Capture Credit Annex data related to your ISDA and EEI agreements

**Collateral and guarantees management**
Capture and manage parental guarantees, bonds, cash and T-Bills Used for Risk Transfer

**Credit VaR and potential future exposure**
Use Monte Carlo simulation to calculate Credit Value at Risk, PFE, Expected Loss and Unexpected Loss

**Reporting**
Use any of multiple standard credit reports to enforce credit policy

**Monitoring**
Use real-time alerts and credit limits to ensure credit is reviewed with every deal
Credit workflow
FIS' Energy Trading and Risk Platform provides the tools to credit managers need to enforce corporate credit policy by:

- Determine and maintain payment terms for each counterparty
- Allocation of credit and executed collateral
- Listing contracts approaching termination date
- Negotiating additional collateral to cover credit costs of trade floor activities
- Maintain company credit ratings
- Managing interest rate feeds for accurate tracking of cash
- Maintaining probabilities of default and recovery rates

Exposure management
FIS' Energy Trading and Risk Platform credit risk includes comprehensive functionality to help companies understand the current exposure to risk in the portfolio, including:

- Sources of exposure
- Concentration of exposure
- Sensitive’s
- Mitigation strategies

These sources can be derived from active trades with floating forward positions that fluctuate based on the ups and downs of the market and settled trades that have not been invoiced or paid.

Portfolio analytics
FIS offers seamless analytical capability for customers who wish to manage actual and potential counterparty credit migrations. Primarily using a Monte Carlo (MC) process to provide statistical simulation methods that calculate:

- Credit Value at Risk (Credit Var)
- Potential Future Exposure (PFE)
- Expected Loss (EL)
- Unexpected Loss (UL)

Margining and thresholds
FIS' Energy Trading and Risk Platform captures critical information need for margin call analysis report. Normally contained in the credit annex of an ISDA or EEI agreement, FIS' Energy Trading and Risk Platform uses this information to determine whether the users’ company or their counterparty will need to make a margin call based on:

- Credit thresholds between the counterparties.
- Exposures the counterparties have to each other.
- Any collateral that has been provided to one counterparty by the other.

By capturing the minimum margin, initial margin, rounding levels and threshold by credit rating, the credit manager is able to manage, monitor and accurately calculation its own and its counterparty's margin requirements.

FIS' ENERGY TRADING AND RISK PLATFORM CREDIT RISK PROVIDES INCREASED EFFICIENCY AND BETTER CREDIT MANAGEMENT

- Maintain collateral positions with counterparties.
- Store collateral thresholds and rating matrices from contract provisions.
- Generate calculations of credit exposure and calculate collateral and liquidity obligations.
- Model complex limit structures.
- Report credit risk concentrations by commodity, deal type, credit rating, country, and more.
Guarantees and collateral
For organizations that require risk mitigation through Risk Transfer, FIS fully supports capture and monitoring Parental Guarantees and Collateral in the form of Cash, Line of Credits, Bonds, US Government Bonds, US T-Bills:

- Grantor and recipient of guarantee
- Associated internal business unit and coverage area, including contract specific collateral
- Effective and Expiration Dates
- Amount, Type and Limit of guarantee

These important risk mitigation measures are available in remaining limit, exposure and credit risk calculations. Using the FIS' Energy Trading and Risk Platform message center a Credit Manager may choose to set an alert to monitor when these instruments are nearing expiration.

Monitoring and reporting
FIS offers multiple standard credit reports in real time or on-demand deployment. Coupled with Real-time alerts the credit manager can ensure that the corporate credit policies can be enforced. Clients who are looking for more, can use FIS business intelligence to provide a credit dashboard to managers and executives with timely accurate information.

Output capabilities include:

- Remaining credit limit based on standard or custom formulas
- Margin call analysis reports
- Generation of Margin Call or Credit Expiry letters
- Real Time credit cubes with stop light credit warnings
- Dashboards with informative charts and graphs that display exposure, pie and bubble charts to visually display trouble spots
FIS' Energy Trading and Risk Platform – emissions and renewables trading

Comply and manage emissions and renewables allowances
Climate change and sustainability are recognized business challenges that have generated both broad-based governmental regulations and grass-roots initiatives at local and regional levels. While not entirely global, the Kyoto accord spurred many governments to attack the issue from the perspective of emission reduction and controls. Today U.S. state and regional initiatives drive actions aimed at carbon with the EPA regulating sulfur dioxide (SOX) and nitrous oxide (NOX) emissions.

These regulations and initiatives, like the Regional Greenhouse Gas Initiative (RGGI) in Northeastern US and the EU-ETS, underscore a sizeable new risk factor for power producers, refiners and industrials, both large and small. Such programs to mitigate climate or environmental risk generally include caps on emissions and introduce new operational risks, as new processes are required of compliance departments. The use of allowances to meet caps and hedging of compliance risks, have led to a thriving trading market around emissions allowances and renewables credits such as Texas Renewable Energy Obligations (ROCs) and U.K. Renewable Energy Credits (RECs).

Managing the risks with FIS' Energy Trading and Risk Platform
To support participation in these markets, FIS' Energy Trading and Risk Platform emissions management offers flexible trade and configurable risk management for emissions and renewables. FIS can help you to effectively manage price and operational risks by:

- Enabling emissions trading, capturing forecasted and actual emissions, and supporting the issued purchase and sale of emissions allowances
- Enabling trading of renewables credits and related energy derivatives
- Matching allowance certificate inventories to obligations
- Managing regulatory reporting by tracking trades and monitoring allowance surrender, “true-up”, and verification processes

FIS' Energy Trading and Risk Platform emissions management’s allowances module supports trade types that include allowances, emissions physicals, and shapes. Allowance types that can be captured include EU ETS, GOs, ROCs, LECs, CERs, RECs, REGOs, US Green Tags, and SOX/NOX. FIS' Energy Trading and Risk Platform emissions management provides full position, risk (including VaR) and P&L reporting for these allowance types. These trade types are stored using FIS' flexible trade shape functionality, allowing for capture at any granularity required, from monthly to sub-hourly.

Trade entry through FIS' Energy Trading and Risk Platform front office includes flexible support for serial numbering rules to support inventory tracking of allowance certificates and credits. Trade capture data includes contract vintage, delivery date, portfolio, counterparty information, delivery and registry specifics (e.g. origin and destination county), registry accounts and actual and transfer dates.

Emissions forecast and actuals capture
Effective management of an emissions inventory requires capture of the forecasted and actual SOX, NOX, or carbon emissions, alongside allowances trades. FIS' Energy Trading and Risk Platform emissions management can capture emissions forecasts and actuals directly or upload them from third party models.

Registry account management
Proper compliance with trade registry and allowance surrender procedures is critical in the emissions market, with great penalties for non-compliance, both monetarily and in reputation.

The allowances module provides tools to effectively manage the processes required for reporting and regulatory or registry compliance.

For the EU-ETS, all trades must be reported to the registry operator or regulator of the relevant member state. With relevant registry information captured on trades, FIS' Energy Trading and Risk Platform emissions management’s reports can aid this process through documents for checking manual entries or through producing batch files for automatic upload. Registry accounts can be selected, defaulted by the traded book and counterparty, and grouped by portfolio or account for position and mark to market reporting.

Various agencies require reporting of verified emissions on quarterly or annual basis and truing up of the corresponding number of emissions allowances against this or against an inventory of credits. FIS' Energy Trading and Risk Platform reporting and trade capture functions allow for monitoring of these account positions against the latest forecasts for verified emissions.
Cross Asset Trading and Risk | FIS' Energy Trading and Risk Platform

Designed for Usability

Dynamic and auditable spreadsheet control
FIS' Energy Trading and Risk Platform with HTML5 web and mobile technology provides users with an ergonomic and truly user definable experience. Users are able to leverage our out of the box capabilities, as well as create their own workbenches with drag and drop components. Customers will benefit from a true web application that lowers the cost of deployment to the desktop.

FIS' Energy Trading and Risk Platform Trader Workbench

Also available in SaaS
50 percent of energy market participants are considering hosted and cloud-based ETRM solutions in order to reduce application-associated IT costs and keep up with market changes, according to a recent FIS market study.

Here's how FIS FIS' Energy Trading and Risk Platform SaaS benefits energy marketers and traders:

- **Core FIS' Energy Trading and Risk Platform ETRM capabilities** that are used by some of the world’s largest energy trading firms, producers, utilities and large retailers
- **Lower cost** due to reduced up-front capital costs, a higher level of flexibility to keep up with market change, and reduced or non-existent need for IT staff
- **Security** as FIS maintains close relationships with domestic security and intelligence communities to ensure that hosted systems and data are secure at all times
- **Rapid implementation** of a standardized set of integrated, end-to-end capabilities – in as few as 60 to 90 days
- **Automatic software upgrades**, so you’re always up-to-date with functionality, market and regulatory changes
- **Scalability** to turn the usage up and down, depending on business requirements

Flexible user-defined workbench
A flexible framework allows users to create custom workbenches to refine their interaction with FIS' Energy Trading and Risk Platform. Users can drag and drop a wide variety of components into the workbench such as real-time charting, customized maps, and feeds.

FIS' Energy Trading and Risk Platform Workbench Builder

About FIS Solutions for Energy and Commodities
FIS solutions for energy and commodities help utilities and retailers, pipeline and storage operators, marketers and traders as well as integrated energy companies compete efficiently in global markets by streamlining and integrating the trading, risk management and operations of physical commodities and their associated financial instruments. Through real-time data, connectivity and analysis, FIS solutions help you achieve transparency and regulatory compliance, optimize end-to-end transaction and operational lifecycles and meet time-to-market needs with flexible deployment options. As your technology partner, we can help take advantage of the latest innovation and explore new opportunities. For more information, email us at getinfo@fisglobal.com.
About FIS

FIS is a leading provider of technology solutions for merchants, banks and capital markets firms globally. Our more than 55,000 people are dedicated to advancing the way the world pays, banks and invests by applying our scale, deep expertise and data-driven insights. We help our clients use technology in innovative ways to solve business-critical challenges and deliver superior experiences for their customers. Headquartered in Jacksonville, Florida, FIS is a Fortune 500® company and is a member of Standard & Poor’s 500® Index.