



# EULER ETRM SOLUTION

MARCH 2019

PHINERGY SRLS

# ABOUT PHINERGY

## WHO'S PHINERGY

Phinergy was born in 2014 from the experience of its founders Stefano Fiorenzani and Enrico Edoli in order to combine skills and offer a more structured service to its customers.

Phinergy's mission is to offer its customers services and consultancy specializing in the areas of energy trading and risk management using exclusively technical skills of the highest international level.

Phinergy has its operational headquarters in Padua (Italy).

## WHY US?

Our excellence is based on the collaboration and theoretical and applied experience of team members, which derives from direct experience in energy management, trading and risk management.



### DECISION SUPPORT AND DISPATCHING



### RISK MANAGEMENT



### BUSINESS INTELLIGENCE & DATA MINING



### ALGORITHMIC TRADING



### ADVICE



### TRAINING



## OUR SKILLS

Logic and Abstraction; Optimization; Applied Mathematics, Energy Economics; Statistics; Machine Learning; IT Development.

## WHAT WE DO

Consulting services: Strategic and Process Decisions; Business Development Support; Portfolio Management & Market Analysis Support.

Training: In house and open session training courses on specialized energy risk and trading issues.

Software Development: Decision support tools for automatic trading; Market analysis tools; Forecasting tools (price, production, consumption); ETRM Solution.

# EULER TECHNICAL AND FUNCTIONAL FRAMEWORK

- EULER is a modular full cloud SaaS solution covering multiple aspects of Energy Trading and Risk Management operational issues.
- EULER has been specifically developed to meet the needs of South East Europe energy trading companies.
- EULER is based on an innovative technological framework allowing for maximum computational speed, maximum database flexibility and maximum technical reliability and security.
- EULER's modules can extensively cover: price curves and deal capturing, P&L and Settlement analysis, Market and Counterparty Risk analysis.
- EULER's can support business activity in Energy Trading and Supply covering multiple POWER, GAS and ENVIRONMENTAL commodity markets.
- EULER is a MULTI-LEGALENTITY, MULTI-CURRENCY and MULTI-TIMEZONE system.

## FUNCTIONAL FRAMEWORK

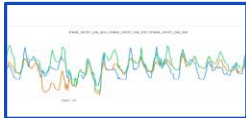
- Contractual and counterparties data registration and management;
- Physical Grid structure definition
- Internal book structure definition
- Price Curve management
- Deal capture
- P&L and Settlement reporting
- Market Risk Analysis
- Credit Risk Analysis
- EMIR/REMIT Compliance (optional)
- Physical Scheduling support (optional)

## TECHNICAL FRAMEWORK

- Full Cloud SaaS Solution (remote access from everywhere without login restrictions — no particular HW requirements for maximum performance)
- Back end full horizontal scalability to guarantee maximum computational performance
- Non-relational Datawarehouse to guarantee maximum flexibility and performance with heterogeneous Big Data
- Open Datawarehouse accessible with a simple to use API-REST service

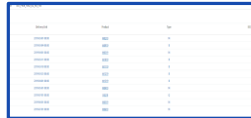
# MARKET PRICES CAPTURING ABILITY

## SPOT MARKET PRICES



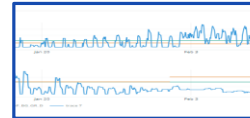
- DA prices from all European power markets
- DA prices from major European Gas markets
- Spot prices of EUA and other Environmental commodities
- Nice and easy web dashboards for price curve consultation, comparison and downloading
- Automatic price feed from all public available price sources
- Possibility to create and maintain private spot curves

## FORWARD MARKET PRICES



- EEX Power Futures
- EEX Power Options
- PEGAS Gas Futures
- EEX Environmental Futures
- Nice and easy web dashboards for price curve consultation, comparison and downloading
- Automatic price feed from main private price sources (EEX, PEGAS, ICIS, Heren, ICE)
- Possibility to create and maintain private fwd curves

## CAPACITY PRICES



- Yearly, Monthly and Daily PTRs prices.
- Automatic connection with  
JAO  
SEECOA  
ENTSO-E  
TRANSELECTRICA  
ESO



- EULER's API can be easily used for automatic upload of any Spot, Forward or Capacity price curve from private price sources.
- PHINERGY's team will provide all the necessary support for the correct use of API for uploading and downloading price curves.

# DEAL CAPTURING ABILITY

## POWER

### Energy (PHY/FIN)

- Spot
- FWD/FUT/SWAPS/CfDs
- OPTIONS
- Custom Profiles

### Capacity (PHY/FIN)

- Yearly, Monthly, Daily, Custom PTRs
- Use it or Loose it / Use it or Sell it

### Assets

- Conventional Generation units
- Renewable Units

## GAS

### Energy (PHY/FIN)

- Spot
- FWD/FUT/SWAPS/CfDs
- OPTIONS
- Custom Profiles

### Capacity

- Yearly, Monthly transport capacity
- Entry/Exit capacity

### Storages

- Physical Storage deals
- Virtual Storage deals

## ENVIRONMENTAL

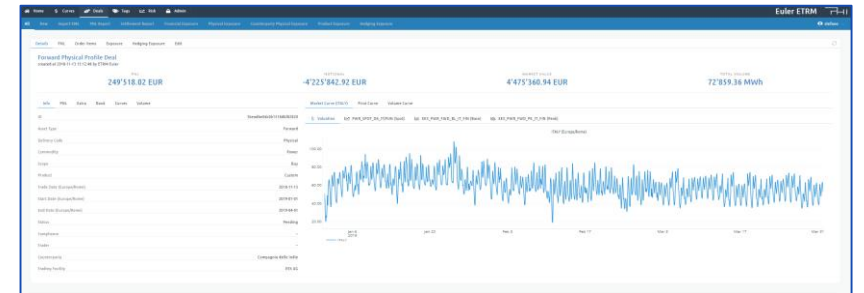
### EUA

- Spot
- FWD/Futures

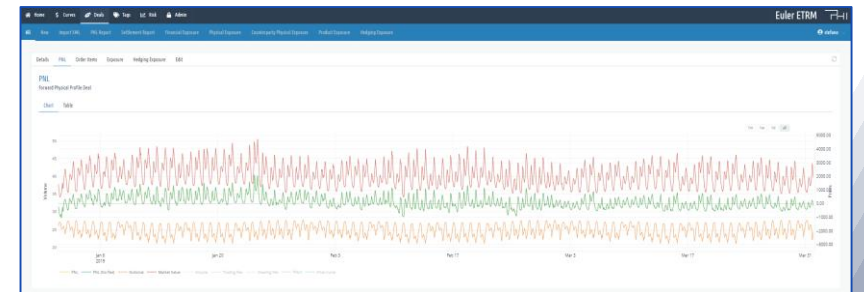
### GO

- Spot
- FWD

- EULER can be connected with Trayport-API or other trading platforms for direct booking of FWD deals.
- JAO and SEECOA xml files can be directly uploaded into EULER for a direct booking of major PTRs contracts.
- EULER's API can be easily used for automatic upload of any kind of supported deal.



Contract Name	Start Date	End Date	Quantity	Price	Financial Metrics
Contract 1	2018-01-01	2018-01-31	1000	100.00	100.00
Contract 2	2018-02-01	2018-02-28	2000	200.00	200.00
Contract 3	2018-03-01	2018-03-31	3000	300.00	300.00
Contract 4	2018-04-01	2018-04-30	4000	400.00	400.00
Contract 5	2018-05-01	2018-05-31	5000	500.00	500.00



# REPORTING

## Deal Details

- Notional Amount, Market Value, P&L
- Payables & Receivables
- Price Curve, Market Curve, Volume Curve
- Trading Fees, Clearing Fees

## P&L Report

- By Legal Entities, Business Units, Portfolios, Books and Tags
- Current and Historical P&L
- Market Value P&L and Cost/Revenues P&L
- Hourly P&L and Monthly P&L
- Possibility to set and monitor P&L KPIs

## Settlement Report

- Monthly Settlement Amounts by Counterparties
- Settlement Amounts by Payment Date

## Financial Exposure

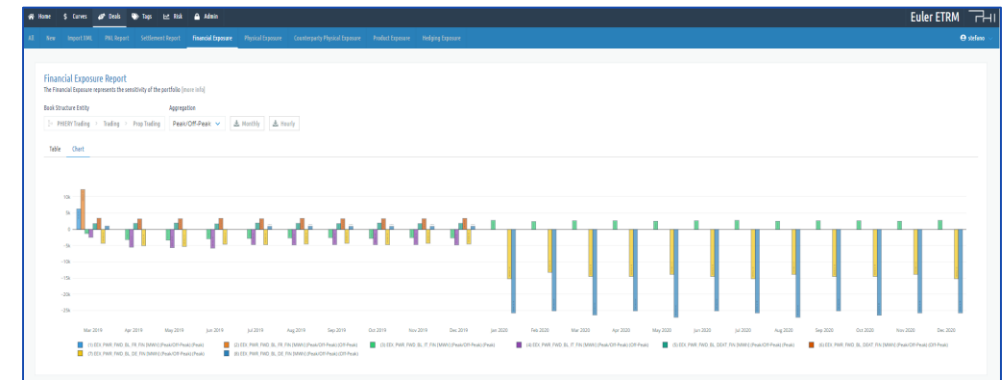
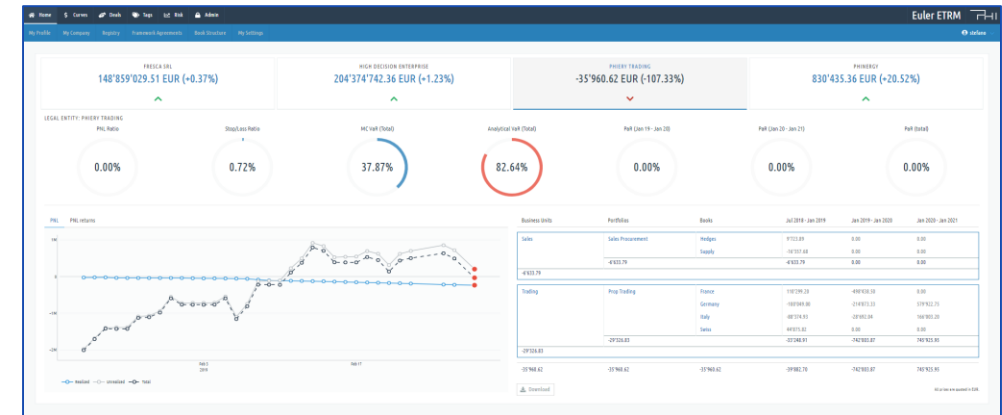
- By Legal Entities, Business Units, Portfolios, Books
- Exposure to each Commodity/Market
- Monthly (Base/Peak/Off Peak) or Hourly Exposure
- Exposure by time buckets or by market products

## Physical Exposure

- Net Physical Energy position by Bidding Zone
- Net Physical PTR Capacity by corridor/link
- Netted Physical Energy/Capacity position by Bidding Zone
- Net Physical Energy position by Counterparty

## Hedging Exposure

- Automatic decomposition of Custom energy Profiles into a combination of tradable market products for optimal risk reduction.

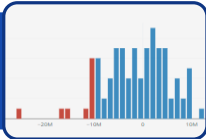


# MARKET RISK ANALYSIS



## ANALYTICAL VaR (Real Time Calculation)

- Parametric VaR by LEs, BUs, Portfolios, Books
- Marginal VaR by LEs, BUs, Portfolios, Books
- Component VaR by LEs, BUs, Portfolios, Books
- Undiversified VaR by LEs, BUs, Portfolios, Books



## HISTORICAL VaR (Real Time Calculation)

- Historically calculated VaR by LEs, BUs, Portfolios, Books

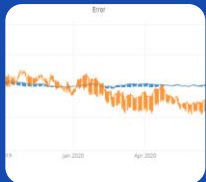
Optimal Hedging

32.80%

Curve	Product	Exposure	Delta
EUR_USD_1M_1Y	Q10101	100.00	0.00
EUR_USD_1M_1Y	Q10102	100.00	0.00
EUR_USD_1M_1Y	Q10103	100.00	0.00
EUR_USD_1M_1Y	Q10104	100.00	0.00
EUR_USD_1M_1Y	Q10105	100.00	0.00
EUR_USD_1M_1Y	Q10106	100.00	0.00
EUR_USD_1M_1Y	Q10107	100.00	0.00
EUR_USD_1M_1Y	Q10108	100.00	0.00

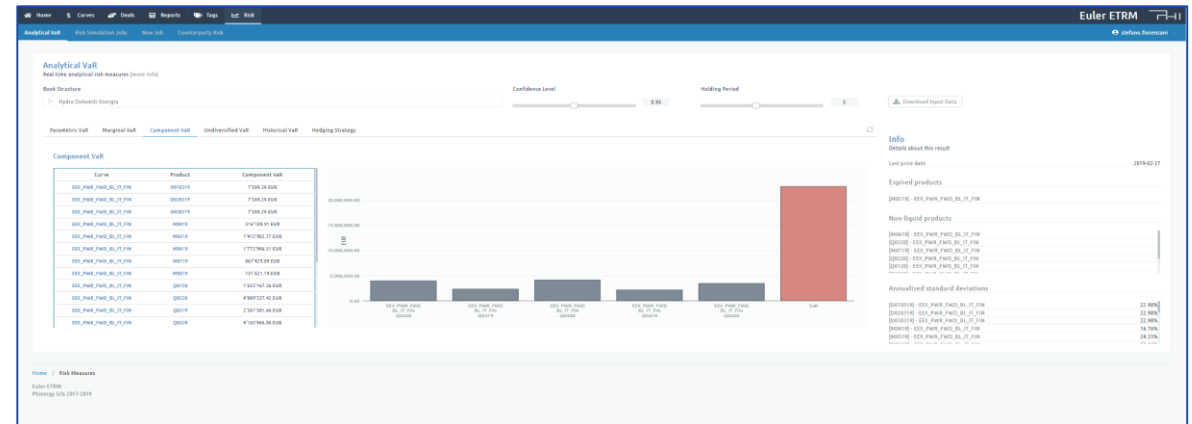
## OPTIMAL HEDGING (Real Time Calculation)

- Possibility to check risk reduction effectiveness of potential hedging positions



## Monte Carlo VaR/PaR (The Fastest MC engine in the market!)

- Two available simulation approaches (FWD base HJM model for liquid markets and Spot based Two Factors Mean Reverting Model for liquid/illiquid markets)
- MC Simulation Statistical Diagnostics
- MC based Profit at Risk, Value at Risk, Residual Profit at Risk

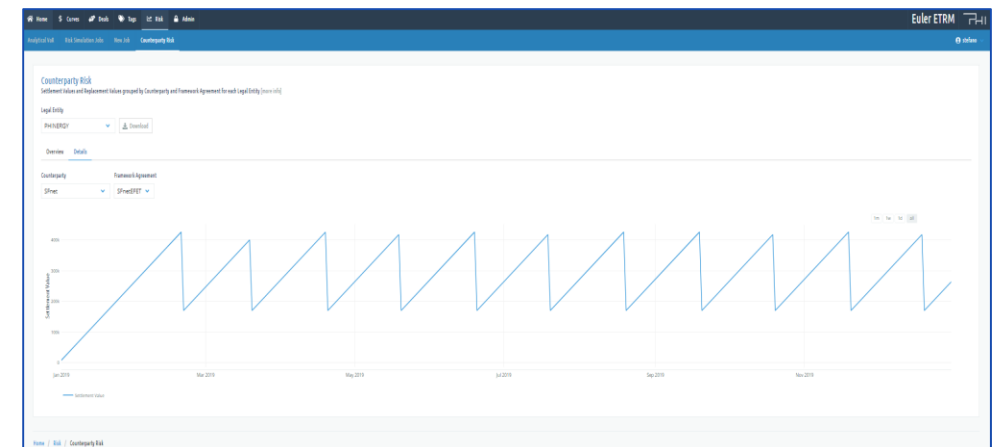
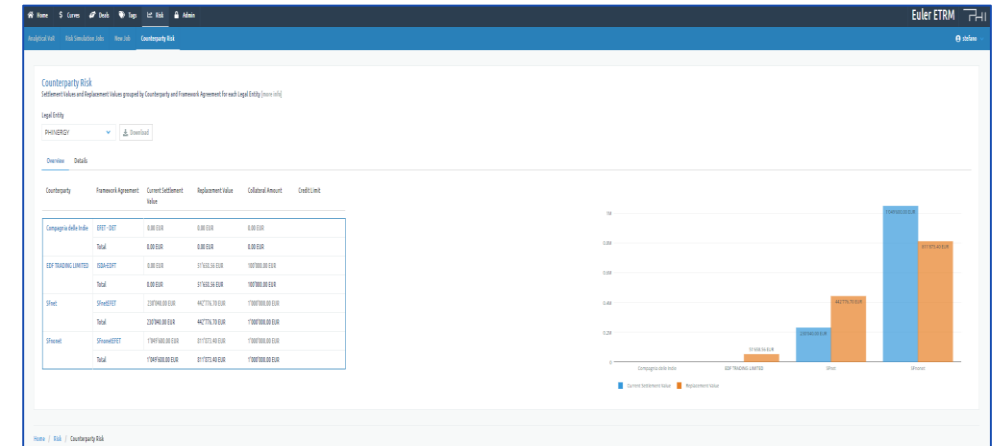


# COUNTERPARTY RISK ANALYSIS

Payment Terms Management  
Collateral Management  
Close Out and Payment Netting Management

Settlement Value Calculation (Current Settlement and Max Expected)  
Replacement Value Calculation

Counterparty Risk Limits Management



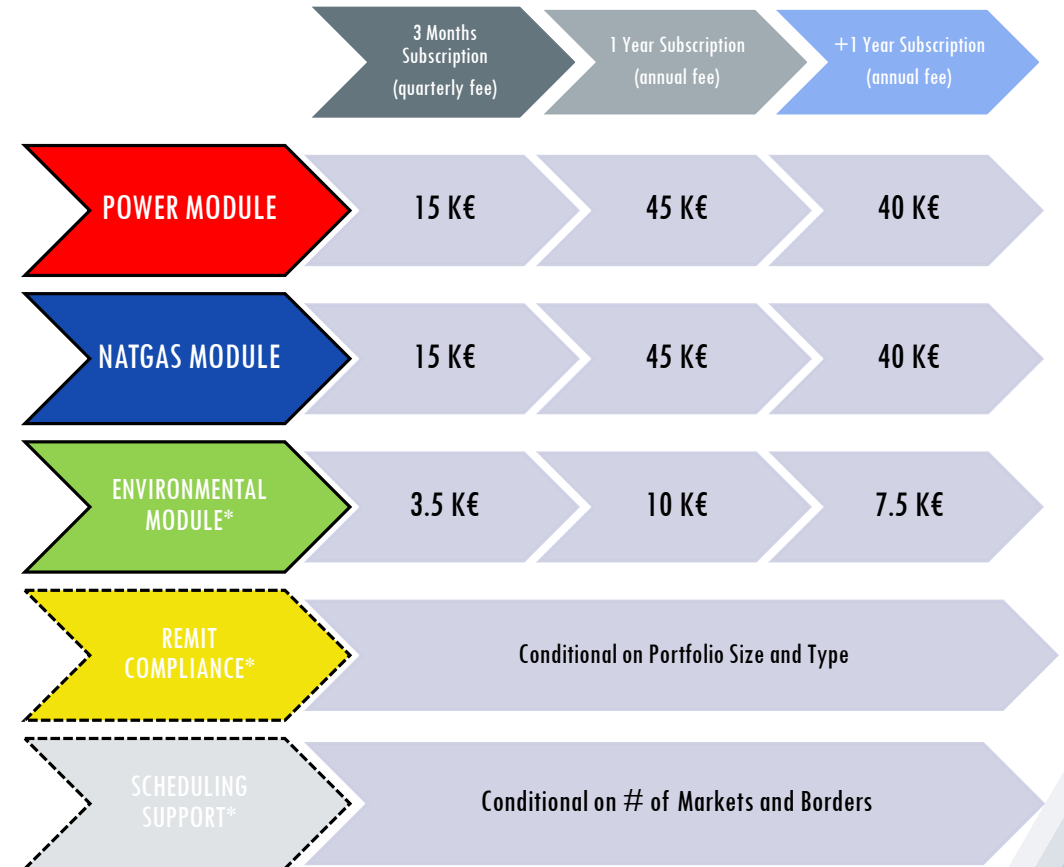


# MODULAR ECONOMIC OFFER

- NO initial investment for the purchase of unnecessary licenses
- NO extra hardware cost for having a cutting hedge speed/space performance
- HIGHEST security and privacy standards
- MODULAR and TIME flexibility
- LOWEST subscription costs with comparable products all over Europe

- Customizations and Integrations can be evaluated and priced aside
- All inclusive subscription fee: assistance, training, ordinary maintenance, updates etc
- Subscription provides unlimited contemporary access for up to 5 users per installation

**Make a leap in the future !!!**  
**Ask for more info or a demo at [info@phinergy.biz](mailto:info@phinergy.biz)**  
**Do it now !!!**



\*Module available only in association with Power or Gas Modules.

# SOME OF OUR BUSINESS PARTNERS....



# MANAGEMENT



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Enrico Edoli is founder and CEO of Phinergy.

During his career, he worked as an external quantitative analyst for trading and risk management support in various energy companies in Italy. He has published several technical articles and a book related to quantitative energy finance and he is also lecturer of a course in Mathematical Finance at the University of Padova.

Enrico has a degree in Mathematics and a PhD in Applied Mathematics achieved both at the University of Padua.



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Stefano Fiorenzani is founder and Chairman of Phinergy.

He is a recognized expert in Energy Trading and Risk Management, with a career spanning numerous top European energy companies and financial institutions. He has published several scientific and business articles and three books on advanced methods in the Energy Finance area.

He holds a degree in Economic Science, a Master of Science in Financial Economics and a PhD in Mathematical Finance.

# CONTACTS



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