



# Simulation and Forecasting

## INTERCONNECTED EUROPEAN ELECTRICITY MARKET



# A scenario

The establishment of the Interconnected European Electricity Market introduces a new scenario.

COUPLING  
OF THE  
EUROPEAN  
ELECTRICITY  
MARKETS

NEW COMMON  
MATCHING  
ALGORITHM:  
EUPHEMIA

INTERACTION  
OF DIFFERENT  
BID TYPES AND  
LIMIT PRICES

GRADUAL  
INCORPORATION  
OF NEW MARKETS  
(GME, OTE, ETC...)

NEW  
LEGISLATIVE  
CHANGES

ALGORITHM  
EVOLUTION  
(FLOW-BASED) AND  
HOMOGENISATION  
OF BID TYPES

NEW  
ELECTRICAL  
INTERCONNECTION  
INFRASTRUCTURES

Furthermore, the market will be affected by continuous changes resulting from this integration.

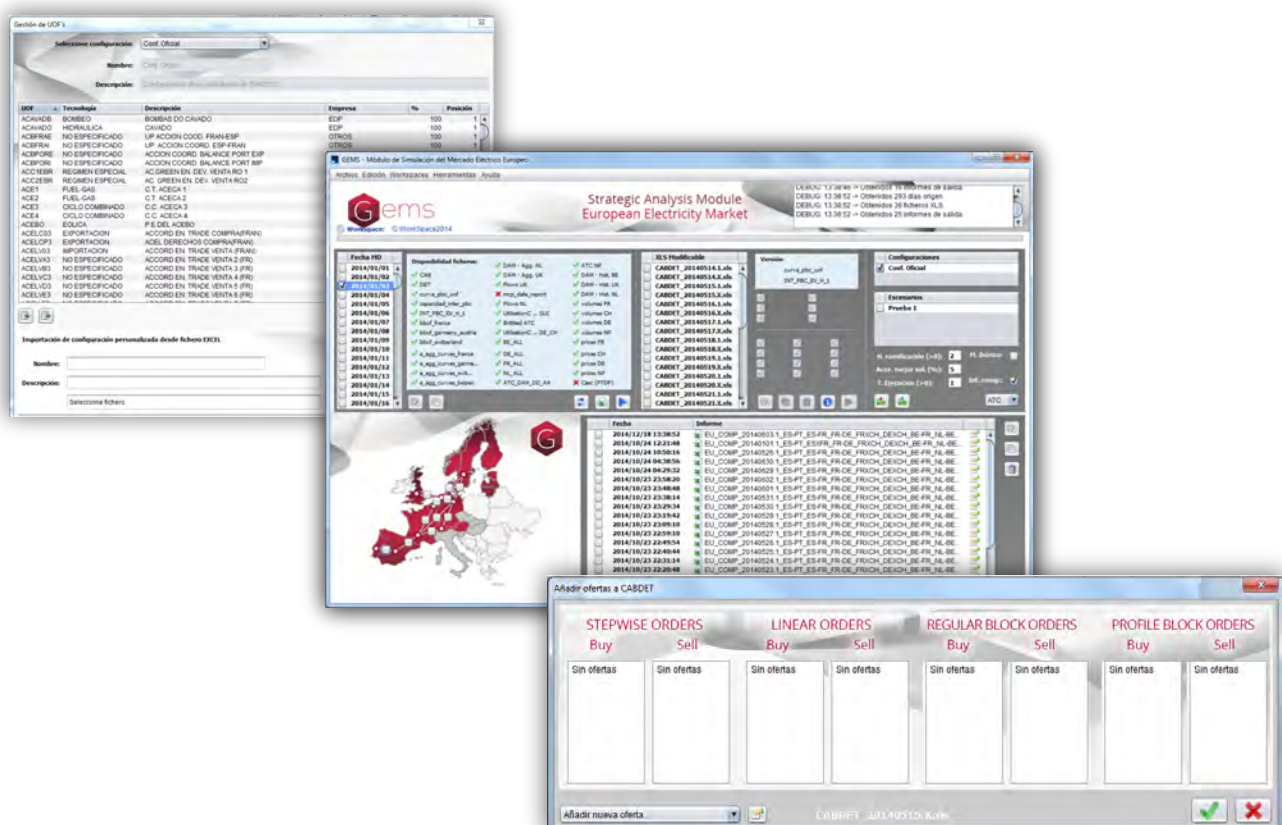
...under continuous evolution



# GEMS: Optimise the operations under the European Interconnected scenario.

It is a system which reproduces the operation of the new EUPHEMIA matching algorithm and the coupling of the daily electricity markets at the European level.

This allows the user to optimise their participation strategies in the day-ahead market and in trading activities at the European level.





# How does GEMS work?

- IT PERFORMS A SIMULTANEOUS MATCHING OF THE **BUY AND SELL BIDS FOR ALL COUPLED MARKETS**, SHOWING THE RESULTING MARGINAL PRICES IN EACH MARKET.
- IT USES THE MAXIMISATION OF SOCIAL WELFARE AS ITS TARGET FUNCTION.
- IT PROCESSES SIMPLE AND COMPLEX BID TYPES.
- IT PERMITS THE USE OF A **HYBRID INTERCONNECTIONS** REPRESENTATION SYSTEM, THROUGH THE SIMULTANEOUS USE OF ATC AND FLOW-BASED MODELS.
- IT FAITHFULLY REPRODUCES THE ENERGY EXCHANGES AT THE DIFFERENT INTERCONNECTIONS AS WELL AS MARKET SPLITTING SITUATIONS.



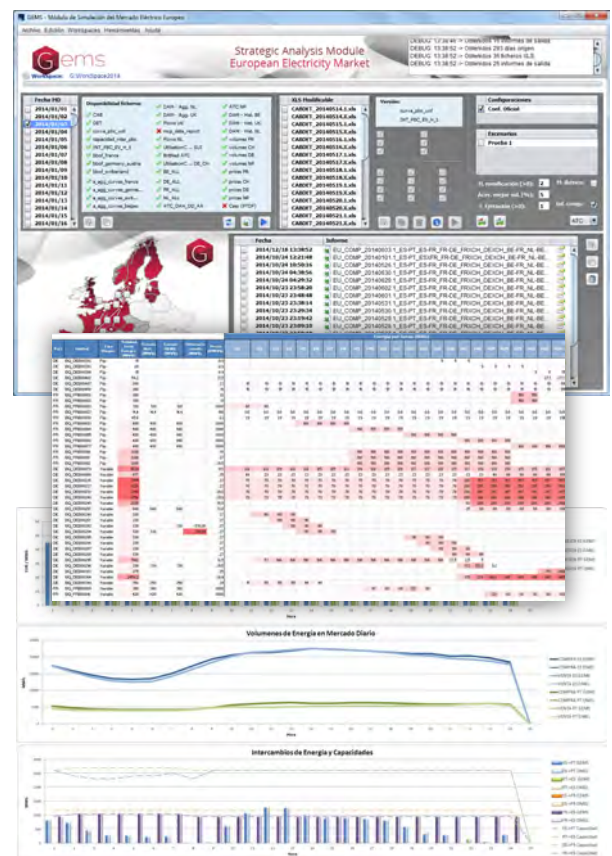




# Strategic Analysis Module

AIMED AT THE ANALYSIS OF LEGISLATIVE CHANGES, BID STRATEGIES AND THEIR OPTIMISATION THROUGH THE SIMULATION OF ALTERNATIVE SCENARIOS.

- By means of the user modelling alternative scenarios, it permits the contemplation of legislative changes, increases in interconnection capacities, internal bid strategies and those of the competition, etc. allowing for the optimisation of market participation strategies as well as the economic analysis of the predicted effect of legislative changes which are still under development.
- Permits the use of the flow-based capacities calculation system in CWE markets.
- Offers intuitive scenario generation interfaces and has been developed for optimal interaction with databases and reporting tools.



**OPTIMISE YOUR MARKET PARTICIPATION STRATEGIES, EVALUATE UPCOMING LEGISLATIVE CHANGES, ETC. IN THE NEW CONTEXT OF THE COUPLED EUROPEAN ELECTRICITY MARKET.**

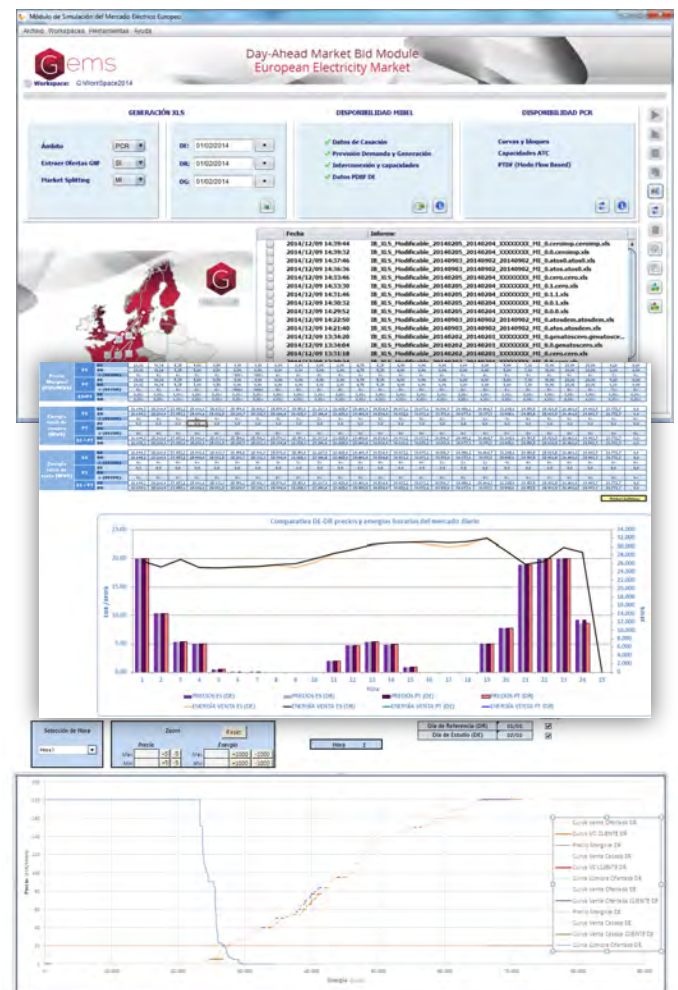




# Day-Ahead Market Bid Module

AIMED AT THE GENERATION OF OPTIMAL BIDS ON THE DAILY MARKET, VIA THE PREDICTION OF MATCHING RESULTS OVER A WEEKLY TIME FRAME:

- Allows external predictions to be entered associated with demand, renewable generation, interconnections, etc. in order to optimise the simulation of the matching process over the short term.
- Allows for dynamic scenario creation through the simulation of the behaviour of the competition, nuclear generation forecast, generation breakdown, etc., allowing for the analysis of the matching of each unit based on the simple and complex conditions entered: minimum income, operation ramp-ups, blocks bids, etc.
- Provides predictions of marginal prices over a weekly time frame. Performs simultaneous matching of coupled European markets.
- Uses public data on recent results of the matching process of the European daily markets (aggregate curves, complex bids blocks, smart orders, ATC capacities, etc.).



**IMPROVE YOUR RESULTS THROUGH OPTIMAL DESIGN OF BIDS ON THE DAY-AHEAD MARKET, USING PRECISE SHORT-TERM SIMULATIONS AND PREDICTIONS.**



# Electricity Markets Consulting Services

AIMED AT SUPPORTING OUR CUSTOMERS IN THE ACHIEVEMENT OF THEIR BUSINESS GOALS, BY PROVIDING EFFICIENT SOLUTIONS TO THE CHALLENGES POSED BY THE DYNAMICS OF THE EUROPEAN ELECTRICITY MARKETS.

We offer consulting services with the delivery of detailed reports, which allow our customers to evaluate new legislative scenarios, changes in energy market rules, effects of new electricity infrastructures on marginal prices, etc., all within the context of the new interconnected European market.



**INCREASE THE CERTAINTY OF YOUR DECISION-MAKING  
ON THE ELECTRICITY MARKET**





# Integration options

## DESKTOP EDITION

Resource-friendly software:  
runs smoothly on regular  
computers.

Fully portable version.

Highly customizable and  
ready to upgrade software

## DATABASE EDITION

Integrating external systems  
and DBs.

Allow users to share results  
and modify scenarios.

Centralized data storage:  
optimizing time and resources.



# Other Services

ISOTROL is actively involved with energy associations and R&D European Projects. Furthermore the company has been collaborating with the University for over 30 years developing algorithms for the electricity sector.

Over the past three years at ISOTROL, in collaboration with the research group INGELECTUS, we have worked on the development of simulation modules for the new European market.

## ALGORITHM BASED DEVELOPMENTS

INTRADAY MARKETS

ANCILLERY SERVICES

DEMAND & PRICE FORECASTING

DEMAND RESPONSE  
MANAGEMENT SYSTEM (DRMS)

ISOTROL PERFORMS BESPOKE DEVELOPMENTS, AND ALWAYS MAINTAIN STRICT CONFIDENTIALITY OF THE SIMULATION PROCEDURES AND STRATEGIES OF OUR CLIENTS.

# Proven Experience



European electricity utilities taking advantage of GEMS.



## Simulation and Forecasting

INTERCONNECTED EUROPEAN ELECTRICITY MARKET



### **SPAIN**

Headquarters (Sevilla)  
Edificio Bluenet  
Avd. Isaac Newton, 3.  
PCT Cartuja. 41092  
Sevilla  
T: (+34) 955 036 800

### **UNITED KINGDOM**

UK Ltd  
6th Floor, New Baltic  
House  
65 Fenchurch Street  
London  
EC3M 4BE

### **USA**

Isotrol USA LLC  
300 Brickstone Square  
#201  
Andover, MA 01810  
Technical contact: +1 202  
460 8757  
Commercial contact: +1  
978 662 5226

### **CANADA**

Isotrol Canada Ltd.  
88 Maplecourt Crescent  
SE  
Calgary, AB T2J 1V7

### **BRAZIL**

R. das Pernambucanas  
282 6º andar, Graças,  
Recife-PE  
CEP 52011-010

### **CHILE**

Pedro de Valdivia, 555  
Oficina 401  
Providencia, Santiago de  
Chile  
T: (+56) 9 5364 2001

### **MEXICO**

2ª Av Sur nº 9, Col  
Centro  
Código Postal 30700  
Tapachula, Chiapas  
México, D.F.  
T: +52 (55) 5998 8597