

WHAT ARE THE “3D” CHALLENGES OF THE ENERGY SECTOR – AND HOW DO ELECTRICITY MARKETS RESPOND?

- The world of energy is rapidly changing. The “3D” – **decarbonisation, decentralisation and digitalisation** – are challenging the way electricity wholesale markets work.
- Power exchanges react by developing new products or completely new markets, e.g., local flexibility markets or trading possibilities for **guarantees of origin**.
- The key questions are: How can we facilitate the shift towards decentralised production of renewable assets? How can we integrate an increasing amount of traded volumes from renewables into the market, taking into account their need for short-term adjustments? And what can we do to incite demand-side response, in order to increase flexibility?
- In addition, new technologies like algorithms and automated trading increase the speed of electricity trading – which also brings along new challenges for trading platforms.
- The good news is: All these topics have already been tackled in the past few years. Solutions exist – and they are ready to be deployed.



The “3D” of the energy sector: Decentralisation, digitisation, decarbonisation

The energy sector, and energy trading along with it, are changing fundamentally and at a high speed. This development is driven by the megatrends of decarbonisation, decentralisation, and digitalisation. Power exchanges can help to shape the energy market and energy trading of the future by contributing innovative ideas for products and services. The goal: To achieve the energy transformation with the help of market-based solutions.

The “3D” challenges: Electricity is key

The Paris Climate Agreement paves the way for a new **society** – one **based on electricity**. As an effect, renewable energies will be used as primary energy – resulting in market-based coupling of different sectors of the economy, or sector coupling.

As a result of the progress of the energy transition, **power generation is becoming increasingly fragmented**. Today, electricity is produced in millions of small renewable assets rather than only a few large-scale, fossil-fuelled power plants. **Digital technologies can help driving this development**.

Power exchanges facilitate the transformation and decarbonisation of the energy sector via markets and contracts that foster the increasing integration of renewables – let’s have a look.

Flexibility markets: Avoid grid congestions before they appear

Flexibility markets are a new tool which enables to trade flexibility. Flexibilities are the capacity to adjust electricity consumption. For example, industrial consumers have the possibility to lower their production in order to decrease

the load on the grid. Flexibility markets efficiently centralise local flexibility offerings. They enable network operators, on one hand, to resolve physical congestions reliably and economically. Flexibility providers, on the other hand, benefit from an additional revenue opportunity for the flexibility they can provide. Power exchanges are therefore establishing a standard for flexibility markets. EPEX SPOT, for instance, has invested into a trading platform tailor-made for trading flexibilities. *More information can be found here.*

Guarantees of Origin: Promote the energy transition

Guarantees of origin (GOs) are a **tracking instrument that allows to confirm the origin of electricity from renewable production** within the total of electricity. Thanks to GOs, European consumers who sign up for a green electricity offer with their energy provider can be assured that the exact amount of electricity they consume has been injected into the grid from renewable sources. In the context of the energy transition, a well-functioning and exchange-based GOs market brings transparency on the traded products and the technologies that are most demanded on the market. EPEX SPOT plans to launch such a market.

More information can be found here.

System Operator services: Market-based solutions to meet power grid challenges

The drivers of the energy transition put System Operators and their grid under pressure – quite literally. Decentralised production is leading to growing frequency and balancing issues. More and more congestions need to be tackled efficiently. Smart market-based solutions, driven by highly reliable and performant trading platforms, can contribute to the solution. By combining the expertise of the exchange business with the knowledge of the electricity system, power exchanges help system operators at all grid levels to master today’s and tomorrow’s challenges of the energy transition, and this across the entire value chain of trading: market operations, market platform provisions, IT monitoring, settlement and more. *More information can be found here.*

