Our Technology

Modern decentralised engine power plants can provide the future energy system with the necessary flexibility. With their rapid startup capabilities when extra electricity is needed and fast reduction to zero when there is no more demand, engine power plants provide sustainable solutions that enable more intermittent renewables to be integrated into Europe's energy system without compromising the security of supply.

The flexibility of engine power plants is not limited to start and stop times, but includes the choice of the primary energy sources: The majority of applications use low-carbon gas. This can be natural gas, biogas, landfill gas or Liquefied Natural Gas (LNG). Alternatively, biofuels, diesel or hydrogen can be used if the circumstances allow or the system requires it.

Today many engine power plants are also utilised to produce heat in addition to electricity. They can be used for district heating, steam generation, cooling and other purposes. In some cases, cogeneration plants achieve up to 95 per cent efficiency.

Single engines have a power range of up to 20 MW. However, they can be combined in engine power plants in a modular approach, reaching total plant capacities of 500 MW or more.

The modular advantage: Operators can start and stop engines based on power requirements.

The modular principle of engine power plants is ideal to build up a decentralised supply system. It helps to reduce the need for high voltage power lines and makes a valuable contribution to ensuring grid stability.

EUGINE is the centre of knowledge for engine power plant technology and electricity market design. Its members are the leading European manufacturers of engine power plants and their key components. They provide forward looking solutions for flexible electricity generation.

EUGINE works with EU and national institutions in order to help the European electricity system to meet the challenges of today and tomorrow.

efficient

Best form: The efficiency of engine power plants is up to 95 per cent in cogeneration applications.

responsive

Ready, steady, go: The energy supplied by engine power plants corresponds dynamically with actual energy demand.

fast

Flash into action: engine power plants provide energy right away at any time even in emergency situations.

reliable

Green light: engine power plants guarantee a safe and stable power supply everywhere: from vibrant cities to remote locations.

environmentally sound

Flower power: engine power plants operate with very low emission levels and are CO_2-neutral with biofuels.

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European Engine Power Plants Association

Europe's Energy and Climate Policy Challenge
tackled by Engine Power Plants

European Engine Power Plants Association

The Climate Policy Challenge

Reaching the EU policy objectives outlined in the 2030 framework for climate and energy policies requires a further transition of energy production, integrating highly sustainable, flexible and efficient technology as provided by engine power plants.

Reducing greenhouse gases

To achieve the 2030 EU target of a 40 per cent reduction of greenhouse gas (GHG) emissions compared to 1990, carbon-intensive energy sources like coal must be replaced by less emitting energy sources. These include renewable energy sources like wind, sun, biomass or gas. **Engine power plants run on the full range of fuel types, from different biofuels to all types of gases, from natural to sewage and biogas.** They are therefore a very useful technology to help decarbonise Europe's energy production. Furthermore, thanks to their very fast availability, engine power plants only run when really needed, avoiding unnecessary emissions in idle or minimum-load mode.

Balancing RES intermittency

Beyond the debate on the optimal share of renewable energy sources (RES) in the overall energy mix, the EU needs to discuss the way intermittent RES can be best integrated into the electricity market. **Power supply and power demand have to be constantly balanced to avoid blackouts and ensure grid stability. As the variation of power generated by fluctuating sun and wind intensities makes this more and more challenging, the EU faces a strong 'need for flexibility'. Flexible energy sources are needed to compensate for RES variations.** Contrary to conventional power plants, engine power plants are extremely flexible: they can provide power to the grid within a minute and reach full output within five minutes. **Due to this high flexibility, engine power plants are the perfect match to accompany the growing share of renewable energy sources.**

Efficiency through combined heat and power generation

Engine power plants can provide electrical and thermal power in an integrated and highly efficient process, which can achieve **energy efficiency rates of up to 95 percent,** and thus primary energy savings. This – in most cases, decentralised installed combined heat and power (CHP) technology – also contributes to a reduction of GHG emissions.

The Energy Security Challenge

The European Energy Security Strategy is a first step on the way to achieve the EU objective of a secure energy supply. However, it focuses on the primary energy supply and neglects the challenge of network collapses and blackouts with severe implications on society and industry. The debate should go further and tackle the need for a decentralised and stable power system.

Energy security

Engine power plants provide smart solutions for energy security. As **multi-fuel technology,** they switch rapidly between gas, biogas or even diesel, and thus make it possible to choose the type of fuel according to price fluctuations and availability (e.g. in case of supply disruption). **High energy efficiency** reduces energy consumption, energy imports and consequently, energy dependency. Finally, the **modularity** of engine power plants provides the opportunity to switch on/off specific engines inside the power plant, meaning output can be precisely adjusted at any time to consumer and industry needs or to the primary energy supplied in case of partial supply disruption.

Decentralising the power system

Both the deployment of renewable energy sources as well as the use of engine power plants contribute to the decentralisation of power generation. Electricity generated close to energy consumers reduces the need for new high-voltage transmission lines and consequently, reduces enormously the related costs and power losses in transit. This is also a way to reduce security threats affecting the energy system: **a centralised energy system with large nuclear power plants is much more vulnerable to possible forced outages or terrorist attacks** than a decentralised energy system composed of thousands of small producers.

Stabilising the power grid

Power systems will only be secure if they are neither dependent on unstable foreign energy suppliers nor jeopardised by unexpected variations of indigenous energy production resulting from the intermittency of renewable energy sources. **Engine power plants already provide an optimal solution to fully compensate for these variations.** They generate power right away, at any time. If needed, they can even be linked up to form a **'virtual power plant'**, controlled from a central control entity to stabilise the grid.

Our Policy Recommendations

Thinking beyond the targets

While it is necessary to have a vision on what the EU wants to achieve in the energy sector, it is at least equally important to outline a realistic path for **implementing these targets.** How can EU goals be achieved in a cost-efficient way while at the same time creating a market in which investments in flexible power generation will be made? If such conditions do not come forward, the EU's power system could be put at risk (i.e. imbalances, unbearable costs and blackouts).

Rewarding flexibility rather than capacity

Up to now, power markets have only remunerated the generated power quantity (kilowatt hours) without taking into account the quality (level of flexibility). The new era of heavy fluctuations on both sides of power markets (power demand but now also power supply) requires an adaptation of power systems. The electricity markets of the future should not only reward kilowatts generated, but also **provide price signals for flexible power generation in order to boost investments in reliable flexible power generation. Capacity markets do not provide an adequate solution** because they would continue to remunerate the power quantity available and not the flexibility of available power. Moreover, national capacity markets may lead to high additional costs for citizens, market distortions and a renationalisation of energy policy. This could even put the concept of the internal energy market into question.

Ensuring a level playing field

Market participants should benefit from a level playing field. **All electricity market participants should have balancing responsibilities, including suppliers of renewable energies.** If the latter cannot balance offer and demand, they should face the imbalance charge as well.