2024 – 2029

Flexibility x Net-Zero

Policy recommendations

EDGINE

Resilient
Sustainable
Competitive

Making Europe
Resilient
Sustainable
Competitive

The European engine power plant industry is advocating for an energy system that meets Europe`s climate targets. Our sector's vision for Europe is one that reaches net-zero through an integrated approach that builds on Europe's existing strengths. In this brochure, we present the recommendations from the engine power plant sector to European Union policymakers for the period 2024 – 2029.

By adapting the technology for renewable gas and hydrogen operations, the European engine power plant sector has demonstrated its commitment to decarbonisation. Every day, engine power plants support schools, hospitals, data centres, utilities, and other essential services; ensuring their resilience even in the face of unexpected events. Through continuous investment in innovation, our sector maintains its competitiveness in Europe, as well as globally.

We are convinced that the 9 key policy recommendations outlined here will help Europe decarbonise while upholding resilience and competitiveness. We look forward to working with policymakers and stakeholders to make them happen.

2024-2029

EUGINE Policy Recommendations

1. Reward reliable power
2. Take a multi-technology approach to decarbonisation
3. Adapt decarbonisation to local realities and needs
4. Recognise the potential of high-efficiency cogeneration
5. Preserve the on-site use of biogas
6. Support hydrogen power plants
7. Put energy efficiency at the centre
8. Recognise all home-grown innovations
9. Take the most cost-efficient approach to decarbonisation

Engine power plants make Europe resilient

Engine power plants are a flexible, scalable, and decentralised solution. They are used in a variety of applications, from grid balancing and "mission critical" purposes, to efficient energy solutions for schools, airports, hospitals, and other infrastructure and public services.

Our plants ensure that essential services remain operational and keep the energy system safe and secure. They provide warmth in the winter, cooling in the summer, and electricity year-round; empowering businesses and communities to thrive.

What is needed from policymakers?

1 Reward reliable power

Electricity markets should be made future-proof with specific schemes that reward reliability in a broad sense. Reliable and flexible power will be needed to stabilise the grid and cover demand for both residential districts and businesses, especially in times of low wind and solar output.

2 Take a multi-technology approach to decarbonisation

There is no silver-bullet solution towards decarbonisation. Often, the best solution is the one that taps into the complementarities between technologies. A technology-neutral approach to decarbonisation will increase Europe's resilience and independence.

3 Adapt decarbonisation to local realities and needs

The availability of renewable, home-grown energy varies from one region to another. Europe should tap into its renewable gas potential by promoting the use of renewable gas in all sectors, including power and heating.

Bringing stability to the grid

The **Kiisa emergency reserve power plant in Estonia** was commissioned by the national transmission system operator and operates only in case of a network failure or capacity shortfall. The plant reaches 100% load in less than 10 minutes, can operate with different fuels and down to a bone-chilling -80ºC, securing the national electricity supply.

Reducing schools' energy consumption

In 2018, the **Baekke School in Denmark** decided to make a bold move to reduce its energy consumption. By integrating mini-cogeneration units with heat pumps, this municipal school has slashed its consumption, saving 23% on bills and cutting carbon emissions by 30%. A great lesson on technology innovation for its 280 students!

Providing reliable energy for airports

Memmingen Airport, Bavaria's third-largest commercial airport, is powered by locally sourced climate-friendly biogas. The biogas is used in a flexible combined-heat-and-power plant that runs only when green electricity is needed in the power grid, particularly when photovoltaic systems are not generating enough electricity. The plant secures the airport's energy supply and supports its goal of achieving net-zero CO_2 emissions by 2030.

Contributing to security of supply

In 2019, **Italy implemented a capacity market** aimed at bolstering the country's electricity supply security.

Central to this initiative were fast-starting engine power plants. Carefully selected to operate only when called upon by the system operator, they enable Italy's journey towards a more sustainable energy system.

Resilient

Engine power plants make Europe sustainable

With their ability to use a variety of fuels and their quick start-up times, engines embody flexibility, making them adaptable to diverse local needs and conditions. Engine power plants are a key solution for the efficient use of renewable gases and fuels, as well as for the integration of variable renewables.

All biogas plants providing heat and electricity on-site are engine-driven, and manufacturers are developing the technology to run on hydrogen and their derivates. Towards 2050, hydrogen power plants will contribute significantly to the seasonal balancing of electricity demand and supply.

What is needed from policymakers?

4 Recognise the potential of high-efficiency cogeneration

The simultaneous production of heat, cold, and electricity helps small and large buildings and companies in the EU to save energy. It is one of the most cost-effective ways to mitigate emissions. Maintaining energy efficiency as a centrepiece of European energy and climate legislation is crucial.

5 Preserve the on-site use of biogas

For a long time now, biogas plants have been installed on farms, in waste-water treatment facilities, and other industries, to efficiently use gas produced on-site. Europe should build up its biomethane sector by adding new sources of feedstock to meet its targets – instead of merely promoting the "upgrade" of existing biogas to biomethane and cutting the biogas plants from their supply.

6 Support hydrogen power plants

Hydrogen power generation is becoming a reality and needs to be promoted in combination with long-term storage and other flexibility technologies. Hydrogen-to-power will be one of the essential sources of long-term flexible energy generation, helping to re-convert stored solar and wind energy into electricity whenever needed.

Turning waste into green electricity and heat

The **Energor company in Germany** was set up by a farmer and his son in 1995. For the past 20 years, it has been collecting food waste from nearby schools, nurseries, hospitals, care homes, and restaurants, and turned it into biogas. The biogas is then used in a highly efficient combined-heat-and-power plant which delivers sustainable heat and power to almost 2 000 households.

Making hydrogen-to-power a reality

This **innovative flagship project in Austria is** the world's first 100% hydrogen storage facility in a porous underground reservoir. Electricity produced in summer will be captured and stored as green hydrogen, to then be used in winter.

As part of its commissioning, a highly efficient and flexible hydrogen cogeneration plant in the 1 MW range will transform the stored hydrogen into electricity and heat whenever other renewable energy is in short supply.

Providing circular economy solutions for utilities

At the **Weinheim wastewater treatment plant** in Germany, energy is harnessed from the wastewater of approximately 170 000 people. With fermentation tanks producing 2.4 million m^3 of gas annually, two cogeneration plants provide sustainable electricity and heat that is used on-site. The plant's efficiency allows the utility to surpass its own electricity requirements and export the surplus power to the grid.

Paving the way towards a carbon-free future

The **former Chemnitz-Nord coal-fired power plant** has been transformed to a versatile, hydrogen-ready plant that will serve communities when renewable energy wanes. What sets this project apart is its readiness for the hydrogen era. With a later retrofit, it can transition into a hydrogen-powered facility, paving the way towards a 100% decarbonised energy system.

Engine power plants make Europe competitive

Our members' manufacturing activities are largely based in Europe. Engine power plant manufacturers are global leaders in investing in order to constantly refine their technology for enhanced efficiency, reduced emissions, and optimised performance.

The technology's flexibility and modularity are ideal for decentralised energy systems and micro-grid solutions, from urban areas to remote locations. Engine power plants are not only environmentally friendly, but also economically sound, offering cost-effective energy solutions for both European large-scale industries and small businesses alike, enabling them to remain competitive in the European and global markets.

What is needed from policymakers?

1 Put energy efficiency at the centre

Saving energy is the best way to reduce energy bills. Cogeneration and trigeneration technologies produce heat, cold and electricity at the same time and thus help companies and consumers use valuable renewable gases and fuels in the most efficient way possible.

8 Recognise all home-grown innovations

The engine power plant sector has been innovating consistently throughout its existence to help industry and households reduce their energy consumption and become resilient. EU policies and programs must encompass and consider all local innovations that support the decarbonisation goal, from hybrid heating solutions to hydrogen engines.

9 Take the most cost-efficient approach to decarbonisation

100 GW of coal power capacity need to be replaced in the coming years. In many parts of Europe, switching from coal to renewable gas power is the quickest and most cost-efficient way of decarbonising the power and heating supply.

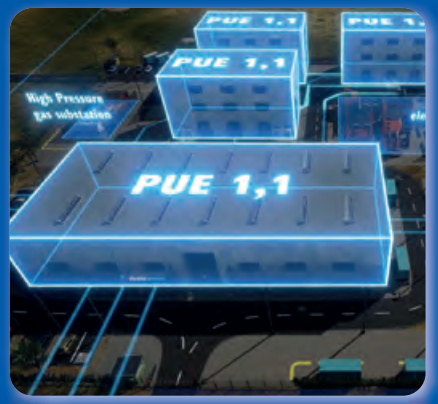
Delivering more energy, higher flexibility, and lower emissions

The **Stuttgart-Gaisburg Power Plant** is replacing an old coal power plant serving the city known as the “cradle of the automobile”. With an efficiency of up to 90%, this future-proof engine power plant helps save 60 000 tonnes of CO_2 each year. In the long run, the plant will run on renewable gases and thus be free of greenhouse gas emissions.

Combining the best of two worlds: the PowerHeatPump

Combined-heat-and-power generation and heat pumps are often presented as alternatives – but they harness their full potential when operating jointly. This Danish SME is at the forefront of this innovative solution that combines both technologies to make the heat transition affordable, simple, and safe.

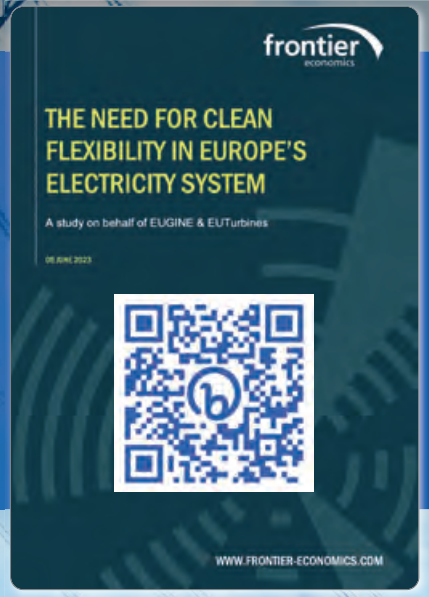
Increasing Power usage effectiveness with trigeneration



The first **hyperscale data centre in Romania** is scheduled for completion in 2025. An engine power plant will supply electricity and cooling to the building and its IT infrastructure. The engine trigeneration plant will allow the data centre to reach a power usage effectiveness of 1.1 – meaning that for every kW of IT equipment, only an additional 0.1 kW is necessary to power it.

Helping farmers save energy and increase incomes

Bioenergie Fargau was set up by a farmer in the north of Germany when, in 2010, milk prices were under pressure. With its 265 ha of land and 200 dairy cows, the farm produces biogas that is turned into 3.7 million kWh electricity and a 3 million kWh heat a year by an engine power plant. While the electricity is re-sold, the heat is used on-site, producing energy savings and additional profits.



Maintaining Europe's security of electricity supply – Our role

- Rising electricity demand and increasingly intermittent electricity generation pose significant challenges for Europe's security of electricity supply.
- Short-term flexibility solutions such as batteries, demand response, and improved power grids will be needed; but will not be enough to cover all flexibility needs.
- After 2040, prolonged periods of high residual load – when variable renewable energy cannot cover demand – will occur throughout Europe.
- In some years, the need for additional flexible and reliable back-up apacity could reach 400GW – that is 40% of the European Union's total installed generation capacity in 2022.
- Engine power plants can run on hydrogen blends and as 100% hydrogen power plants with only minor modifications.
- Flexible power plants running on climate-neutral fuels will be essential to maintaining security of Europe's electricity supply.

Our Organisation

EUGINE is the voice of Europe's engine power plant industry. Our members are the leading European manufacturers of engine power plants and their key components. Engine power plants are a flexible, efficient, reliable and sustainable technology, helping to ensure security of electricity supply and providing (renewable) electricity and heat.

Our Vision

- ## Net-Zero is reached in 2050 at the latest
  Achieving the EU climate targets requires the European energy system to be completely decarbonised in 2050.
- ## Renewable energies will the dominant solution
  Electricity will be generated from renewable energy sources. Most of it will come from variable renewable energy sources, while the rest will be provided by dispatchable renewable energy sources.
- ## Flexibility will be a key system requirement
  The necessary system flexibility will be provided by various solutions including flexible generation, storage and demand response, matching to the flexibility needs of the system, from the very short term to weeks or seasonal storage.

Our Goals

- ## Acting as a knowledge centre for engine technology
  We are a knowledge-driven association underpinned by the work of our dedicated Task Forces. We serve as a networking platform for the industry.
- ## Contributing to European energy policy
  EUGINE stands for a market that supports flexible solutions in the short, medium, and long term. We advocate for an optimised business environment for engine power plants.
- ## Communicating about the solutions provided by the technology
  Engine power plants have series of key capabilities that make them essential partners in a flexible, reliable, efficient, and integrated energy system. We make sure these capabilities are well known and acknowledged.

Our members

ABB

CATERPILLAR

EC POWER

JENBACHER | INNIO

MAN Energy Solutions

mtu A Rolls-Royce solution

WÄRTSILÄ

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