EUROMOT

The European Association of Internal Combustion Engine and Alternative Powertrain Manufacturers

POSITION PAPER

Comments on Setting an Energy Efficiency Framework for the Decade Ahead

13 April 2026

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13 APRIL 2026, BRUSSELS

EUROMOT, the European Association of Internal Combustion Engine and Alternative Powertrain Manufacturers, welcomes the Commissions' initiative to consult stakeholders on the call for evidence process *"Setting an energy efficiency framework for the decade ahead"*[1]. An efficient use of energy is essential to achieving the EU's 2040 climate target and the 2050 climate neutrality goal.

Following an in-depth analysis of the Commission's Impact Assessment (IA), EUROMOT notes that several important aspects related to current developments in the electricity market are insufficiently addressed or missing. In particular, the IA does not adequately reflect the operational realities of today's electricity systems, which are increasingly characterised by high shares of variable renewable energy and a growing need for flexibility to ensure system stability, security of supply, and cost efficiency.

As a result, the contribution of supply-side flexibility, notably from highly efficient, fast-response generation technologies to energy efficiency objectives is not sufficiently recognised. This omission risks underestimating the role that flexible, dispatchable, and high-efficiency energy conversion technologies can play in enabling higher renewable penetration while maintaining system reliability and affordability.

Key Recommendations:

- **Explicitly recognise supply-side flexibility as a key component of energy efficiency**, alongside demand-side flexibility and energy storage, given its role in enabling renewable integration, improving system efficiency, and containing system costs.
- **Align energy efficiency methodologies with real electricity market conditions**, ensuring that supply-side flexible and balancing operation is properly reflected in efficiency assessments.
- **Update efficiency reference values for separate electricity production** to distinguish between baseload and flexible operation, including the introduction of specific reference values for grid-stabilising plants based on best available techniques.
- **Address methodological gaps in the EED**, notably in the primary energy savings (PES) methodology for high-efficiency cogeneration, to ensure that supply-side operational flexibility and rapid start-up capability are adequately valued.
- **Provide a stable framework for investment in highly efficient, flexible supply-side generation and cogeneration assets**, including those capable of operating on sustainable and low- or zero-carbon fuels, as an essential complement to renewable energy deployment.

EUROMOT's comments below address these shortcomings in detail and are structured in line with the corresponding sections of the Impact Assessment (IA).

A: Political context, problem and subsidiary check

The Impact Assessment correctly identifies the need for cost-efficient energy efficiency measures to enhance Europe's competitiveness, strengthen energy security, reduce dependence on imported fossil fuels, and meet the EU's 2040 and 2050 climate objectives. It also acknowledges the importance of improving energy efficiency both on the demand side and at the interface between supply and demand, including through better system integration.

However, the role of the thermal fired plants in enabling grid stability and supporting the gradual integration of intermittent renewable energy sources is still not adequately acknowledged within the Energy Efficiency Directive (EED)[2]. In particular, fast-response reciprocating engine power plants are capable of starting up and shutting down within minutes and do not need to operate continuously at part load to provide flexibility. This avoids unnecessary fuel consumption and associated CO_2 emissions during periods of high or excess renewable electricity generation.

By providing rapid start-up, shutdown, and load-following capabilities, such plants enable higher and faster penetration of variable renewable electricity, such as wind and solar, into the grid while maintaining system reliability. This contribution to the **operational efficiency of the energy system** is explicitly acknowledged in recital (58) of Energy Efficiency Directive (EED)[2], which highlights the importance of integrating power from sources with different inertia and start-up characteristics. Nevertheless, this aspect is not reflected in other key methodological tools of the EED, notably the high-efficiency cogeneration primary energy savings (PES) methodology set out in Annex III. This omission should be addressed.

B. Objectives and policy options

The IA states that the initiative should explore options for streamlining and harmonising rules and methodologies related to energy efficiency towards 2040, while incentivising a more efficient and targeted use of energy. In this context, it is critical that efficiency assessment methodologies reflect **realistic operational conditions in modern electricity markets**.

Article 26(8) of the EED exempts peak and back-up electricity generating installations operating less than 1,500 hours per year (as a five-year rolling average) from the obligation to conduct a cost-benefit analysis for high-efficiency cogeneration. At the same time, Annex I of Regulation (EU) 2023/2104[3] sets BAT-derived efficiency reference values for the separate production of electricity under "operational use under realistic conditions."

For gaseous fuels (Category G10), these reference values appear to be based primarily on baseload combined-cycle gas turbine (CCGT) operation. In practice, however, there is a trade-off between efficiency and flexibility: CCGT plants can be optimised either for high efficiency or for high flexibility, but not for both simultaneously[4]. As a result, reference values based on baseload CCGT operation do not adequately reflect the performance of plants operating in flexible or balancing modes.

By contrast, modern gas-fired reciprocating engine units typically achieve net electrical efficiencies of around 45–48% (LHV) and have start-up times of 2–5 minutes (to full load). Aeroderivative gas turbines reach typically approximately 37–40% efficiency and have start-up times of 5–8 minutes [5A]."Hot" industrial gas turbines typically have a start-up time of about 15 .. 20 minutes and CCGT plants about 45 .. 55 minutes, i.e. significantly longer start-up times[6]. These characteristics illustrate a clear mismatch between the current G10 reference values and today's electricity market needs, which increasingly prioritise **fast, flexible supply-side response**.

Modern cogeneration plants [5B] are widely recognised as key assets for balancing intermittent renewable energy sources, particularly during periods of low wind and solar generation ("Dunkelflaute")[7A,7B]. While heat remains an important output, in many electricity markets the value of electricity during such periods is decisive for plant operation. The current framework does not adequately capture this reality.

EUROMOT therefore recommends introducing **specific efficiency reference values for grid-stabilising and flexible plants** operating more than 1,500 hours per year into Annex I of Regulation (EU) 2023/2104. These values should be based on the efficiency benchmarks set out in the Large Combustion Plants (LCP) BREF, consistent with recital (42) of the original EED (Directive 2012/27/EU). Supply-side flexibility should be explicitly recognised and rewarded when defining efficiency benchmarks for separate electricity production, thereby supporting investment in high-efficiency cogeneration plants that contribute both to grid stability and increased renewable energy (solar, wind) integration.

C. Likely Impacts

The IA highlights positive economic impacts from energy efficiency policies, including improved energy security, lower system costs, and greater demand-side flexibility. While these elements are important, the analysis overlooks a critical component: **supply-side flexibility**.

Recitals and provisions of the EED largely frame grid balancing in terms of energy storage and demand-side measures. However, recent experience demonstrates that these measures alone are insufficient. In Germany [7A,7B], prolonged periods of low wind and solar generation ("dunkelflaute") in

2024 led to significant price volatility and increased reliance on fossil generation and imports. Without adequate flexible supply-side capacity, such situations cannot be effectively mitigated.

Highly efficient, flexible gas-fired engine power plants provide precisely this missing element. They offer rapid response to fluctuations in renewable generation and demand, support system stability, and enable higher renewable penetration at lower overall system cost. Supply-side flexibility should therefore be explicitly included among the options considered in future energy efficiency policy frameworks.

D. Better Regulation Instruments

Reciprocating internal combustion engines (RICEs) have demonstrated a high degree of adaptability over time, both in terms of fuel flexibility and operational performance. Many RICE-based systems are already capable, or can be upgraded, to operate on biofuels, hydrogen, and hydrogen-derived synthetic fuels.

Beyond fuel flexibility, RICE-based power plants provide exceptional **operational flexibility**, enabling them to deliver renewable-enabling and grid-balancing services. As electricity systems integrate higher shares of variable renewable energy, maintaining grid stability and reliability becomes increasingly critical to avoiding price volatility and ensuring affordability[8].

Energy storage technologies (batteries) alone cannot provide all necessary flexibility over extended periods of low renewable output[9]. In this context, flexible gas-fired engine power plants, transitioning over time to sustainable and carbon-neutral fuels, represent a practical, efficient, and immediately available solution. **Supply-side flexibility solutions should therefore be actively encouraged as part of a future-proof EU electricity market design aligned with the EU's energy efficiency and decarbonisation objectives.**

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THIS IS EUROMOT

EUROMOT, the European Association of Internal Combustion Engine and Alternative Powertrain Manufacturers, represents the key manufacturers of internal combustion engines and alternative powertrains installed in industrial non-road mobile machinery, marine and stationary applications that are operating in Europe and worldwide.

Founded in 1991, we provide an unparalleled heritage and hub of expertise for businesses, authorities, regulators, and public stakeholders worldwide. In partnership with major sector associations and institutions, it is our mission to drive smart regulation and sustainable innovation.

Delivering dependable power for society at high energy conversion efficiency with low emissions remains a key objective of EUROMOT member companies. EUROMOT asserts internal combustion engines and alternative powertrains are a key enabler to address the additional societal need for decarbonisation across multiple industry sectors. This can be achieved by continuing to advance the development of highly efficient energy conversion systems capable of operating on low and net-zero Greenhouse Gas (GHG) energy carriers.

Headquartered in Brussels, EUROMOT is a European interest group, and our profile is registered in the EU Transparency Register under the identification number 6284937371-73. We have been granted consultative status at the United Nations IMO (International Maritime Organization, London) and United Nations ECE (Economic Commission for Europe - Geneva) and other relevant stakeholders.

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