

December 2025

Setting the Stage for Tomorrow's Energy Communities: PARMENIDES Delivers Its Final Results

What our pilots have reached by the end of the project

The **PARMENIDES** pilot at [KTH Royal Institute of Technology](#) in Sweden has **successfully** demonstrated the **PARMENIDES** Flexibility Strategy through trade-off exploration/exploitation. Using a curriculum learning approach to deep reinforcement learning (RL), a control agent was trained to respond to intraday flexibility requests aligned with the Universal Smart Energy Framework (USEF) Flexibility Trading Protocol (UFTP). This novel approach addresses machine learning constraints associated with the rarity of flexibility requests, the potential variability and volatility of electricity prices, and the delayed system dynamics due to thermal inertia.

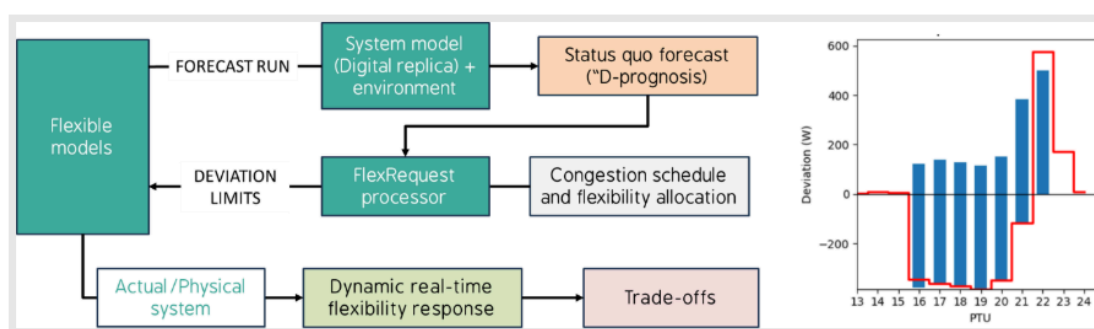


Illustration of how the flexible models were trained according to the PARMENIDES

Flexibility strategies are used to generate forecasts and respond to flexibility requests. The figure on the right shows an example of USEF-aligned flexibility response in a test scenario.

Standardisation and Certification

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standardisation, who actively contributed to and often led initiatives in this area. **PARMENIDES** partners were already deeply involved in standardisation efforts before the project began and will remain engaged afterwards.

Despite the availability of established certification frameworks across the energy, data, and cybersecurity domains, several gaps remain, particularly relevant to **PARMENIDES**. These limitations may hinder the deployment and market acceptance of innovative energy management and hybrid energy storage solutions unless addressed through targeted actions and collaboration with regulatory bodies and standardisation organisations.

Innovations designed and developed to be replicated

Throughout the project, the consortium has developed a suite of **Key Exploitable Results (KERs)** that represent tangible advancements in the energy management domain. At the heart of these innovations lies a semantic knowledge framework, the **PARMENIDES Energy Community Ontology (PECO)**, which enables seamless interoperability between devices, software services, and stakeholders. Building upon this foundation, the project has produced an advanced **Energy Management System** capable of handling hybrid energy storage assets, an **AI-driven flexibility and load management strategy** for optimizing energy flows, and a **Grid Capacity Management (GSM)** system that ensures stability while maximizing the use of distributed energy resources. These solutions are designed to work both **independently and in synergy**, creating a comprehensive platform that addresses the entire energy value chain, from behind-the-meter optimisation to grid-level coordination.

What's Now?

As the project reaches its final month, we have achieved great results that we are proud of and ready to share with the world.

*We're excited to continue advancing the energy transition **together** with our stakeholders and partners even after the project has ended.*

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You can learn more about our project by watching our introductory video

Upcoming important event

Our review meeting is planned in Vienna on February 20th, 2026. We will meet with our Project Officer and discuss our work throughout the project.

PARMENIDES' partners are working on a few papers for submission in 2026. You can learn more from our website.

Take a look at our **entire project's news and published papers** by visiting our website.

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