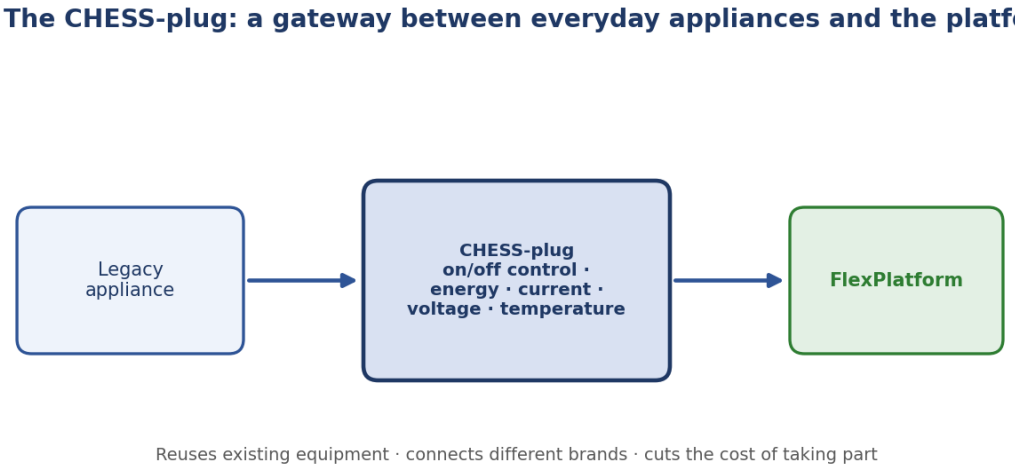
FlexCHESS

The CHESS-plug: giving everyday appliances a role in the energy transition

2025, November



One of the biggest obstacles to a more flexible electricity system is surprisingly ordinary: most of the devices in our homes and businesses simply were not designed to talk to the grid. A washing machine, a heat pump or an air-conditioning unit does its job, but it has no easy way to share information or adjust its behaviour to help balance the system. Replacing all of this equipment would be slow and prohibitively expensive.

The FlexCHESS project offers a more practical answer: the CHESS-plug.

The CHESS-plug is a low-cost hardware device that acts as a bridge between existing, "legacy" appliances and the wider flexibility platform. Plugged in between the device and the socket, it can switch electricity on and off and collect useful data — energy consumption, current, voltage and temperature — and share it with the FlexCHESS platform. In doing so, it turns ordinary equipment into a connected, controllable resource, without the owner having to buy new appliances.

The advantages are clear. Because the CHESS-plug reuses what people already own, it dramatically reduces the cost of taking part in flexibility provision. It allows devices from different brands to be brought into a common smart-home system, overcoming the problem of incompatible technologies. And the data it gathers opens up new possibilities — for example, an unusually high current reading could signal a fault, while temperature data could help optimise heating and cooling. By cutting energy use during peak periods, the CHESS-plug helps the grid and lowers bills.

Funded by the European Union

FlexCHESS project has received funding from the European Union's Horizon Europe research and innovation programme under the grant agreement No 101096946. This publication reflects only the author's view, and the EC is not responsible for any use that may be made of the information it contains.

Interoperability is what makes this possible. To bring devices from different manufacturers into one system, FlexCHESS aligns with open standards such as ETSI's SAREF ontology for smart appliances and common demand-response protocols like OpenADR. The CHESS-plug acts as a gateway, translating between everyday equipment and the platform — so that a home does not need a single "smart" brand to take part.

For users, the experience is designed to be simple: control and monitoring through a familiar mobile application, with a clear view of how energy is being used. Seeing that information, and being able to act on it, tends to increase people's willingness to take part in energy management.

Within FlexCHESS, the CHESS-plug feeds directly into the project's open flexibility platform, supplying the real-time data that the smart energy management system and decision-support tools rely on. It is a small device with a big purpose: making the flexibility market accessible to everyone, one appliance at a time.

References and further reading

- FlexCHESS project — CORDIS, European Commission
- SAREF — Smart Applications REFerence ontology (ETSI)
- OpenADR Alliance

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