

Smart electrification: Europe's breakthrough solution

As Europe strives for net-zero emissions, clean electrification emerges as the most cost-effective solution to reach that target. But here's the jolting reality; the pace of electrification in Europe is stagnating, accounting for less than a quarter of our energy consumption. Acceleration is therefore imperative, even more so in light of energy security concerns. With electrification on the fast track, the pressing issue of grid congestion looms on the horizon, particularly if not done intelligently. The urgency is driven by three challenges: the surge in electrified demand including electric vehicles (EVs), heat pumps and electrified industrial processes; the rapid expansion of renewable energy resources, and growing grid connection requests.

Already, in some areas, grids are under strain, struggling to keep up and pose a risk of obstructing, rather than facilitating, this transition. In the Netherlands, Alliander, the Dutch Distribution System Operator has openly acknowledged that it is struggling to handle the pace of electrification driven by the rise of EVs and the demand for residential electricity¹. Meanwhile, in Poland, approvals for grid connection are also up, but so are refusals, with over 3,400 rejections in 2021/2022; a striking contrast to the less than 300 in 2017/2018. The rate of grid connection being denied currently stands at a daunting 60 to 80%.²

The stark truth is that this issue will only continue to grow in the future. If passive consumption of more and more electricity remains the only option for consumers, it will inevitably lead to unmanageable and expensive grid congestions. *To avoid this scenario, electrification must be smart!*

This means all consumers are empowered to step into their role as active participants that consume, store, and produce clean electricity in a flexible and time-dependent way. This is of paramount importance as Europe's energy mix becomes increasingly reliant on variable renewables. Consumers' active participation will not only prevent further strain on the system but will also support it in a cost-effective and decentralised way³. This is the potential of consumers' Demand-Side Flexibility (DSF), a powerhouse waiting to be unleashed.

[As smartEn recently calculated](#), prioritising a flexible, efficient, and active management of the existing network and tapping into the already available demand-side flexibility potential, can help save between 11.1bn and 29.1bn Euros annually in lengthy distribution grid reinforcements. The development of [District self-balancing \(DSB\) schemes](#), a practical, scalable, and universal solution with immense potential to create an energy system from the bottom up with consumers at its heart, can also be instrumental in this effort.

The benefits of smart electrification reach far beyond active grid management or optimisation, bringing advantages to the entire energy system and all end-users. Our [report with DNV](#) highlights the potential for consumers to save over €71 billion annually on electricity consumption. Even those who do not own a heat pump or drive an EV can reap tangible benefits, including cost savings and an overall more efficient, reliable, energy system. These measures could unlock over €300 billion in annual indirect benefits for people, communities, and businesses.

¹ <https://www.alliander.com/en/financial-news/electricity-network-in-residential-areas-is-approaching-maximum-capacity/>

² Polska Grupa Energetyczna (PGE), Polish Association of Professional Heat and Power Plants, 29 June 2023

³ https://smarten.eu/wp-content/uploads/2023/10/smartEn-Position-Paper-on-EU-Grids-Action-Plan_Final-1.pdf

As Europe charges forward in its pursuit of energy security and climate neutrality, smart electrification, with active consumers leading the way, stands out as the ultimate game-changer in overcoming capacity constraints. *The good news?* We have technological solutions within our reach and EU policies are becoming increasingly more favourable. The race is now on to roll-out these innovations at scale across the entire European Union. Let's make it happen!

*smartEn is a proud industry partner of the [Reuters Energy Transition Europe 2023](#). Join us on 13-14 November in London, to explore how we can make Europe the first net-zero continent and discover the reimagining of demand-side flexibility from energy transition leaders at the panel '**Greening the European Grid: Digitalisation, Flexibility and Demand Response**'.*

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About smartEn - Smart Energy Europe

smartEn is the European business association integrating the consumer-driven solutions of the clean energy transition. We create opportunities for every company, building and car to support an increasingly renewable energy system. Our membership consists of the following companies:

