# Microgrid design netherlands

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As opposed to each house functioning as a separate entity, the Aardehuizen works as a community microgrid that distributes power across all 23 homes. There is a single smart meter per household, and each house has its own individual meter connection. As a whole, the neighborhood is connected to a single Low Voltage Transformer. The Aardehuizen community grid is decentralized, which allows the community to go off-grid, providing critical energy during outages or public utility failures.

There are few other ecovillages around the globe that have been built at a scale as successful as the Aardehuizen. The scarcity of communities like the Aardehuizen raises the question, Why did Olst, Netherlands become the ideal location for a sustainable community when so many other locations have fallen short? Several factors have contributed to the Aardehuizen"s success -- among which social organization plays the largest role.

To begin, the Aardehuizen residents organized themselves in a collectif particulier opdrachtgeverschap (a "CPO") which allowed them to collectively commission the construction of a private housing development project. The CPO granted the residents control over the design and construction of their village. With complete control over the process, the residents had the flexibility to find their own contractors, helping them save money and create ambitious energy-efficient home designs.

Currently, the Aardehuizen community can produce 32% of the total energy it uses. While this level of local power generation is already commendable, one man - an energy systems engineer named Florijn de Graaf - had bolder visions to drastically increase the Aardehuizen"s energy efficiency. He conducted a case study of the village and recognized that although the Aardehuizen"s current energy system was impressive, he could make a few additions to maximize energy efficiency.

De Graaf"s solution lies in a new approach called Smart Integrated Decentralized Energy (SIDE) Systems. A SIDE system is a self-sufficient energy system that integrates thermal and power technologies at a high level. According to his 2018 report "New Strategies for Decentralized Energy Systems," the SIDE acronym stands for:

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REGENERATION Series: Electrify Everything December 11,2024December 11 @ 1:00 pm – 2:15 pm UTC-5

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Once upon a time, data center reliability was all that mattered. The conversation has now evolved to include sustainable resiliency. Grid power disturbances are becoming more frequent due to higher demand, aging infrastructures, intermittent renewable energy sources, and more frequent storms or other disasters.

Combining this with an accelerated trend of digital transformation, such as remote work and teaching environments, IoT and big data applications, we are experiencing the need for more reliable and green data center capacity.

Buying electricity is projected to become more expensive. The continued growth in demand and capacity is driving the need to find a more sustainable way forward. Microgrids can offer sustainable energy on-site generation that lead to cost savings and improved resiliency. Explore more in white paper 289, How Microgrids for Data Centers Increase Resilience, Optimize Costs, and Improve Sustainability.

Many digital infrastructure leaders share that vision and are acting on it today. For example, Microsoft boldly announced that it will be carbon negative by 2030; a message reinforced by a recent successful proof of concept using hydrogen fuel cells to power a row of data center servers for 48 consecutive hours. Another example is the partnership between Switch and Capital Dynamics that is driving the Gigawatt 1 solar and battery project in Nevada.

Whether pursuing a competitive advantage or simply meeting local environmental regulations, reducing carbon footprint has often been achieved using the offsets of renewable energy credits or "virtual" power purchase agreements that enable access to remote green energy sources, such as solar or wind farms. These are positive steps, yet they do not help support greater on-site resilience.

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