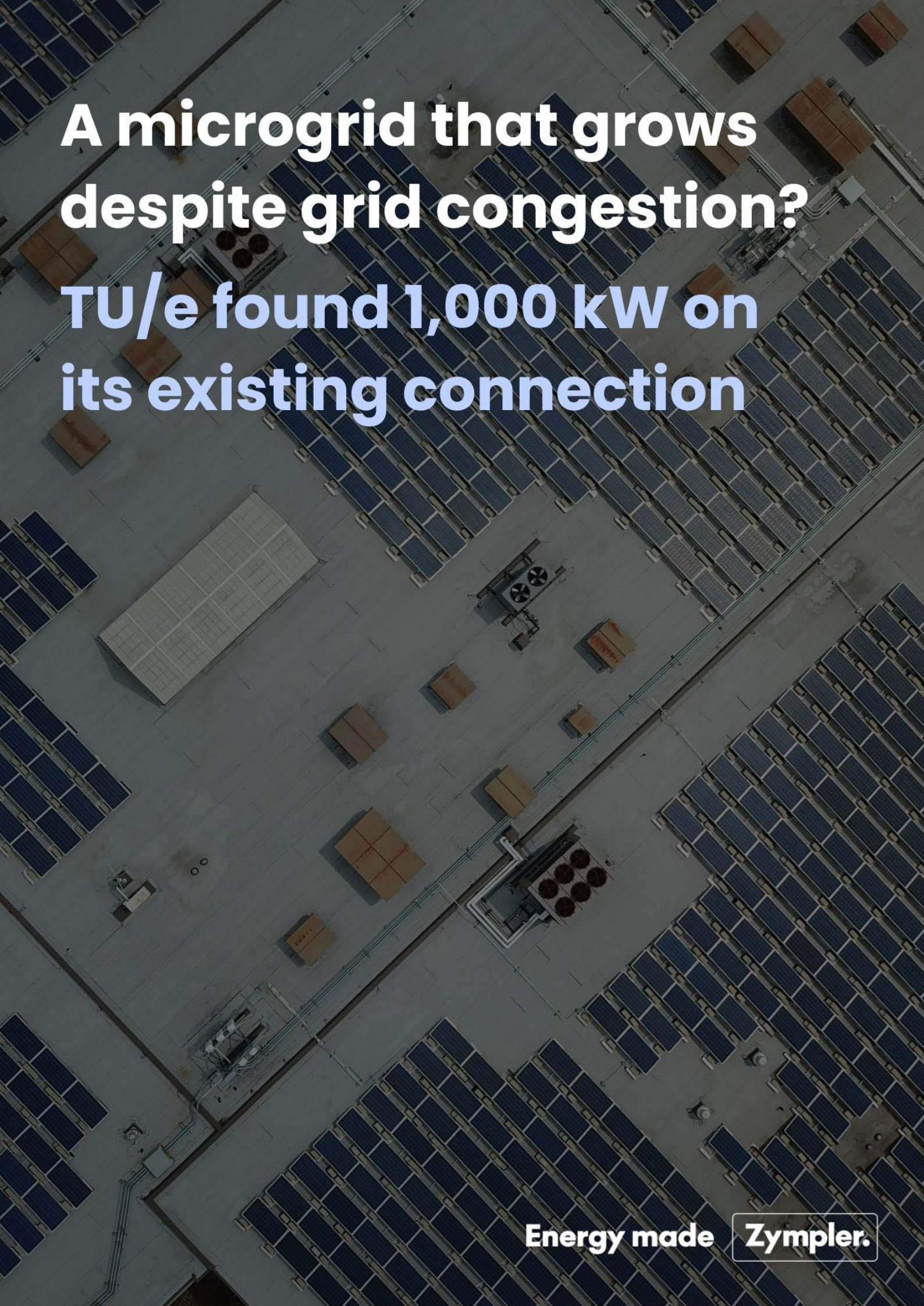


An aerial photograph of a large, flat commercial building roof. The roof is densely packed with rows of dark blue solar panels, which are arranged in a grid-like pattern. Several brown, rectangular HVAC units are scattered across the roof, interspersed among the solar panel arrays. The overall scene depicts a large-scale solar energy installation on a commercial building.

**A microgrid that grows
despite grid congestion?
TU/e found 1,000 kW on
its existing connection**

Energy made **Zympler.**

One limit. One bill.

The Netherlands is electrifying fast. Heat pumps are replacing gas boilers, fleets are switching to electric, and rooftops are filling up with solar. All that demand and generation meet behind connections that were never built for it. Upgrading isn't a short-term option in much of the country and after two years of sharp increases, grid tariffs level off in 2026, with the grid operators expecting them to rise again from 2027 on. If you want to grow, you have to do it within the connection you already have.

At that point everything behind the connection starts to depend on everything else. Solar panels, a battery, charging points, heat pumps, production equipment: once they are competing for the same

narrow headroom, they stop being separate installations. Together they form a microgrid.

Most companies reading this already have one. They just don't call it that. Every installation still has its own controller, its own portal and its own logic.

The instinct is to reach for more assets: a bigger battery, more solar, more charging points. But assets without control don't solve the problem. They complicate the topology and tie up more capital.

The value of a microgrid lies in the costs you stop paying part of your grid fees, settled on your highest quarter-hour peak each month, energy tax on every kWh you pull from the grid unnecessarily, and overruns of your contracted capacity. Those costs come back every year. So does the saving.



Five bottlenecks of an unmanaged microgrid

- **Growth with nowhere to go.** Every charging point and every heat pump adds more demand behind a connection with a fixed ceiling. You hit that ceiling before you've even reached your electrification target.
- **Capital sitting idle.** Many systems keep the battery at 100 percent state of charge all year round, on standby for a peak that might happen. That's safe, but it means your biggest investment does nothing for most of the year.
- **Local optima.** An inverter maximises its own output, a charging point delivers full power the moment a car plugs in, the battery follows its own logic. Without central coordination, your assets are all pulling in different directions.
- **Fragmented data.** The charging backend, the inverter portal, the battery management system, and the meter all log separately. Without consolidation there's no single view, no coordination, and no solid basis for CSRD or GACS reporting.
- **A market that never sits still.** Prices and grid load shift every quarter-hour. In the first half of 2026 the gap between the cheapest and the most expensive moment of the day averaged 17 cents per kWh. On 24 June that gap widened to more than 70 cents: around 6 cents in the afternoon, close to 80 cents at 9 pm. If you aren't buying power intelligently, you are consistently overpaying.¹

¹ Bare day-ahead prices, EPEX SPOT NL, excluding sourcing markups, energy tax, and VAT. Average daily spread first half of 2026: 17.2 cents per kWh, compared to 13.9 cents in the same period of 2025. The comparison is indicative: since the transition to quarter-hourly prices on the day-ahead market, both years are not directly comparable.

The impact on your business case

The extra cost of an unmanaged microgrid doesn't show up on a single invoice line. Three mechanisms stack on top of each other, and all three keep coming back.

- **kW-max charges.** Large consumers pay per kilowatt based on the highest quarter-hourly value measured that month. One peak quarter-hour determines your grid fee for the rest of that month. A single 11 kW charging point that consistently pushes up your monthly peak can cost around €475 a year with the more expensive grid operators.²
- **Energy tax.** Every kWh you draw through the connection is taxed. What you pay depends on your consumption bracket: at high volumes the rate per kWh is considerably lower than for a small consumer. Power you generate yourself and use directly behind the connection isn't taxed. If you feed solar power back during the day and buy back that same energy more expensively in the evening, you're effectively paying twice.
- **Going over your contracted capacity.** If your peak exceeds your contracted transport capacity, you are billed on the measured value. Your contract does not move up with it: extra capacity is something you have to apply for yourself, and in an area with transport scarcity that means a waiting list running into years. If the overrun keeps recurring, in a congested area

² Worked example based on the 2026 kW-max tariffs for large consumers published by Enexis, transport category MS-D. Assumption: an 11 kW charging point that raises the measured monthly peak by 11 kW in every month of the year. $11 \text{ kW} \times €3.60 \text{ per kW per month} \times 12 \text{ months} \approx €475 \text{ per year}$. The figure is lower at other grid operators and in other transport categories.

you are in default and liable for any resulting damage.

Every one of these mechanisms can be managed. Every kilowatt you consistently shave off your monthly peak saves you money twelve times a year. And if you keep your peaks under control, you can often get by with a lower contracted capacity altogether.

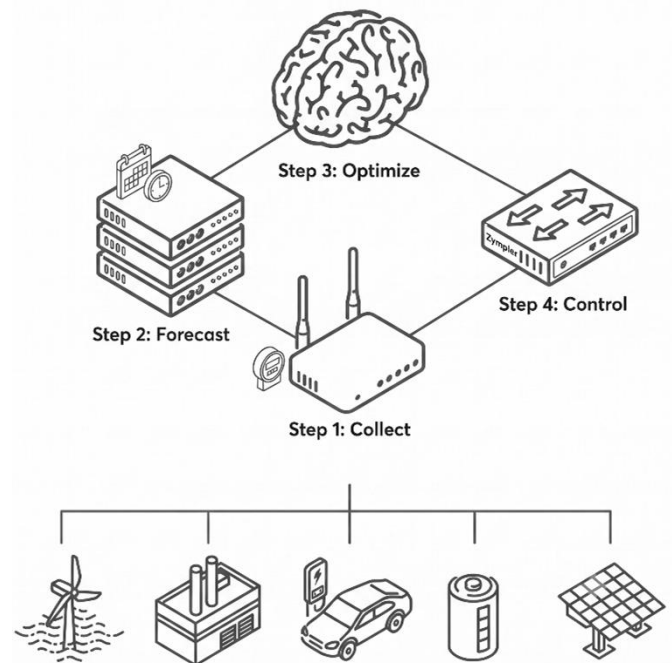
"Where other EMS platforms let the battery sit idle, Zympler keeps it working all year round."

— **Thijs Meulen**, energy management and building automation advisor, TU Eindhoven

Zympler. Control in four steps.

Zympler orchestrates the entire microgrid as a single system: every asset, every energy flow, every external factor. Not reacting to what's happening but anticipating what's coming. It works in four steps:

- 1. Collect.** Quarter-hourly values per meter, charging status, generation, grid load and prices all come together in one system. The foundation for both control and reporting.
- 2. Forecast.** Generation, demand and prices up to 72 hours ahead. For a university campus, for example: knowing when the heat pumps are likely to kick in, before they do.
- 3. Optimise.** Weighing cost, reliability and asset use against each other, always within the hard limit of the connection.
- 4. Control.** Reality always deviates slightly from the plan. Real-time adjustments catch those deviations before they hit your quarter-hourly peak.



Waiting or working: two strategies compared

The standard approach keeps the battery fully charged all year round, as insurance against the peak. Predictive control does the same job, but only when it's actually needed.

Tabel 1 / Static versus predictive battery control

	Static (100% SoC)	Zympler (predictive)
Peak covered	✓	✓
Charging during cheap hours	X	✓
Trading outside peak windows	X	✓
Battery available for other purposes	X	✓
Business case	A cost	Pays for itself

Energy made

Zympler.

Customer story.



TU Eindhoven.

Situation. The campus has 68 metering points, with charging points, solar panels and heat pumps spread across multiple subnets and transformers under one administratively combined connection (ASA) of over 10,000 kW. On cold winter days the heat pumps switch on simultaneously and the connection is consistently exceeded. The site has a 1,500 kW / 3,500 kWh battery and twenty 22 kW AC charging points.

Solution. Zympler forecasts when the heat pumps will add demand and charges the battery beforehand during the cheap hours. Outside the predicted peak windows the battery trades on the energy markets. During quiet periods the same planning layer frees up the battery as a test environment for Deep Reinforcement Learning research, supported by EIRES.

Result. 1,000 kW extra capacity on the existing connection, without reinforcement. The battery pays for itself in 7 years, from costs avoided within the connection and trading income outside it.

Peak shaving without standing still

Peak shaving doesn't require a battery that's permanently full, but a battery that's full at the right moments. Weather-driven peaks, like heat pumps switching on during cold winter days, can be seen coming with the 72-hour forecast.

Based on that forecast, Zympler determines when the battery needs to be charged and buys that energy in advance, during the cheap hours. In all other hours, that same capacity is available for trading. Peak shaving always takes priority: the system works with safety margins, so a deviation in the forecast doesn't lead to an overrun.

The result.

- Lower monthly peaks, and with them a lower kW-max on your grid fee.
- No idle time outside the peak windows: the battery trades on the energy markets.
- Your peak stays within your contracted capacity, so you don't end up in default or having to apply for more.

Four questions for your own microgrid

- **Topology.** How many metering points, subnets and transformers do you have? Beyond a few dozen metering points, manual coordination becomes unsustainable.
- **Legal setup.** Do you operate under a GDS exemption, under an ASA, or under neither? The third is the most common case: a single standard large-consumer connection, with everything behind it your own responsibility. Which of the three applies determines who monitors the limit and how costs and energy tax are passed through.
- **Manageable costs.** Pull twelve months of invoices: what are you paying in kW-max, contracted capacity and energy tax on power you could have generated yourself?
- **Peak profile.** Are your peaks concentrated and predictable, like weather-driven heat pumps? The fewer peak hours, the more hours the battery can earn its keep.

Support with regulation

A microgrid touches several frameworks at once. Zympler provides the underlying data for:

- **CSRD:** sustainability reporting for companies within the current scope, with auditable energy and emissions data per metering point. If you fall outside it, you'll still encounter it through your customers.
- **GACS:** requirements for building automation and monitoring in commercial and public buildings.



The next step

Every topology is different. With a short simulation, Zympler calculates what your connection can deliver:

- Your manageable cost base: kW-max, contracted capacity and energy tax.

- The payback period of your battery under predictive control.
- A concrete implementation path within your existing connection.

Book a call and find out in a single session where your system is leaving money on the table.

Energy made Zympler.

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