

Build the market, not just the factories.

Power equipment is the critical plumbing for all things electrification, and as new demand outpaces supply, adding new factories alone will not close the gap. Connecting supply to demand with certainty, flexibility, and reliability demands coordination and market infrastructure the industry does not yet have. This is the blueprint for building it.

By Shilpika 'Shilps' Gautam, Founder & CEO of Opna.

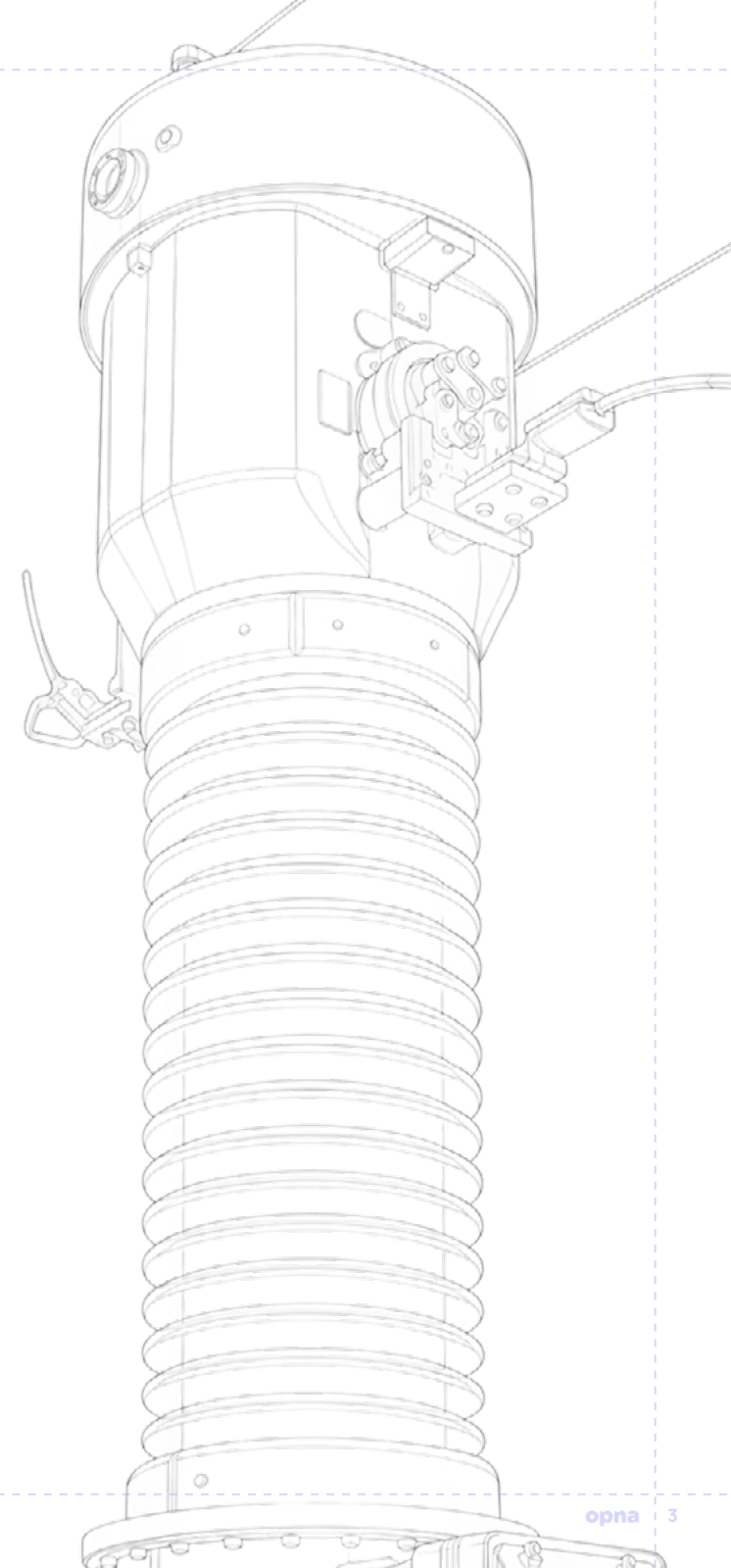
opna

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TL;DR.

Europe is tasked with balancing energy security, electrification, and economic growth, while also delivering decarbonisation and affordability. New demand on the electricity grid is arriving all at once: data centres, renewables, electric vehicles, industrials, and, as the planet heats up, air conditioning. Concurrently, our ageing power grid is overdue for maintenance and upgrades, not just to serve demand, but to underpin the continent's sovereignty and energy security.

New electrification, and the existing grid, are underpinned by critical equipment to keep running and scaling. Transformers, cables, switchgear, and so much more are the essential, foundational plumbing to meet this moment.

Electricity demand in advanced economies was effectively stagnant for 15 years,¹ but that era is over. The next five years will add roughly 57% more electricity demand per year globally than the past decade; EU demand alone is forecast to grow at 2.3% annually through 2030.¹

As demand scales, the power equipment supply chain cannot keep up because the industry has not built the infrastructure to deliver it. Lead times for equipment delivery have increased sharply, as have the prices. In

some cases there is existential risk to funded projects because the equipment cannot be sourced in time. High-voltage transformer lead times have stretched past four years, while prices are up 77% since 2019.

This is a coordination failure, as well as a demand-supply gap: a market with no infrastructure to match qualified supply to incoming demand at the scale Europe now needs.

Investing in new physical manufacturing capacity will help, but it alone is not sufficient, and much of the planned equipment will not be available for another 4-7 years.² Fixing this coordination failure requires building market infrastructure from the ground up: infrastructure ready to take on this exponential increase in power demand, and able to connect current demand with existing supply efficiently.

Europe needs a coordination layer for the power supply chain: a backbone that holds verification, matching, and financing on the same data, built with the visibility, financing depth, and platform capability to move this industry into a market.

It becomes the single source of truth and transactions, where qualified supply, buyer demand, slot timing, and project finance live together.

Buyers find qualified slots, finance the deposits, and reallocate slots when projects slip. Original Equipment Manufacturer (OEM) order books stay full, and new factory commitments get sized to demand the market can see. Regulators get the evidence base for connection-queue reform. Financiers get the data to underwrite equipment supply risk for the first time. Each side strengthens the flywheel, and is strengthened by it.

Whoever builds this layer sets the route for critical infrastructure projects to come to life.

If we get it right, across Europe and beyond, we get the grid reliability, energy security, industrial growth, and technology access a modern economy demands, delivered in a way that works for businesses and communities alike.

Access to uninterrupted power was not a privilege I grew up with.

“ Electricity load shedding, for better or for worse, is a core childhood memory from my time growing up in India. It was simply a part of the day, whether planned or unplanned, and we learned to live around it. Summers were particularly tricky. Often a neighbour would knock or call to let us know that we would no longer have electricity that evening, or very low-voltage access, so we had to pick between turning on the fans or the lights.

Sometimes the voltage levels would swing wildly and fry the few electrical appliances we had in the 90s. There were macro causes for this: insufficient investment in the grid despite ageing infrastructure, and demand outpacing supply. But also more localised causes: a transformer getting “cooked,” a “local fault,” or cabling theft.

When we could afford it, we bought an inverter. A dull grey box that was essentially a battery, charging when mainline power was available and giving us a modicum of relief, a few hours of extra charge here and there. We could not plan the load-shedding or power outages, but simple everyday life could go on. I could study at night without an army of candles. We did not have to finish our dinner in the dark. 45-degree heat could be made more

bearable with fans. We had some control that the overburdened grid alone could not give us, and that changed how we lived around it.

I have now lived in Europe for almost two decades, and up until a few years ago, I did not give any thought to the stability and continuity of my electricity access. I worried about how quickly we needed to ramp into a fully clean energy generation mix, but losing my electricity access, or facing blackouts, was not on my bingo card.

The last few years have changed this. The memories I grew up with in India have come back while living on a continent that has long treated uninterrupted power as a given.

The world, and Europe in particular, is trying to forge ahead on energy security, decarbonisation, and affordability all at once. Supply chain security for the power equipment that underpins all three sits at the heart of whether any of it can happen at speed.

That equipment - the transformers, the cables, the switchgear - is what new electrification depends on, and it is what the existing grid needs to keep it running and to scale it.



Shilpika 'Shilps' Gautam
Founder & CEO of Opna

A Guinness World Record breaker, climate advocate, 20+ year fintech and financial executive, with a career spanning commodities, carbon markets, and capital markets. Her north star remains constant: to level the starting line for everyone, everywhere.

This moment demands a step change in the power supply equipment industry.

European and wider OECD electricity demand was effectively stagnant in its growth between 2010 and 2022, spiking briefly during Covid and again during the 2022 energy crisis.³

The grid kept pace by running its existing assets harder and smarter: better dispatch, tighter management, more capacity drawn from the same lines, with little need to build. Optimisation did the work, and the network absorbed new connections without having to grow.

That era is over. After a 15-year period of stagnation, electricity demand across advanced economies is back on a sharp upward trajectory, and Europe is forecast to grow at 2.3% annually through 2030. Demand is rising now, steeply, and the rise is structural.¹

The planet is heating, which pushes cooling and air-conditioning load higher every summer and speeds the move to electric heat and transport. AI compute is driving data centre power demand at a pace the grid has not seen before.

European data centre power demand alone is forecast to grow by more than half between 2025 and 2030, from 87 TWh to 134 TWh.⁴ Continued geopolitical turmoil has put energy availability at the heart of national security, and in Europe that increasingly means clean energy availability, even as hundreds of gigawatts of renewables sit waiting to connect to the grid, ready to meet our net-zero promises.⁵

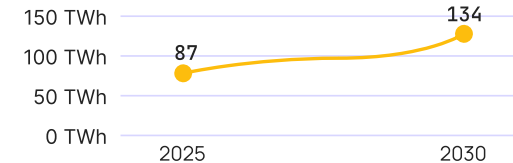
Meanwhile, Europe's installed base of 4.5 million transformers needs to nearly double to 9 million by 2050.² On top of all of this, over 40% of Europe's distribution grids have been in service for more than four decades, and €584 billion in new investment is required.⁶

The grid we have in place today was not built to carry this pace of demand growth, and needs significant plumbing to keep it working.

POWER DEMAND GROWTH ↗

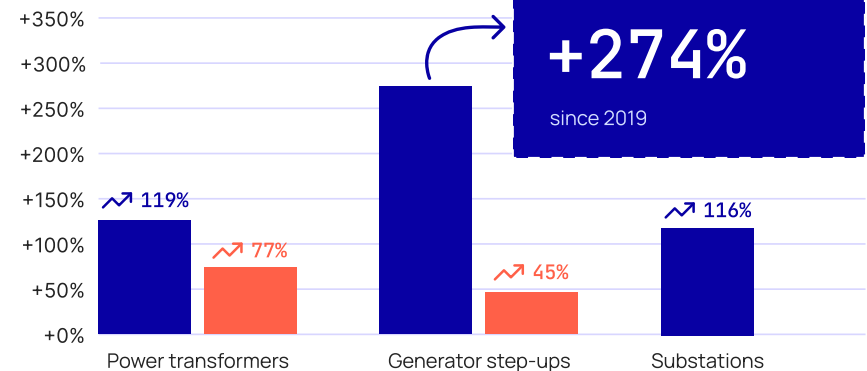
+54%

European DCs, 2025-2030



US EQUIPMENT DEMAND GROWTH SINCE 2019

■ Demand growth ■ Price increase



INSTALLED BASE ↗ 50%

9M

European transformers by 2050

GRID INVESTMENT ↗

€584B

required in Europe

“ I have spent three decades delivering grid connections across every layer of UK power infrastructure: regulated networks, IDNOs, ICPs, transmission, EHV through to LV. The pipeline I have closed in the last ten years alone exceeds 5.5 gigawatts of GB secured grid capacity projects connected or in build, and includes +500MW of Data Centre Connections. From that vantage point, one thing is now unambiguous. The country has reformed every part of how a connection is delivered, except the equipment the connection actually needs. That is the bottleneck Clean Power 2030 will be decided at. We do not need more factories alone. We need the market infrastructure that lets the factories we already have, reach the projects that need them, at the right time.”

David Swaddling

Transmission and distribution infrastructure specialist,
Ex Head of Group Sales, Eclipse Power.

None of the above happens without the power equipment. Cables, transformers, switchgear: the physical kit that links a data centre, a wind farm, or a factory to the grid. The availability of that equipment is strained in ways new factories alone cannot fix.

Large power transformers now take 128 weeks to deliver, with some lead times stretching past four years, against a pre-pandemic norm of 50 to 60 weeks.⁷ Generator step-up transformers run to 144 weeks.

The squeeze is felt on all sides. Upstream, into raw inputs: grain-oriented electrical steel, the magnetic core of every transformer, has nearly doubled in price.⁹ Downstream, into equipment once treated as a commodity: distribution transformers shipped in six weeks before the crunch, peaked above 100 weeks in 2023, and still run to around 30 weeks. Medium-voltage switchgear is up by roughly half since 2019.

Regulators are moving with the pace of demand. Recent reforms in Romania, the United Kingdom, and the United States are shifting grid connection allocation toward credible-progress rules, making demonstrated project maturity and verified supply the test for whether a project keeps its place in the queue.^{10,11}

The headline numbers and the policy tailwinds describe a shortage, a widening demand-supply gap. They do not tell us how to close it, or what market mechanisms need to exist to scale this industry for what is coming.

What we have is a classic coordination failure: this massive market has no infrastructure matching its demand to supply.

Europe is queuing for capacity it does not have the infrastructure to reach.



How this industry has traditionally functioned.

For decades, the power equipment supply chain has optimised for a single type of buyer.

The utilities, the transmission and distribution network buyers, are the high-volume, long-term, largely regulated buyers.

They have been the anchor customers for power equipment and set the terms in what was a buyer's market, given limited growth elsewhere: multi-decade frameworks, predictable balance sheets, standard voltage classes, credit backed in effect by national governments. Capacity, slot allocation, payment terms, and credit assumptions were all set around that buyer, and the system worked.

There was very little need for innovation in procurement practices; in fact, most of these companies still buy power equipment the way it has been bought for decades.

Each project runs as a bilateral negotiation between a procurement team and an OEM sales contact, shaped by engineering consultants and EPCs whose rolodexes often decide which suppliers get a look, and bounded by the grid operator's approved supplier list.

A buyer who wants to look wider runs straight into questions of technical suitability and reliability; there is no shared view of which

factories are qualified, which have open slots, how they have performed, or which payment and contract terms will close. The information that should work as market infrastructure is often locked away as institutional knowledge inside individual companies, and individual projects.

This is a cottage industry running critical national infrastructure.

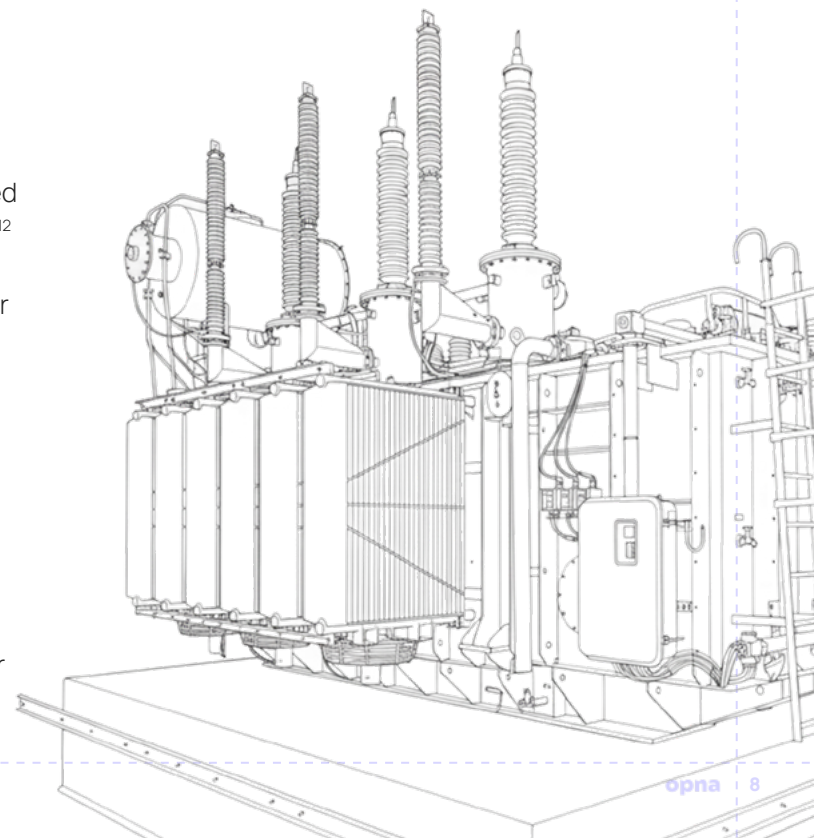
Utility demand was their primary business, so OEMs saw little reason to expand or innovate: there was no market growth to chase. They also had good historical reasons to be careful.

The 2008 crisis left many with stranded capacity through the 2010s, after they invested in new facilities ahead of a predicted electrification upswing that did not play out.¹² The world's leading OEMs have built their models around filling existing capacity rather than expanding it. This is now beginning to shift.

OEMs are finally investing in new capacity. Siemens Energy closed FY2025 on a record €138 billion backlog, with grid technologies and data centres named as primary drivers.¹³ Hitachi Energy is putting \$1.5 billion into expanding global transformer capacity by 2027, on top of \$3 billion announced the year before.¹⁴

But it is hard to see why the new factories will not be filled on the same terms as the old ones, sold years ahead at the lead times described above to buyers who have always had priority access to the order books.¹⁵

The new demand from data centre operators, renewables developers, IDNOs, and industrials lands in a market still largely optimised for utility or utility-like buyers (the hyperscalers, in the case of data centres), with little innovation in place to absorb a new shape of demand.



Why the status quo no longer works, and why just building more is not the answer.

The scale and shape of demand arriving has no precedent in this industry. Data centres alone are projected to push European data centre power demand from 87 TWh in 2025 to 134 TWh by 2030, a 54% increase in five years⁴

Hundreds of gigawatts of renewables sit waiting to connect across the continent, with more than 700 GW in the UK queue alone.⁵

Industrial reshoring projects under the EU's Net-Zero Industry Act, electric vehicle charging rollouts targeting tens of millions of vehicles by 2030, and heat pump installation programmes add steady load on top.

Together, this new demand will drive the vast majority of European electricity demand growth between now and 2030.

Each of these projects will demand an unprecedented amount of new power equipment. But this demand cannot be met using the utility playbook that has shaped the industry for a century.

And yet, this is where we are with the OEMs. OEMs structure their commercial offers, payment terms, slot allocation, qualification processes, and factory build plans around

the utility playbook. A new data centre operator, a renewables developer, an IDNO, or an industrial reshoring project that walks into an OEM tender process today is likely to meet the same terms that a national utility would. These new buyers are not built to play by those rules. On their own, they do not have the large, lumpy, long-term horizon volumes utilities offer.

Many are still juggling their grid connection offers with raising investor funding and finalising permitting. There is a structural difference between what these new buyers can offer and how OEMs prefer to do business.

Underneath all of it sits a simple yet fundamental tension that is easy to state but hard to resolve. The buyer needs certainty, flexibility, and reliability. The OEM needs certainty in the order book to plan capacity and underwrite new plants. The buyer's need for flexibility creates the OEM's uncertainty.

This pattern is not new. It has been the consistent constraint across each energy transition wave Europe has been through, observed by those who have built these markets from the inside.



I have spent years working at the forefront of change in how we produce, transport, and use electricity, including renewables, energy storage, offshore integrated energy facilities, and onshore energy parks. While regulatory rules and financing structures could adapt to enable new business models, one consistent cause of project delays has been supply chain constraints. Invariably the market adopts innovation and moves much faster than the supply chain. If we want to embrace the exponential market growth anticipated from AI and data centres, we also have to plan how we will deliver the plant required to power them. New supply chain business models are critical. Doing what we have always done will be completely futile.

Bridgit Hartland-Johnson

Board Director and energy system integration expert; formerly Chief Specialist, Project Development System Integration at Ørsted.



**The four
coordination
failures that
new capacity
alone cannot
fix.**

These four coordination failures do not function independently. They reinforce each other.



1. Unsynchronised relay.

When it works well, delivering a project (for example, a data centre with a fixed energisation date) should run like a relay, leading up to that date. The grid operator provides the connection and hands the baton to the developer; the developer hands it to the contractor or EPC; the EPC hands it to the OEM; the OEM hands the finished equipment back. The site powers on and runs the workloads it was built for. Today, despite needing to run towards this fixed go-live date in the future, each runner is on a different track, running a different race. The grid operator hands over the baton two years late. Meanwhile the developer's financing baton arrives after the OEM needs the equipment deposit. The EPC is being asked to run the leg and take on the risk before the previous runner has reached them. The race may finish late, or never finish at all, and there is little recourse available for the damage that ensues

Every party in the value chain is moving at its own pace, and nothing is synchronised.

2. Payment friction.

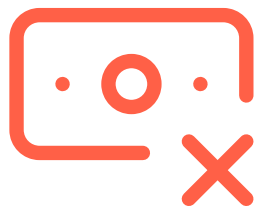
Even when the right equipment is found and the right supplier identified, the money cannot flow at the right time, in the right structure, to the right entity.

OEMs are paid on factory schedules. Standard payment structures front-load a significant share of equipment value before delivery e.g. 30% on order+ 20% on drawing approval, reaching 90 per cent before the equipment ships.¹⁶ For a high-voltage transformer, that can mean millions paid within six months of order placement, against a delivery date 4 years away.

Developers are funded on project schedules. Capital becomes available at financial close, which requires firm grid offers, planning consent, construction contracts, and equipment supply in place. This is a circular dependency: financial close requires equipment commitments, equipment commitments require deposits, and deposits require capital only available at financial close.

Now, as we see the buyers shift towards OpEx-first models and off-balance-sheet financing, to better reflect how infrastructure is financed and built, the traditional OEM model feels even more out of place - OEMs are built to sell assets, not flexibility.

The window in which an equipment order must be placed is precisely the window in which developers have the least capital to place it.



These four coordination failures do not function independently. They reinforce each other.



3. Difficulty in underwriting new demand.

OEMs commit factory capital against demand they can underwrite at scale. Utility frameworks have long been the underwriting standard: predictable volumes, standard voltage classes, long-dated commitments, credit backed in effect by national governments. New demand does not arrive in that shape. Smaller and mid-market data centres come in non-standard MVA and voltage configurations. Industrials come in smaller, less predictable batches. And the credit profile, in many cases, sits below utility-grade.

Even as new factory capacity comes online, the commercial and financing structures OEMs operate are built for the largest buyers- be it the utilities or the hyperscalers. If your credit profile, order volume, or specification does not clear the utility-grade bar, the new capacity is not for you- leaving out a currently smaller but fast growing chunk of buyers.

The underwriting model OEMs operate is still built for the largest, most creditworthy buyers. The new shape of often does not fit in it.

4. Provenance and track record.

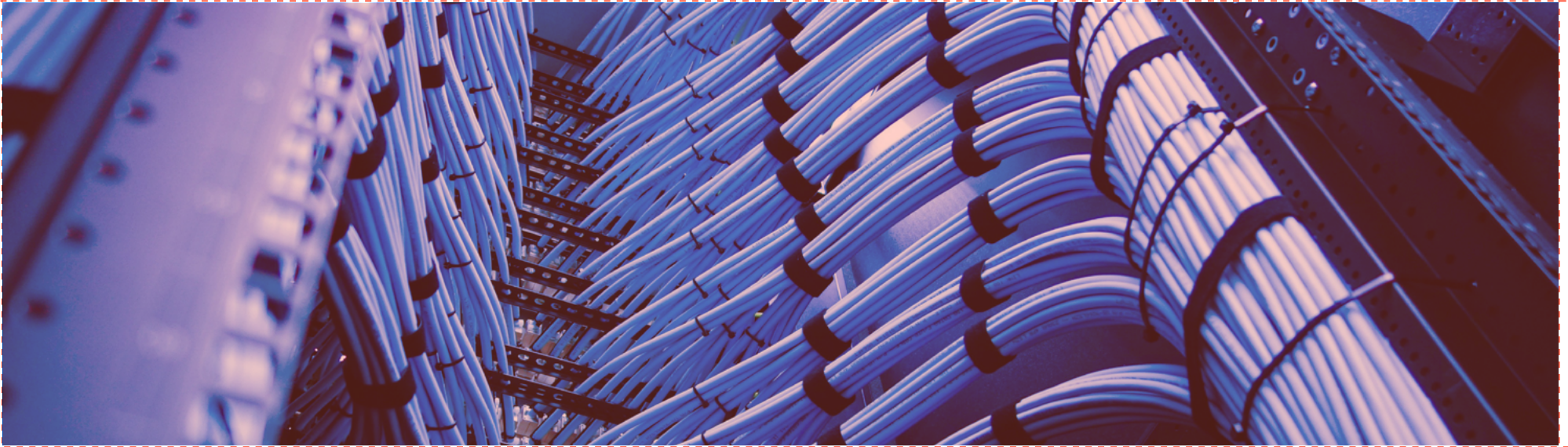
The track records of alternative manufacturers are not easily understood across the market.

Alternative OEMs in Asia and Central Europe can be technically competent, competitive on price, and much faster on lead times, and still cannot access the market. CIGRE has published the standard manufacturer assessment framework since 2013¹⁷, and many alternative OEMs already hold type-test certification, grid-code compliance, and EU reference installations. The barrier is not quality. It is that no mechanism exists for verification evidence to travel between buyers.

Each engineering team redoes the same factory-level work on the same manufacturers, year after year, paid from each project's budget. DNOs and TSOs default to approved equipment registers like G81 in the UK¹⁸ because no shared evidence base exists to widen them. The stated rationale is liability and warranty protection, yet those warranties typically run just three to five years from delivery date, not installation.¹⁹ Supply that could be qualified at market scale stays invisible at project scale.

Qualified supply is out there. The market just does not have the infrastructure to access it.





The constraint is not only at the factory. It extends through the engineering and operational layers that should be qualifying alternative supply.

“ Although European transformer manufacturing capacity is approaching its limits, supply constraints are not confined to factory output. Utilities and network operators face shortages of experienced engineering resources, which can delay the assessment and approval of alternative transformer suppliers and restrict opportunities for data centre developers to access non-traditional sources of equipment. At the same time, shortages of skilled installation and commissioning personnel are creating delivery bottlenecks across the sector. With data centre-related power demand expected to rise significantly over the coming years, competition for both transformer capacity and specialist engineering resources is likely to become increasingly acute.

Mark Ducommun

Power Equipment Expert and Director, PSP Limited.

**Fixing the
coordination
failures:
what it would
actually take.**





From unsynchronised relay to parallel workstreams.

Standardise specifications and decouple equipment procurement from project approval.

The sequence of approve project → appoint EPC → procure equipment adds 12 to 18 months of avoidable delay.

Procurement needs to move earlier in the project lifecycle, using standardised specifications that are fungible across sites, advancing equipment design and placing orders before FID. Microsoft's 30 UK edge sites on a common blueprint, and SSEN Transmission's shift to standardised specs, are the working examples. If a project falls through, or one of the other sites moves faster, the equipment moves to the next one.



From payment friction to capital aligned to timing, structure, and model.

Pre-development financing for slot reservation. A dedicated pre-development facility, structured as debt against the equipment asset rather than the project, would bridge the timing gap. The equipment itself is the collateral. If the project fails, the slot is reallocated.

Equipment leasing and OpEx conversion. A leasing vehicle, backed by infrastructure debt, that owns the transformer and charges a monthly fee would convert a CapEx barrier into an OpEx line. The structure exists in adjacent markets but has not been applied to power equipment. It works only with standardised equipment, so the asset holds value if redeployed, and a creditworthy off-taker base.



From difficult underwriting to demand OEMs can build against.

OEMs will not build new capacity speculatively. The only thing that unlocks a new production line is a guaranteed order book, and no single buyer outside the hyperscaler tier is large enough to provide that on their own.

Demand aggregation and buyers' club models. Pool demand across multiple developers, data centres, IPPs, and ICPs into a single consolidated signal. The Frontier model (Stripe, JPMorgan, Alphabet co-purchasing carbon removal to unlock supply) is the direct analogue. Applied here: a consortium of non-competing buyers commits to a volume of transformer slots, giving OEMs the certainty to invest in capacity. The legal and information-sharing complexity is real but solvable with careful design.

Focus on slot allocations, not orders. Secure OEM production slots ahead of project finalisation and move or reallocate them as demand crystallises. The key enabler is standardised equipment design so slots are fungible across buyers.

Government-backed industrial strategy. NESO's presentation of £120 billion of network investment visibility transformed Hitachi's approach, making the UK their primary focus. Governments that publish credible 30-year infrastructure plans with specific equipment requirements give OEMs the demand certainty to invest. The UK's Advanced Procurement Mechanism (around £4 to 5 billion) is a working example of how to do this without distorting competition.²⁰

From unclear provenance and track record to shared proof between buyers.

This is the hardest coordination failure to solve because it is embedded in regulatory frameworks that exist for legitimate safety and liability reasons. But the current system is self-defeating: it protects against risk while creating a different, larger one: that infrastructure simply does not get built.

Reform approved equipment registers (G81 and equivalents). The registers need a fast-track pathway for alternative OEMs with demonstrated track records. Regulatory bodies need to create a structured, visible, accessible process for qualifying new suppliers, not a blanket exclusion.

Build verifiable track records for alternative OEMs. The barrier is not quality. It is that this history is not documented and shared in a form European buyers can use. A certification and verification layer (factory-level performance data, failure rates, reference installations) would allow buyers to make risk-informed decisions rather than defaulting to incumbent names.

Why the fix is a new market layer.

The market has no single layer that reconciles demand and supply.

There is no consistent and updated visibility on which equipment slots are open, which manufacturers are qualified for what, or which payment structures will finance which buyers. No one is doing the programme-level de-risking that gets projects delivered on time, or building the widest possible access into the supply chain.

This overarching coordination failure, where qualified supply and real demand both exist but cannot reach each other through existing institutions, is also a market failure in the strict economic sense: the rules and structures block efficient matching, and no individual participant has the incentive or position to fix it alone.

OEMs cannot, because the layer has to be neutral across competing OEMs to work. Lenders cannot, because they price single transactions, not structural mismatch. EPCs, developers, and connection providers cannot, because each sits on one side of the market, consumed by its own project.

Across all four coordination failures, the same structural gap appears: **there is no entity sitting between fragmented buyers and fragmented suppliers whose job is to make the market work.**

Hyperscalers solve this for themselves through scale and balance sheet. Incumbent OEMs solve it for their largest customers through key account relationships. Everyone else, the non-hyperscale data centre developers, the renewable IPPs, the ICPs, operates in a market with no price discovery, no demand aggregation, no financing bridge, and no supplier intelligence.

The interventions described above do not each require a different actor. They require one well-positioned coordination layer that can:

- Decouple early procurement from project approval (Failure 1).
- Provide the financing bridge between order placement and project close (Failure 2).
- Aggregate demand to justify OEM investment (Failure 3).
- Build and verify alternative OEM track records (Failure 4).

That is not a technology company. It is not a bank. It is not a consultant. It is a new category of market infrastructure, and it does not yet exist.

The constraint is not only at the factory. It extends through the engineering and operational layers that should be qualifying alternative supply.



What this looks like when it works.

Here is what the power equipment supply chain market infrastructure layer does in practice.

1. Transparent, real-time supply intelligence.

Today, buyers make procurement decisions on relationship-dependent information. A futureproof market has a living, factory-level view of qualified manufacturing capacity, real-time slot availability across the full European-qualified base, verified track records for alternative manufacturers, and aggregated demand signals so OEMs can plan, rather than react to, capacity.

2. Move from orders to slots.

Today, equipment slots are illiquid and bilateral. Once booked, a slot is locked to one buyer; if that project slips, the slot is lost to the original buyer or renegotiated at significant cost, with no efficient mechanism to match it to a buyer who could use it. A futureproof market treats slots more like reservations: bookable, transferable, and reallocatable when projects slip, with standardised equipment specifications that make slots fungible across buyers.

3. Financing that matches how infrastructure is actually built.

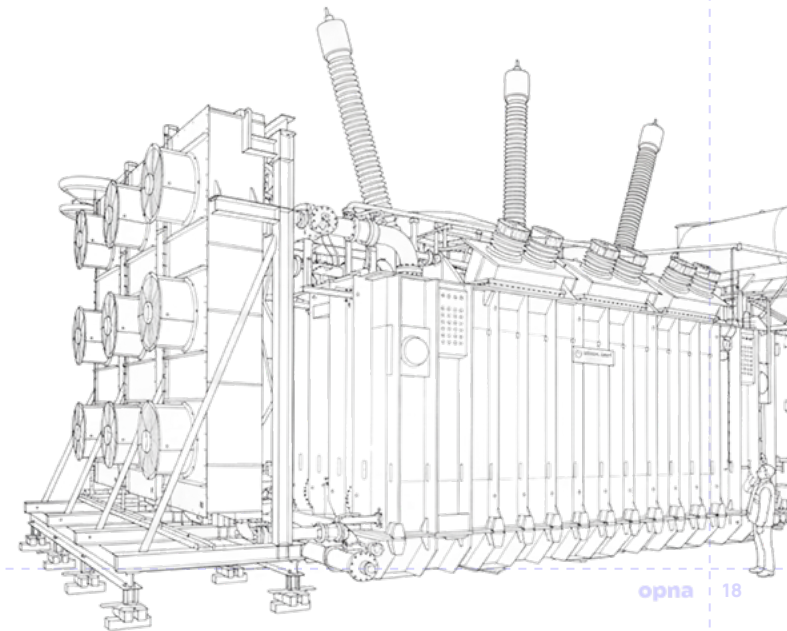
Today, OEMs want capital before delivery, developers have it after financial close, SPV structures prevent portfolio-level commitments, and PE owners operate on cycles shorter than infrastructure timelines. A futureproof market has pre-development financing that bridges the order-to-close gap, equipment leasing for buyers who need OpEx structures, and payment smoothing that unlocks supplier capacity currently withheld for cash flow reasons.

4. A diversified, verified OEM ecosystem.

Today, the market is structurally dependent on a handful of incumbents who cannot scale fast enough and have good historical reasons not to. A futureproof market has a tiered supplier ecosystem with fast-track qualification pathways for verified alternative manufacturers, geographically diversified supply chains that reduce single-point-of-failure risk, and a route into the market for new entrants operating on modern asset-light models.

5. Policy and regulatory architecture that enables rather than blocks.

Today, regulation designed for a slow, stable utility world is being applied to a fast-moving, fragmented market, and the rules prevent the market from self-correcting. A futureproof market has credible, long-horizon infrastructure plans with specific equipment requirements, risk-sharing frameworks between TSOs and developers for early ordering, approved-register reform with fast-track pathways framed as energy security and economic growth measures, and government-backed strategic warehousing where it serves the system.



Practically: a buyer knows, inside a working day, which slots are open across 40 European-qualified manufacturers, against which delivery windows, which voltage classes, and which payment structures. They commit a deposit they can finance. When their connection slips a quarter, the slot does not die. It moves to the next buyer, or to a different site in the same buyer's portfolio that needs it sooner than that buyer could have found it alone. The OEM's order book stays full. The buyer's capital stays working. The project clears FID on committed supply, not a quoted lead time.

It is market infrastructure: verification, matching, and financing in one place, on the same data, built as the neutral route between supply and demand.

The OEMs gain from it too. A layer that brings them aggregated demand, committed against template designs and paid at slot reservation rather than across project-by-project tender cycles, is the route into the most attractive part of the new demand wave, and the mechanism through which the order book shifts to the new mix. The new buyer types become underwriteable at OEM scale. Not by each manufacturer rebuilding its credit and procurement assumptions in parallel, but by a neutral layer aggregating the buyer side into a shape the order book can absorb. The OEMs that move first take it.

The coordination layer is not a temporary fix for the period before new factories come online. It is the market infrastructure that lets a larger, more diverse, faster-moving European power equipment market function at all.

The closest precedent is what Intercontinental Exchange did for energy and commodities 30 years ago. ICE built market infrastructure that did not exist, became the default route for transactions where bilateral coordination had been the only option, and earned the data position that made it hard to replace. European power equipment is at the same point, with one difference. Commodities needed a coordination layer once they had reached scale. Power equipment needs one before it reaches the scale it is forecast to hit, because the scale itself is what breaks bilateral coordination.

Electricity generation data sat in the same place a few years ago, held inside semi-public utility groups and out of reach for anyone trying to build on it. Ember opened it. Competition in balancing improved, consumer costs fell, and policy questions that had run on assumptions could run on numbers. The equipment layer is where electricity generation data was in 2020.

“ Equipment data sits today where other energy market data sat years ago. Without data, it is almost impossible to create competitive markets, tackle policy barriers, design support schemes, or even explain new products to customers. At Ember, we have been providing open global electricity generation data since 2020. Historically, such data was available only to incumbents, who dictated not only prices, but also policy and politics. Thanks to increased transparency, competition in electricity balancing is improving, eventually leading to lower costs for consumers. The same needs to happen in the equipment layer, which is equally critical for grids, renewables, and AI. Better data access will lower costs and accelerate project delivery.

Dr. Pawel Czyzak

Europe Director at Ember and Founder at enersite.

The pattern is not unique to commodities or to data. Market infrastructure built around capital structures and committed offtake has scaled critical industries before: ports, social infrastructure, regulated utilities, and digital connectivity. Power equipment is next.

The market that organises this first becomes the route every project takes for the next decade. Demand is not waiting. Operators, developers, governments, and OEMs are moving regardless of whether the supply chain organises around them, and the regulators are moving with them, rewarding projects that can deliver. Verified supply and committed slot capacity are exactly the evidence this layer produces at scale.

The cost of waiting is concrete. Renewable projects with grid offers in hand wait four years or more for the equipment that would connect them, and the fossil generation that should have come off runs another decade. Energy security thins, because the domestic renewables and nuclear meant to cut imported-energy dependence cannot reach the grid without the same equipment that is short. The AI infrastructure built in 2026 sets the compute geography of the next ten years, and data centres land where they can get power. Distribution-transformer shortages hold up housing developments and EV-charging rollouts, and the next reshoring wave goes wherever can energise first, not wherever needs the work most.



More factories are coming, and Europe needs every one of them. They still will not be enough.

The constraint is coordination, the gap between supply that exists and demand that cannot reach it, between equipment that could be delivered in twelve months and projects that wait four years because no one aggregated the order, bridged the deposit, or knew which factory had the slot.

A market this size, moving this fast, cannot run on a rolodex. It cannot leave execution to the introduction that happens to land in the right week, the relationship that opens the right door, the consultant report that arrives three months after the decision needed to be made.

That is not a market. That is luck dressed up as procurement.

The humble inverter my family bought did something simple. It turned power from something that happened to us into something we could plan around. Market infrastructure does that at continental scale. It turns equipment you queue and hope for into capacity you can find,

verify, finance, and hold to your own timeline. It turns a supply chain that works for the few, the hyperscalers, the national grid operators, the buyers large enough to block-book a factory for three years, into one that works for everyone building the energy transition.

The four coordination failures described in this manifesto are not technical failures. They are market failures. And market failures have market solutions: transparency that replaces opacity, liquidity that replaces lock-in, financing that matches how infrastructure is built, and a supplier ecosystem that earns trust through verified performance rather than inherited brand.

None of this requires waiting for new technology. The equipment exists. The manufacturers exist. The capital exists. What does not exist yet is the infrastructure to connect them, reliably, and at speed, for the decade ahead.

Let us get building.





“ When structured well, innovative capital structures can create the market infrastructure needed to scale critical industries. I have seen this across ports, social infrastructure, regulated utilities, and digital connectivity. If we are to realise the potential that the AI age and energy transition offer, we must urgently bring that same approach to the power supply chain: the cables, the transformers, the switchgear, all the pieces that unlock delivery and reinforce the grid.

If we consider the considerable investment that has gone into generation, how much of the underlying supply-chain value has flowed offshore, and the very material sums we are paying for offshore wind not to generate because our grid cannot cope, the conclusion is unavoidable: we now need to invest in the backbone. By supporting a wider base of credible supply-chain companies to invest capital against committed offtakers and funded solutions, we can unlock this electrification revolution.

Amelia Henning

Former Chair of GIGA-42 Holdings and former CEO of Global InterConnection Group.

Opna is building the market infrastructure for critical power equipment: the missing coordination layer between global manufacturing capacity and the operators, developers, and industrials who need it.

We work with data centre operators, renewables developers, and industrials across Europe to help them secure equipment on their project timelines, with capital aligned to how infrastructure is actually built, and the flexibility to adapt when grid connections, planning, and funding do not all land at once.

If power supply chains are top of your mind - let's chat.



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