The grid cannot wait

How CHINT T&D is solving Europe's infrastructure supply crisis

Interview with Dr. Naihu Li, Vice-President of CHINT T&D and Head of the CHINT Group R&D Institute

Europe's energy transition has an infrastructure problem that capital commitments alone cannot solve. Across 16 European countries, over 1500 gigawatts of renewable capacity sit in grid connection queues. Lead times for large power transformers have stretched well beyond two years in every major market. The investment is committed. The political mandate is there. And yet the transformers, switchgear, and high-voltage equipment the grid requires are not ready to ship.

Into this gap steps Dr. Naihu Li, Vice-President of CHINT T&D and Head of the CHINT Group R&D Institute, with a message for European grid operators grounded equally in certification data, delivery evidence, and 14 years of operational references across the continent. The credible alternative they are looking for, he argues, has been energising European grids since 2012.

When European grid operators and TSOs describe the infrastructure emergency, what do they get right? What do they miss?

They get the scale exactly right. The ambition is genuinely unprecedented in peacetime infrastructure terms. TenneT alone has earmarked €200 billion through 2034 to expand the German and Dutch networks, an investment commitment confirmed directly by the company in March 2025. Germany's grid plan calls for 5,000 new transformers and 3,500 kilometres of new transmission lines by 2045 to execute its energy transition. Eurelectric puts the annual DSO investment requirement at €67 billion, against a current run rate of approximately €33 billion, a €34 billion annual shortfall.

What gets missed is the supply-side constraint. A survey published in 2025, covering 19 distribution system operators from 18 EU countries, found that 90 percent of European DSOs identify transformers as their hardest-to-procure equipment category. Not cables, not switching equipment - transformers, first and foremost, at all voltage levels. T&D Europe reports that its corporate members have collectively committed over €9 billion to expand global manufacturing capacity. That investment is necessary, but it will not close the gap within the timelines that infrastructure projects require. The established players are running at full capacity; according to Wood Mackenzie's analysis, average lead times for large power transformers had reached 128 weeks, with generator step-up units averaging 144 weeks.

Naming the problem is the easy part. The real solution requires opening approved vendor bases to manufacturers who can deliver, at IEC standards, within procurement timelines that live projects can actually absorb.

That qualification threshold is precisely where the scrutiny on Chinese manufacturers intensifies. How does CHINT engage with it?

Every power transformer CHINT ships to a European grid operator is manufactured to IEC 60076 series technical standards and the energy efficiency requirements of Regulation (EU) No 548/2014.

In May 2026, we validated our 145 kV GIS to C2-class requirements through KEMA type testing, the most widely respected third-party validation in the European T&D industry. Our products comply fully with EU Network Codes. These are not self-declarations. They are test reports signed by independent laboratories whose authority European TSOs' own procurement standards recognise and require.

And then there is the project record. CHINT has been energising European grids continuously since 2012. In 2015,

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The first CHINT 400 kV transformer lands in Germany.

Our products comply fully with EU Network Codes

we supplied 225 kV units to Sweden. In 2016, we supplied 400 kV units directly in Greece. In Montenegro, CGES, the state TSO, has reordered from CHINT across multiple contract cycles, including 220 kV units in 2025.

In 2023, we won a project in Greece requiring 2 × 400 kV 340 MVA split transformers and 4 × 150 kV units, competing against European manufacturers with the full advantage of their home market relationships. We won on technical merit, delivery timeline, and the credibility of our after-sales commitment. That same year, we secured a multi-batch supply contract for 400 kV 300 MVA and 220 kV 250 MVA units with EMS, the Serbian national TSO, a relationship that extended through three contract rounds to 2025. In the Netherlands, our 2 × 150 kV 150 MVA transformers have been selected for their carbon capture infrastructure. In Norway, 6 × 132 kV units were delivered too.

Since 2022, more than 20 transformers with voltages between 132 and 400 kV have been installed in Spain, both for the evacuation of renewables and in the distribution network. In 2024 and 2025, Italy's largest DSO awarded CHINT a multi-lot framework contract: 147 units across 132 kV and 150 kV voltage classes, delivered in multiple batches. A European frame contract at that scale, with one of the continent's most demanding grid operators, does not happen without a proven technical and logistical record. And in 2025 and 2026, we entered Germany with 12 x 400kV power transformers for a PV substation and a BESS substation; and secured our first Polish transmission-voltage reference for 4 × 410 kV energy storage transformers. The pattern is not coincidence. It is the consequence of sustained investment in manufacturing quality and purposeful European market engagement.

Our delivery capability rests on three foundations: scale, vertical integration, and design discipline

The two-year wait is the primary constraint on European infrastructure projects. What does CHINT's production model look like? Why does it perform differently?

Our delivery capability rests on three foundations: scale, vertical integration, and design discipline.

CHINT operates 40 manufacturing facilities globally. We are not dependent on single-source suppliers for grain-oriented electrical steel, copper windings, or insulation materials. Supply chain resilience is built into our procurement model through decades of global project execution. We control the value chain from engineering design through factory acceptance testing.

In 2026, we successfully delivered a 165-tonne, 400 kV transformer to Spain on a MAFI trailer aboard a direct Ro-Ro vessel, using a tailored heavy-lift transport solution that set a new benchmark for the international delivery of large-scale grid equipment. Moving equipment of that mass safely from factory floor to substation site requires engineering precision at every stage: loading calculations, road transport weight management, port handling sequences, sea passage protocols, discharge logistics, and final site positioning. We have validated that capability in practice, on a live commercial contract, not in a laboratory.

A hyperscale facility that can be physically constructed in 12 to 18 months cannot secure its power connection on any comparable schedule

There is a relationship between manufacturing quality and delivery reliability that procurement conversations often treat as separate variables. They are not. When your process is built on IEC compliance from the first design review, when your quality management system is structured to eliminate rework cycles rather than manage them, when your factory acceptance tests are rigorous enough that field non-conformities become exceptional events, your delivery schedules become structurally reliable. The competitive timelines we offer are a consequence of confidence in what leaves our factories.

Europe is building a fundamentally different kind of grid. What does CHINT think about the new demand vectors, data centres, energy storage, system integration?

The AIDC challenge makes the equipment shortage impossible to ignore, which actually brings the value of supply chain certainty into sharp focus. In the FLAP-D markets (Frankfurt, London, Amsterdam, Paris, and Dublin) infrastructure developers face grid connection queues extending many years beyond their construction timelines. A

CHINT team @ CIGRE Paris 2024

Our R&D Institute has been investing in SF_6-free alternatives ahead of the regulatory curve

hyperscale facility that can be physically constructed in 12 to 18 months cannot secure its power connection on any comparable schedule. That is not a permitting problem. It is fundamentally an equipment supply problem.

The power density trajectory of these facilities is extraordinary. AI workloads are driving rack densities from the 5 to 10 kilowatts of traditional cloud infrastructure toward fifty to one hundred kilowatts per rack in current hyperscale design specifications. The European data centre market was valued at $47 billion in 2024 and is projected to reach $97 billion by 2030, growing at a compound annual rate of 12.8 percent. Every one of those facilities needs a high-voltage substation, transformers, switchgear, protection systems, and monitoring infrastructure across the full T&D stack.

For grid operators, this creates a compounding problem: renewable connection backlogs and data centre connection backlogs are competing for the same constrained pool of equipment and the same constrained engineering resources. CHINT's response is an integrated substation capability, from the 400 kV transmission interface through medium-voltage distribution, designed for modular, rapid-deployment architectures that infrastructure developers can build realistic project timelines around. We integrate battery energy storage within these substation packages, which is increasingly relevant as grid operators manage peak demand and frequency response. Our reference in Poland, supplying 410 kV transformers for energy storage applications, is the most recent illustration of this integrated offer in a live procurement context.

The EU F-gas regulation is tightening the timeline for SF_6 phase-out across switchgear. Where does CHINT stand on this?

SF_6 carries a global warming potential 25,200 times that of CO_2, accounting for approximately 80 percent of direct greenhouse gas emissions from the T&D sector globally. The regulatory trajectory in Europe is unambiguous, and the market is already responding with commercial deployment of SF_6-free alternatives across an expanding voltage range.

At CHINT, our R&D Institute has been investing in SF_6-free alternatives ahead of the regulatory curve. This is a deliberate strategic choice, not a reactive compliance posture. When European TSOs are making capital investment decisions today for assets that will remain in service through 2050 and beyond, they face a straightforward risk calculation: SF_6 technology specified now creates stranded asset exposure within the planning horizon of the investment itself. The KEMA validation of our 145 kV GIS to C2-class requirements in May 2026 is directly relevant here, it demonstrates that our SF_6-free development programme is not theoretical; it is type-tested and independently certified.

In May 2026, CHINT also released its first TCFD-aligned climate-related financial disclosure report alongside our 2025 Sustainability Report. SF_6-free requirements are already appearing in European RFQs. When procurement teams apply environmental criteria to vendor evaluation, and the rigour of those criteria is increasing, we want to be assessed on documented evidence, not on assumptions derived from geography.

Given the certifications, the European project references, the delivery track record, why isn't CHINT on more approved vendor lists?

Because perception changes more slowly than technical reality, and because the procurement processes that gate access to approved vendor lists were designed in a different competitive landscape.

The perception of Chinese electrical manufacturers in European transmission markets was formed when some products genuinely did not meet the standards required for grid-critical infrastructure. That period has passed. CHINT has invested decades in manufacturing capability, quality management, and engineering talent that operates at the highest international standards. We have the certifications. We have the references, from national TSOs and DSOs and major renewable developers across more than 15 European markets. We have the logistics capability to move 165-tonne transformers safely across international supply chains. We have entered the German market at 400 kV and hold our first Polish reference at 410 kV.

What we have not always had is the visibility in European procurement conversations that our technical standing warrants. That is what we are actively and deliberately changing.

Our presence at CIGRE Paris 2026 is part of a structured engagement strategy, not commercial presentations, but the technical language of IEC standards, KEMA type-test reports, and operational performance data from energised assets. That is the conversation CHINT is ready to have.

My direct message to procurement teams and engineering managers at European TSOs and DSOs: the approved vendor lists you are working from were compiled when your procurement volumes were a fraction of what they need

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The energy transition is the defining infrastructure project of this generation

to be through 2035. The supply chain that served the grid of 2015 is not dimensioned for the grid of 2035. The risk of not opening the evaluation conversation is measured in project schedule delays. At the scale of Europe's current infrastructure ambition, that cost is no longer an acceptable default.

Where do you want CHINT T&D positioned in the European market five years from now?

As the reference for what a Chinese T&D manufacturer can be in a technically demanding, high-stakes European infrastructure market. Not the lowest-cost option on the tender list, the most credible partner in the room. That distinction matters enormously to the operators who will live with this equipment for thirty years, and to the engineers who stake their professional reputation on every commissioning they sign.

Concretely: framework agreements with major European TSOs and DSOs. Positions on approved vendor lists across the United Kingdom, France, Germany, Spain, and the Nordic markets. The German and Polish references we have begun building in 2025 and 2026 are entry points, not endpoints. We expect to be part of the tendering conversations for German transmission projects within the planning horizon that contracts awarded today will actually execute. In the Nordics, our references in Sweden and our Norwegian market deliveries give us the foundation to expand actively.

The energy transition is the defining infrastructure project of this generation. It does not have the luxury of waiting for procurement perceptions to catch up with technical reality. CHINT has the products, the certifications, the manufacturing capacity, and the European project references to be a meaningful part of the solution. We are ready. Let's get to work together!

CHINT in Europe: Project milestones

Operating in European grids since 2012

- **Montenegro (2012 – ongoing)**
  400 kV autotransformers and 220 kV units.
- **Sweden (2015)**
  225 kV transformer.
- **Greece (2016)**
  2 × 400 kV units.
- **Greece (2021)**
  7 × 150 kV transformers for 17 wind farm power station connections.
- **France (2022)**
  Dual-voltage package: 225 kV + 63 kV transformers
- **Greece (2023)**
  2 × 400 kV 340 MVA power transformers + 4 × 150 kV units
- **Norway (2023)**
  6 × 132 kV units
- **Netherlands (2023)**
  2 × 150 kV 150 MVA transformers
- **Serbia (2023 – 2025)**
  Multiple contract batches: 400 kV 300 MVA and 220 kV 250 MVA transformers
- **Greece (2024 – ongoing)**
  18 × 150 kV 50 MVA main transformers for the Hellenic Electricity Distribution Network Operator
- **Italy (2024 – 2025)**
  Multi-lot, multi-batch framework: 147 units of 132 kV and 150 kV transformers
- **United Kingdom (2024 – 2025)**
  400 kV transformer; 132 kV units; 66 kV for Banks Renewables
- **Spain – RECURRENT ENERGY (2025)**
  4 x 125 MVA 220 kV transformer supplying REY SOLAR utility-scale photovoltaic plant grid connection.
- **Germany (2025 – 2026)**
  115 kV solar integration transformers (×3); 9 × 400 kV photovoltaic transformers; 115 kV for ENERTRAG Netz GmbH.
- **Poland (2026)**
  4 × 410 kV + 3 × 115 kV transformers for energy storage infrastructure