CWIEME BERLIN

3-5 JUNE 2025
MESSE BERLIN

A Hyve Event

Welcome to CWIEME Tech Talk:

Analysing Supply-Demand Dynamics for Power Transformers in Europe Amid Rapid Infrastructure Development

Analysing Supply-Demand Dynamics for Power Transformers in Europe Amid Rapid Infrastructure Development

Analysis of European Power Transformers Market

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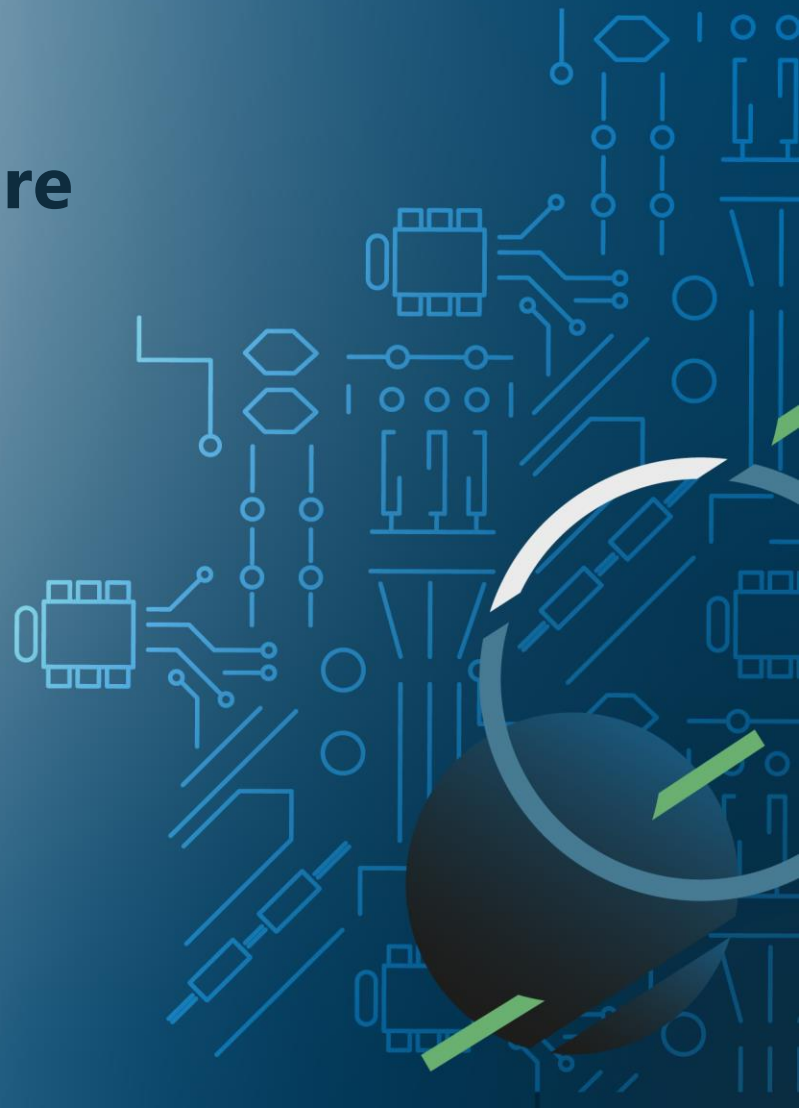


Contents

01

PTR Introduction

PTR Inc. Capability Statement

Enabling Proactive Decision Making by Empowering Businesses with Tools and Information Based on Transparent Methodologies.

PTR Inc. is committed to being your **Strategic Growth Partner** in the Electrical Infrastructure Manufacturing Sector. Leveraging our unparalleled expertise and diverse capabilities, we deliver tailored solutions and strategic insights to empower your growth and business development efforts. Through collaborative service offerings, we drive sustainable growth and ensure long-term success for our valued clients.

Market Research

- Bespoke and syndicated market intelligence reports
- Extensive datasets and reports covering over 40 countries worldwide.
- In-depth research methodology backed by data accuracy & transparency.

Marketing Services

Marketing strategy, media and content creation, services aimed at promoting cutting-edge technologies, products, and services for our clients across the energy value chain via content like:

- Whitepapers
- Webinars
- Social posts..

Advisory

Strategic growth partners for businesses, governments, and investors, specializing in,

- Commercial advisory
- Go-to-Market Strategy
- Opportunity Assessment
- New Market Entry
- Market Access and Policy
- Pricing Strategy
- And more.

Expert Network

PTR Expert Network offers its clients a diverse panel of industry experts spanning multiple sectors across the energy value chain, delivering

- Broad Industry Coverage
- Expertise Across Hierarchies
- Global Reach

PTR's Electrical Infrastructure Research Capabilities

PTR's Research Capabilities in Terms of Off-the-Shelf Reports for Power Grid and New Energy Topics

Transformers
(Distribution, Power)

Switchgear
(HV, MV)

Flexible AC Trans. Systems
(SVCs, STATCOMs)

HVDC Market Analysis
(VSC, LCC, Cables)

AI in Power Grid
(DERM, DR, VPP, & EVs)

Grid Investment Tracker
(TSOs & DSOs)

Substation Automation
(Dist. vs Cent.)

Port Electrification
(Shore-to-Ship, Microgrid)

Smart Meters
(Power Quality, AMI)

Power Factor Correction
(Active, Passive)

Grid Communication
(Private LTE, 5G)

Industrial Motors & Drives
(MV/LV - Custom)

Grid Modernization & Flexibility Technology Leaderboard

EVCI (EV Charging Infrastructure)
(Public, Private, Passenger/Comm.)

Energy Storage Value Chain
(Utility Scale, C&I)

COHV
(BEVs, PHEVs, FCEVs, ICEs)

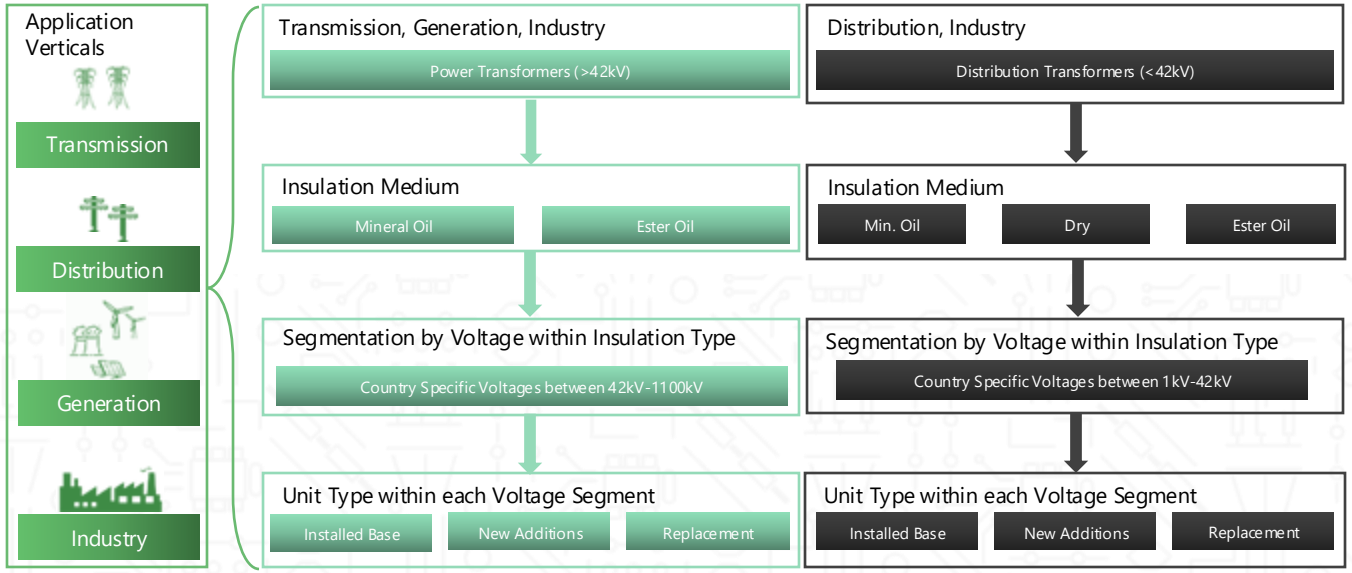
Hydrogen
(Tech., Demand, Value Chain)

Impact of EVs on Power Grid
(Quantitative, Trafos, Switchgr.)

Financial Trackers
(Grid Investments,
Company Financial Breakdowns)

Power & Distribution Transformers Market Intelligence

Country-Specific Coverage of Transformers from 1kV and Above



Transformers are a major spend item for utilities, especially in the mid-to-high voltage categories. They are the most crucial equipment in the substations, and also a key portion of the total spend of both transmission and distribution system operators. PTR sizes the opportunity for this critical equipment by looking at individual utilities (transmission & distribution) in the countries to analyze the upcoming greenfield and brownfield substation projects and loose components installations. This utility-specific approach allows us to understand the grid dynamics and analyze the market in more granular detail than most of our competitors and helps us convey a much deeper understanding of the market to our customers.

Competitive/Qualitative Analysis

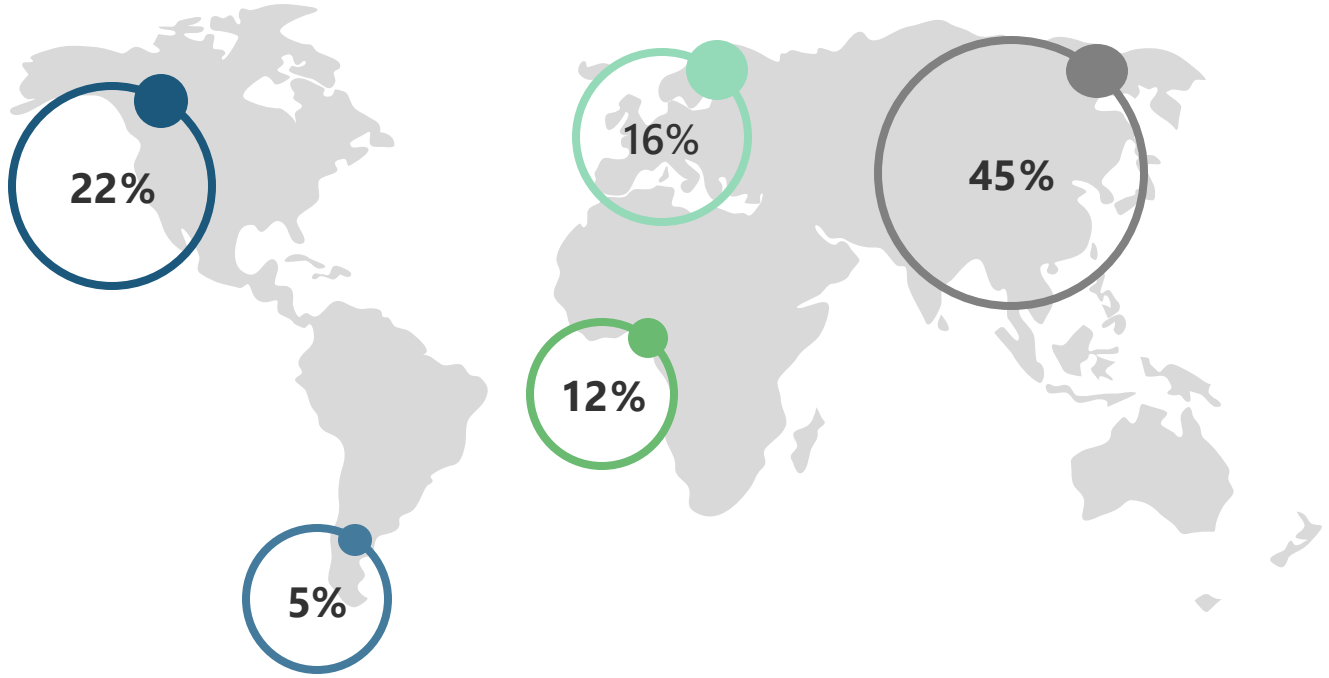
- Supplier Market Shares
- Competition Benchmarking & SWOT
- Sales Channel Analysis
- Product & Technology Trends
- Country Specific Business Practices
- Standards & Regulatory Landscape

02

Power Transformers Market Overview

Global Market for Power Transformers - 2024

Estimated Annual Revenue Share by Region



- North America
- South America
- Middle East Africa
- Europe
- Asia- Pacific

Trends Affecting the Power Transformer Market

Accelerated by Decarbonization, Revitalization and Expansions in the Power

Grid Revitalization

- Aging infrastructure
- Extreme weather events

Increased Lead Times

- Supply chain struggles
- Post-pandemic demand
- Full capacity utilization.

Supply-Demand Imbalance

- Surge in specialized transformer demand
- Shortages and price hikes
- High profit margins
- New manufacturing facilities/Expansion of existing ones

Grid Expansions

- Electrification
- Industrialization
- Urbanization

Push Towards Green Technology

- Digitalization transformers
- Green transformers

Decarbonization Drive

- Net-zero targets by 2030
- Shift to EVs
- Renewables Integration

03

Power Transformer Supply Capacity Analysis

Definitions

1. Small and Medium Power Transformers

Small and medium power transformers serve as critical components for stepping up or down voltage between transmission and distribution networks, typically operating within the 110 kV range. **Small power transformers** manage capacities from **10 MVA to 30 MVA**, while **medium power transformers** handle **30 MVA to 100 MVA**. These transformers are vital for regional grid connectivity, industrial applications, and supporting renewable energy infrastructure.

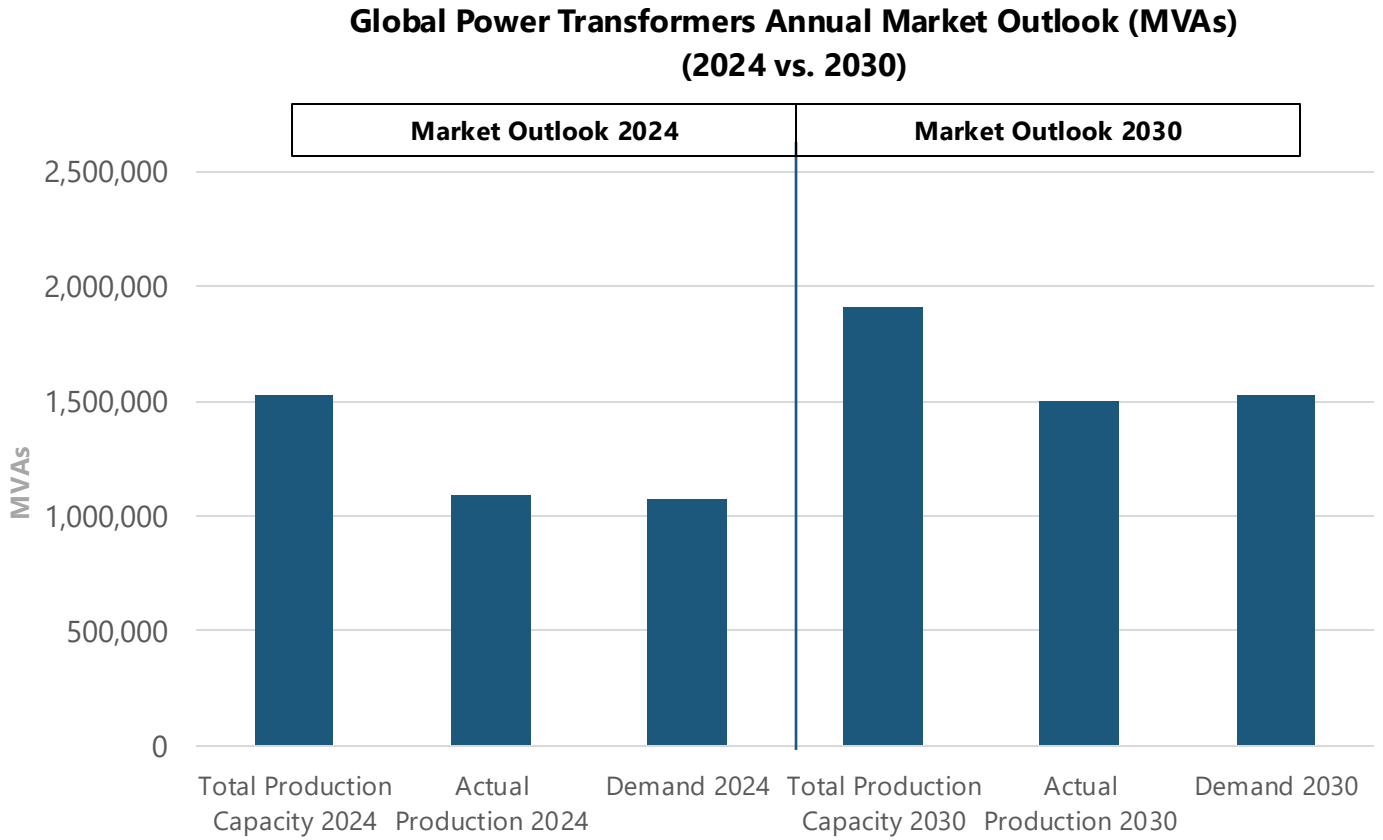
2. Large Power Transformers

Large power transformers, often operating at high voltage levels such as 380 kV in Europe, play a central role in inter-regional and cross-border high-voltage transmission networks. With typical capacities **above 100 MVA**, they facilitate efficient long-distance electricity transmission, connecting large-scale power generation sources, such as power plants and renewable energy facilities, to the main high-voltage grid. These transformers are essential for grid stability and the reliable transmission of electricity across regions or countries.

Global Market Overview: Large Power Transformer (LPT)

Utilization rate of LPT manufacturers is anticipated to increase from 70% in 2024 to 80% by 2030

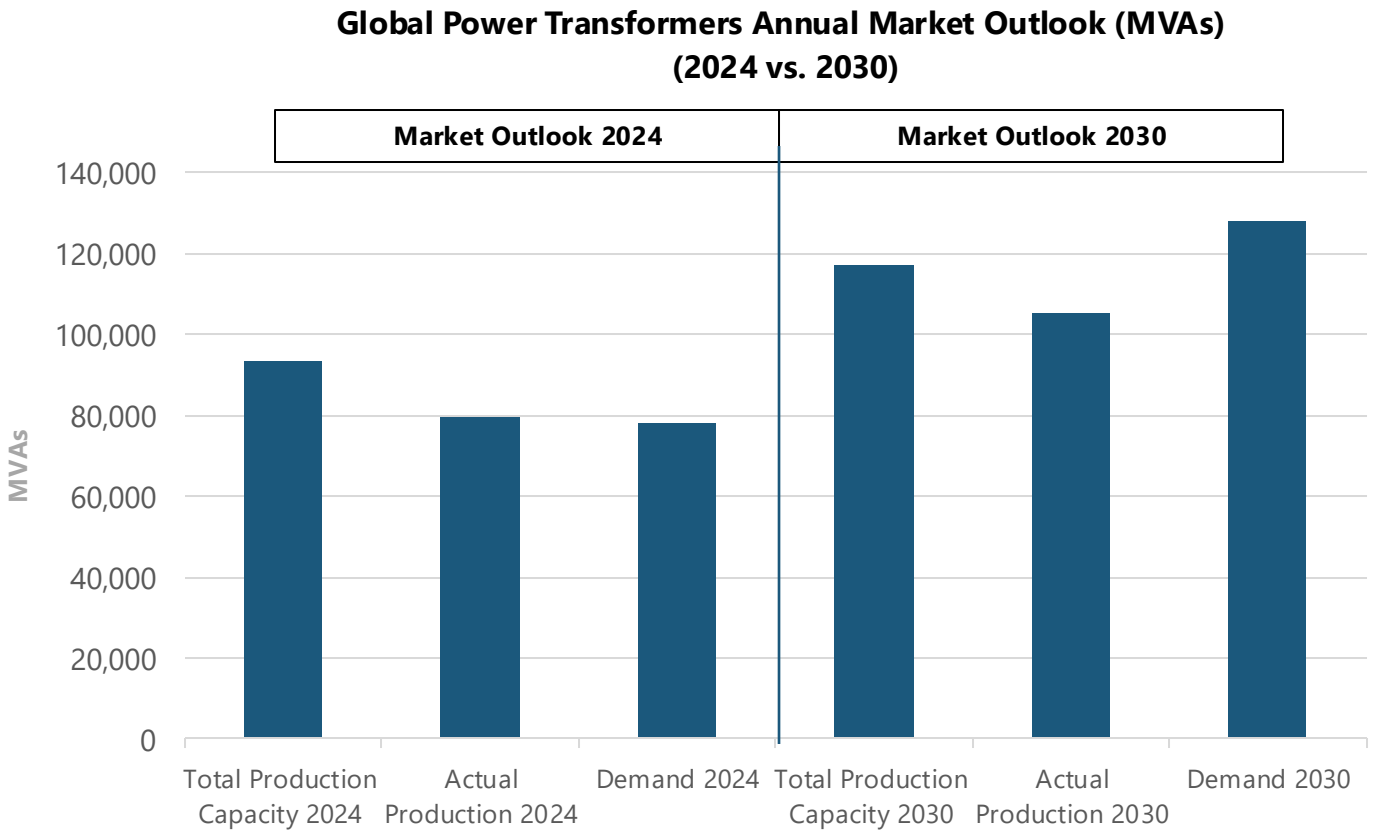
- Continued need for more LPT production facilities, particularly in NAM and MEA
- Global LPT utilization averages ~70%, with projections reaching 80% by 2030.
- LPT lead times in Europe and North America extend up to five years, while APAC averages one year.
- Globally, major investments in LPT manufacturing are underway, with Hitachi Energy leading the way. In the Americas, WEG is expanding to cater to the North American market, while South Korean manufacturers are also focusing on the U.S. market.



Global Market Overview: Small and Medium Power Transformers (SMPT)

Utilization rate of SMPT manufacturers is anticipated to increase from ~55% in 2024 to 65% by 2030

- Global demand for small power transformers is projected to grow at nearly 6% CAGR from 2024 to 2030.
- The total production capacity for these transformers is expected to increase at a slower rate of only 2% CAGR during the same forecast period.
- Significant existing capacity and a low utilization rate of 55%, resulting in limited investment in the segment.
- Additionally, transformer OEM utilization rates are projected to reach 65% by 2030.
- Currently, lead times for small to medium power transformers are under one year.
- SMPT manufacturing expansion is concentrated in APAC, driven by exports to Latin America and the Middle East & Africa. Europe ranks second in terms of investment in this segment.



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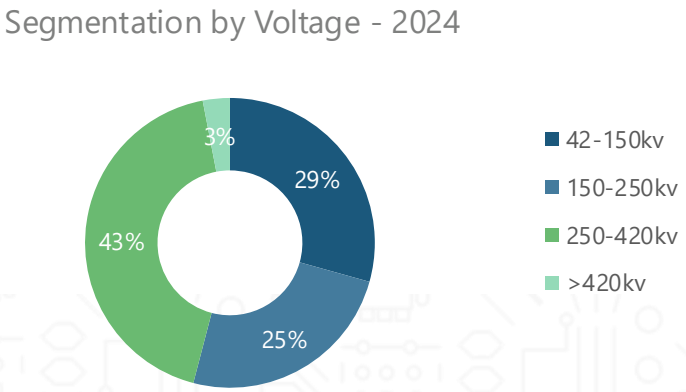
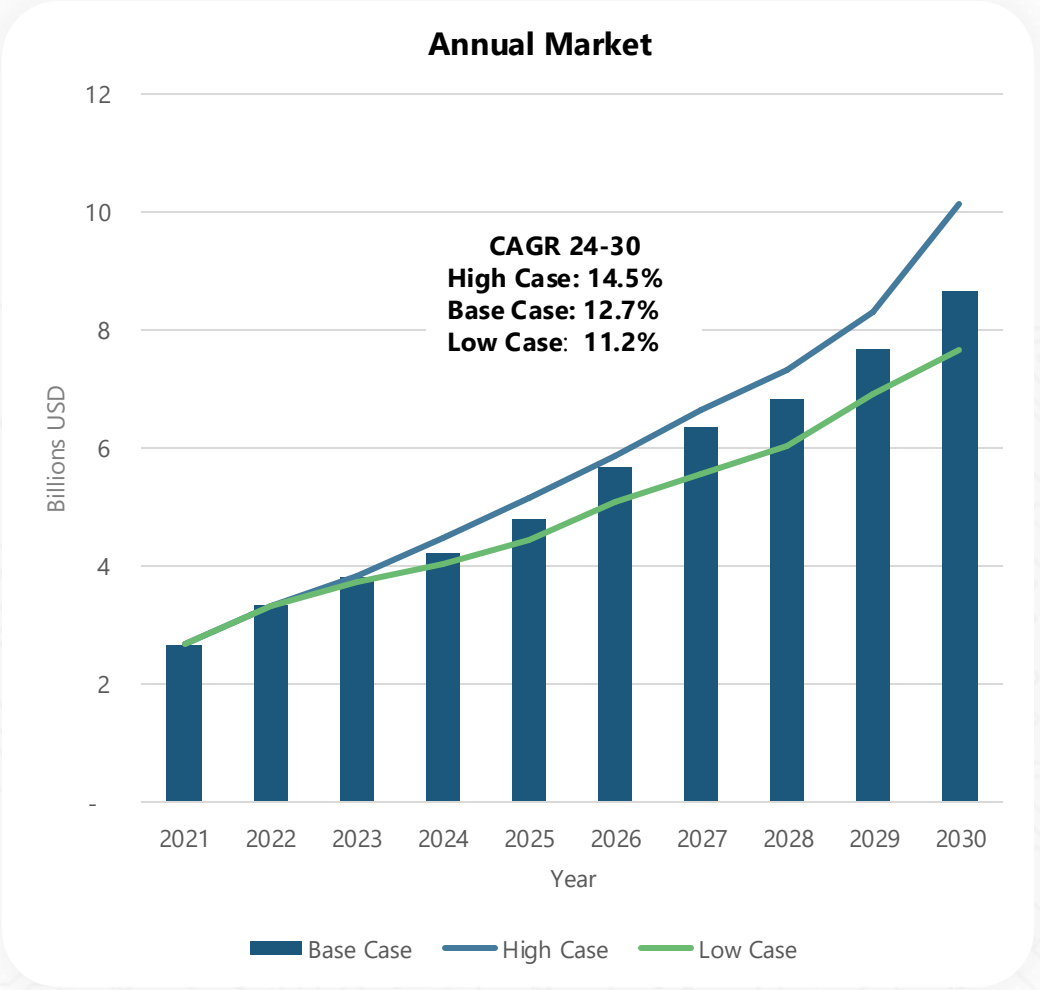
Deep Dive : European Market

Annual Market Forecast – Europe

Market Outlook by Revenue





Analyst Comments

- The European power transformer market is surging, projected to grow at a CAGR of 12.7% from 2024-2030.
- Driven by HV grid expansion across Europe, in response to limited grid capacity in several countries and increasing grid congestion queues across the continent.
- Industrial electrification further contributes to the burgeoning market.
- Aging and inefficient grids need upgrades to accommodate the increasing demand and integrate renewables effectively.

New Production Facilities and Expansions (2021 and onwards)

Hitachi Energy has unveiled the largest number of expansion plans within the region

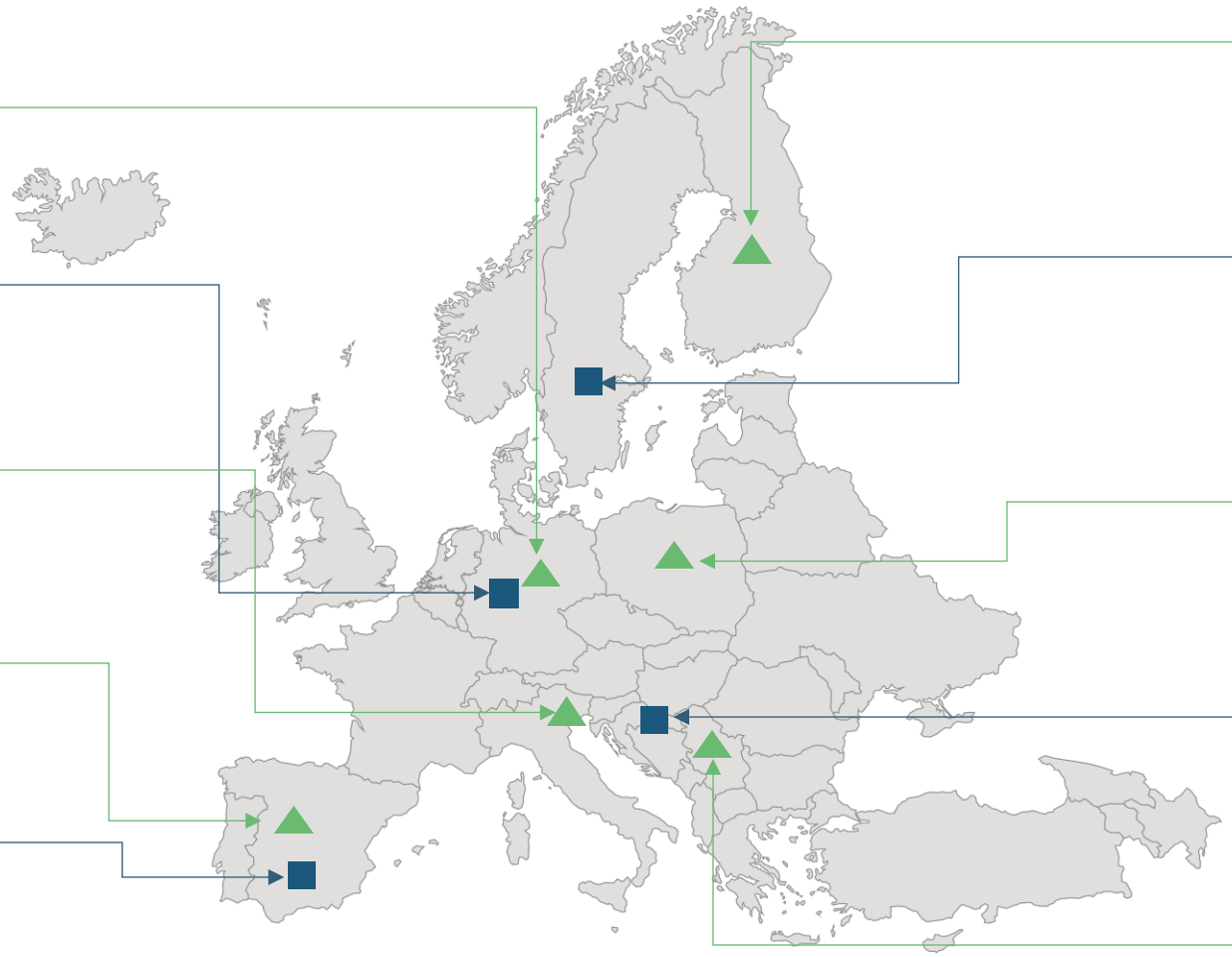
*SGB-SMIT is planning to expand its medium power transformer facility in Germany.

Hitachi Energy has announced an investment exceeding **€30 million** to expand its **Bad Honnef facility by 2026**.

Kolektor Etra has announced plans to build a new production hall and expand its existing facilities in Ljubljana, Slovenia.

*Faramax Trafo, a manufacturer of large power transformers, is now expanding its production capacity of small power transformers at **Extremadura, Spain**

Hitachi Energy has announced an **€80 million** investment to expand its facility in **Córdoba, Spain** by **2027**.



Hitachi Energy is investing nearly **€170 million** in its **Vaasa, Finland** facility, where it manufactures small power transformers.

Hitachi Energy's largest expansion plan in Europe is focused on its **Ludvika, Sweden** facility, with a pledged investment of **€327 million**.

R&S Group Holding AG plans to invest in expanding its power transformer facility in **2025-2026**, with a focus on increasing capacity for small to medium power transformers.

*Končar is expected to invest in the expansion of its power transformer facility in **2025**.

Kolektor Etra is expanding its facility in Belgrade, **Serbia**, with an investment of **€10.5 million**.

Large Power Transformers Facility

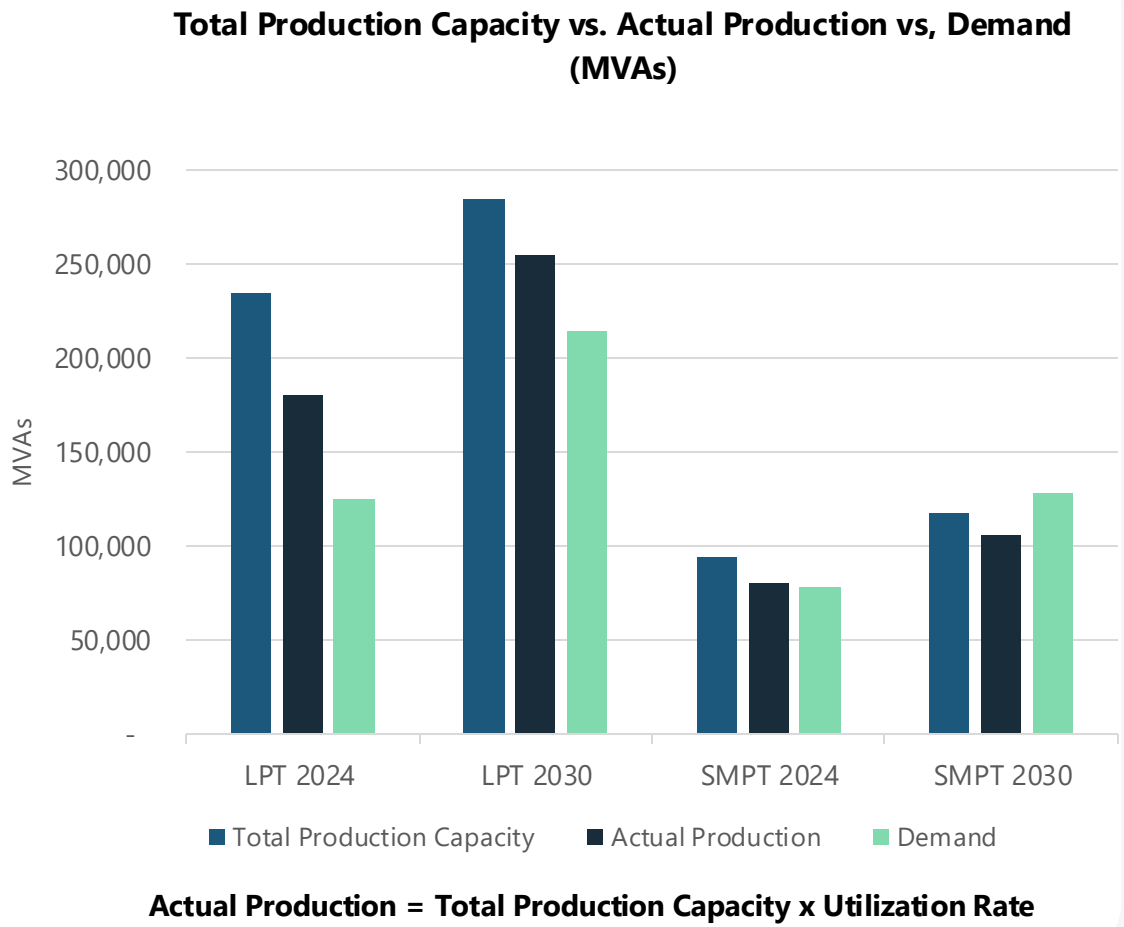
Small to Medium Power Transformer Facility

Regional Market Snapshot: Europe

Europe is exporting larger power transformers to North America and the Middle East

- ~50,000 MVAs of large power transformer capacity is projected by 2030, with ~40% of this expansion already announced.
- ~23,500 MVAs of SMPTs by 2030, with nearly half of the expected investments already disclosed.
- Utilization rates for SMPTs manufacturing facilities currently range between 80–90%, while LPTs operate at 75–85% capacity.
- Quality control issues, testing failures, raw material shortages, and supply chain disruptions etc. result in actual production falling below total capacity.
- In Europe, the total production capacity for power transformers exceeds regional demand, as the region is a major exporter of large power transformers to North America and the Middle East.

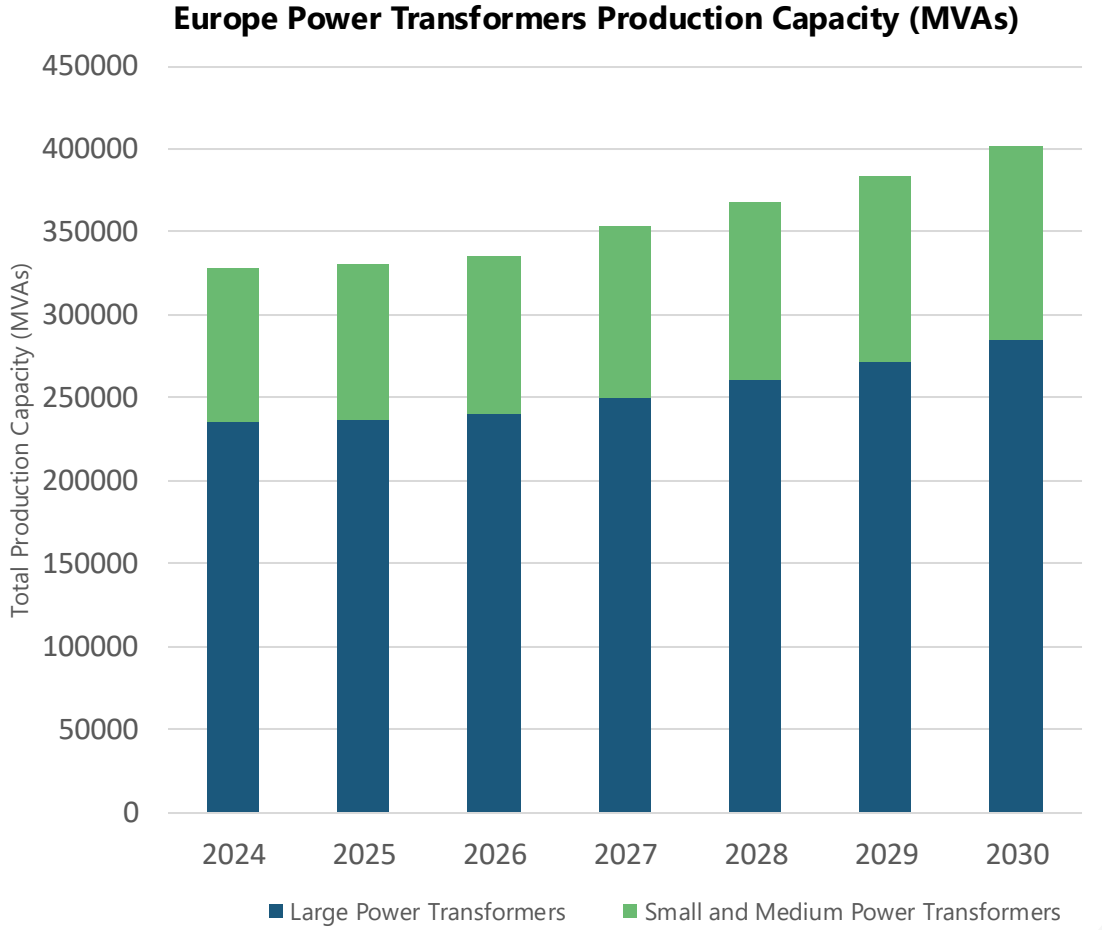
Power Transformers	Utilization Rate 2024	Utilization Rate 2030
SMPTs	55%	65%
LPTs	70%	80%



Double Click on Production Capacities

Market outlook and expansion opportunities

- Currently, Europe's production capacity for large power transformers stands at 235,000 MVAs, surpassing regional demand.
- In contrast, the production capacity for small-to-medium power transformers currently stands at 93,500 MVAs.
- Lead times for large power transformers in Europe, currently ranging from 4 to 5 years, are expected to extend further by 2030.
- Similarly, small-to-medium power transformers, which currently have shorter lead times of 8 to 12 months, may also experience delays if demand exceeds projections.
- Europe exports more power transformers than it imports, with imports primarily consisting of SMPTs and exports dominated by LPTs.



05

Strategic Takeaways

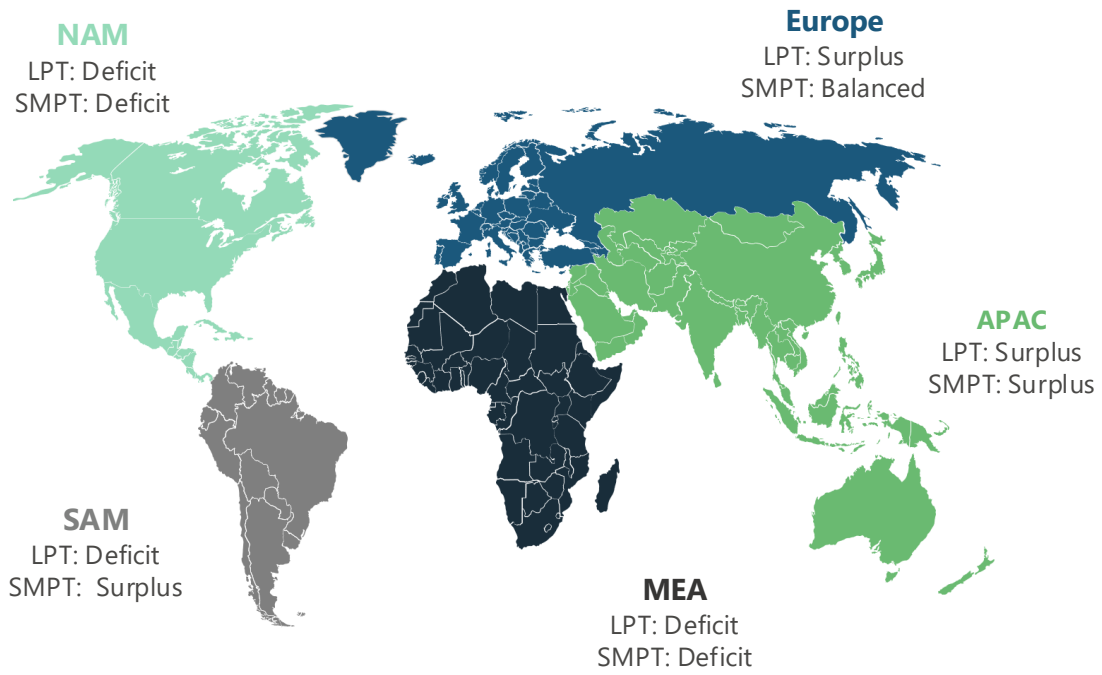
Conclusion: Key Takeaways

Manufacturers should invest to target NAM & MEA markets

Without China as a key regional player, the rest of APAC is still very well-positioned to meet a large portion of demand in MEA and NAM. Regardless, OEMS should consider investing in these markets to capitalize on the remaining opportunities.

- OEMs could grow by expanding LPT manufacturing in Europe, positioning themselves to serve MEA and North America, where shortages loom. Europe already supplies 40% of U.S. power transformer imports, mainly LPTs.
- OEMs should invest promptly in the NAM region to gain early mover advantage.
- Possible imposition of skewed tariffs by the Trump administration on Mexico and Canada also presents an opportunity for European suppliers. Together, these two countries meet 30% of the LPT and 40% of the SMPT demand in the USA.
- OEMs can enter the MEA (specifically KSA) market via joint ventures to benefit from a 2-year local content waiver.

Regional Cumulative Capacity vs. Demand Gaps (2025 – 2030)



Surplus/Deficit= Total Production Capacity -Actual Demand

Questions?

Contact PTR

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