The 9th edition of the StatPlan Transformer Report sizes demand for power and distribution transformers in 2019 and 2020 and forecasts sales to 2026, with expanded coverage including LV transformers, before and after the meter.

**HV, MV, LV**

Central Generator Transformers  
Distributed Generator Transformers  
Power Network Transformers  
Distribution Network Transformers  
Industrial Transformers  
Low Voltage Transformers  
TL Inverters

♦ **The installed base** of transformers in 2020 is analysed by these factors:

  - By region and 157 countries  
  - Transformer type - Central GSU, Utility PT, Industrial PT, Distributed GSU, Network DT, Industrial DT, User LV  
  - Power generation capacity MW  
  - Transformer capacity MVA, number of transformers, kVA per transformer  
  - Power and Distribution transformers analysed by ownership - Generator, Utility, Industry  
  - Distribution MV and LV transformers analysed in units

♦ **Sales analysis in MVA and $ value** of HV, MV and LV transformers, and **units** for MV distribution transformers and LV:

  - Regions (in North America, Europe, CIS, Middle East, Africa, Asia Pacific, LAC) and country  
  - HV (CGSU & Power Network), MV(DGSU & Distribution Network), LV (Network & User)  
  - 2019 to 2026

♦ **Unit capacity in kVA** is analysed for MV and LV transformers over 10/20 kVA in the regions of Europe and North America, and in selected countries in Europe and Asia.

♦ Transformer sales compared at ex-factory cost and installed cost.

♦ **The impact of Covid 19** on the transformer industry, markets and Supply Chain.

♦ **The Supply Chains** for power transformers and distribution transformers are outlined. Changes in the Chinese Supply Chain for transformers and other products are reviewed, with actions by the USD Federal government and Japan to relocate it to other producing countries.
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- The long term demand cycle is plotted - based on new build and historical replacement over decades.
- Recent trends in generation, Central and Distributed.
- Solar PV, step-up transformers and transformerless TL inverters.
- Transformer : Generator capacity ratios MVA : MW for each transformer segment:
  - by regions and 157 countries
  - by type - Central GSU, Power Network, DG GSU, Distribution Network
- Hosting capacity of distribution networks for renewables load to avoid overvoltage
- Transformer production capacity is assessed in MVA by country and major manufacturer.
- Customer list - utility landscape with Transcos and DSOs with summary customer analysis.
- Distribution utilities analysed by numbers of distribution transformers by country
- Price trends and factors affecting price are analysed; input costs for raw materials, labour, energy, production capacity and capacity utilisation.
- Market shares of the top 21 transformer manufacturers, country reviews and listings.
- The transformation process - transformers are needed at any stage where the voltage changes up or down. Alternative stages and parameters are mapped as power is stepped up from generating plant to the high voltage transmission grid, down to medium voltage distribution grid and down to low voltage end user.
- N-1, N-2, 2N, 2N+1 security and redundancy - Load factors range from 40% to > 100% within networks, reflecting levels of redundancy. Ignoring these fundamentals distorts estimates of transformer populations by large factors. In the various parts of a network different load factors are used to achieve a cost-effective security standard usually N-1 or N-2. What are N-1 or N-2 security standards, where are they applied and how do they affect the transformer population?
- The Grid Edge is impacting on electricity systems; a changing generating mixture and increases in distributed power and renewables, the growth of DER and renewables, energy efficiency, electrification and digitalisation are in flux, and the distribution networks are not yet ready for the Grid Edge.
- Smart Transformers - The aging power grid, increasing energy demands, distributed generation and the environment all point toward the need for a smart grid. Transformers serve as a hub for collection and distribution of energy and are key components of a smart grid.
- MEPS - Minimum Energy Performance Standards and Energy Efficiency - Losses in transmission and distribution networks constitute the single biggest loss in any electricity system and 70% of these losses occur in the distribution network. Government regulations and programmes to reduce losses are outlined for different regions, with analysis of the amorphous distribution transformer industry and market uptake. MEPS standards for transformers are listed for countries which have enacted them and the market for high efficiency transformers analysed.
Logistics - Power transformers can be the size of a house and weigh 400-500 tons. They often have to be transported large distances over difficult terrain with poor roads, underpasses and overpasses and limited load weight limits. For LPTs, the parameters of the move must be incorporated at the design stage before manufacture. Logistics problems and solutions are discussed together with their implications for transformers.

Electrification - Electrification rates around the world vary considerably and these are charted, with their impact on electrical markets.

396 Pages  
96 Figures  
182 Tables

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Euan Blauvelt  
StatPlan Energy Research  
+44 0208 871 2752  
e.blauvelt@statplanenergy.com  
8 Quarry Road, London, SW18 2QJ, United Kingdom

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