EXECUTIVE SUMMARY

Chapter 1 - THE POWER AND DISTRIBUTION TRANSFORMER MARKET

Total demand for power and distribution transformers in 2018 is summarised with cagr in real and nominal values, in MVA capacity, and in real and nominal price per unit, for 2019 and forecast to 2026. For all transformers, GSU transformers, power transformers, distribution transformers.

Chapter 2 - THE GROWTH OF THE WORLD’S TRANSFORMER FLEET

A comparison of data of the growth of the transformer stock as measured in the last seven StatPlan Transformer Surveys- analysis EHV HV GSU/utility PTs/industry DTs/DG GSU/utility DTs/industry DTs.

Chapter 3 - THE IMPACT OF COVID

The progress of Covid and its impact on the transformer industry and markets.

Chapter 4 - TRANSFORMER MARKET, GSU, POWER AND DISTRIBUTION, INDUSTRIAL

The classifications of transformers - GSU, LPT, MPT power, SPT power, pad mounted DT, pole top DT, industrial.

Chapter 5 - LOW VOLTAGE TRANSFORMERS BACKGROUND INFORMATION

A mix of information about the LV market and the usage of LV transformers. An outline of the European and North America distribution systems with differences in LV mains. Configurations of industrial and commercial transformer systems are described linking with this with Low voltage transformers.

Chapter 6 – NORTH AMERICAN TRANSFORMER MARKET

Analysis of demand and transformer stock by category; GSU, power transformers and distribution transformers. Detailed shipment data for distribution transformers in the US is only available for the years 2009 by transformer type. Market drivers and utility investment are outlined. The manufacturing industry is analysed in detail by transformer category; LPT, power, medium power transformers, liquid and dry type MV transformers, LV dry type. Purchase influences and delivery channels are analysed. Efficiency are outlined.

Chapter 7 - EUROPEAN TRANSFORMER MARKETS

The European market for power and distribution transformers in estimated at ex-factory cost, for generator transformers, transmission power transformers and distribution transformers for every country. Regional overview of the European utility system is provided, with details of utilizes and network structure, including voltage analysis. Efficiency measures are outlined. The changing network landscape of Distributed Power and Smart Transformers are outlined. Over the last five years, the EU power sector has been hit by a “perfect storm” of macroeconomic and industry-specific factors that have led to overcapacity and low prices. MPS and market drivers are analysed. As a result, the region’s large publicly traded utilities
have, on average, lost half of their market capitalisation since 2008, destroying around EUR 500 billion of shareholder value. This is outlined and analysed in detail focusing on the major utilises affected. The chapter contains detailed marketing sections for the major countries in Europe; France, Germany, Italy, Spain, United Kingdom and Turkey, analysis of manufacturing facilities, especially the global leaders - ABB, Siemens, Alstom, Schneider, Legrand.

**Chapter 8 - CIS TRANSFORMER MARKET**

The CIS market for power and distribution transformers in estimated at ex-factory cost, for generator transformers, transmission power transformers and distribution transformers for every country. The chapter contains a separate report on the major CIS country, Russia.

**Chapter 9 - MIDDLE EAST AND AFRICA TRANSFORMER MARKETS**

The Middle Eastern and African markets for power and distribution transformers in estimated at ex-factory cost, for generator transformers, transmission power transformers and distribution transformers for every country. Individual sections on Iran, Saudi Arabia and UAE.

**Chapter 10 - ASIA PACIFIC TRANSFORMER MARKETS**

The Asia Pacific markets for power and distribution transformers in estimated at ex-factory cost, for generator transformers, transmission power transformers and distribution transformers for every country. Separate detailed sections are included for China, India, Japan, Korea, Indonesia, Taiwan and Thailand. An interesting analysis is provided of investment as a % of GDP, which shows clearly the dominance of the Asian countries and MENA with implications for markets.

**Chapter 11 - LAC TRANSFORMER MARKETS**

The LAC markets for power and distribution transformers in estimated at ex-factory cost, for generator transformers, transmission power transformers and distribution transformers for every country. The two largest market, Brazil and Mexico are analysed individually.

**Chapter 12 - RECENT TRENDS IN TRANSFORMER CAPACITY, CENTRAL AND DISTRIBUTED, NEW & REPLACEMENT**

Growth of distributed generation.

**Chapter 13 - SOLAR PV SOLAR PV AND TRANSFORMERLESS INVERTERS**

Inverters, step-up transformers for grid connected solar PV plants, and transformerless TL inverters for grid connected solar PV plants.

**Chapter 14 - THE VALUE CHAIN – FROM MATERIALS TO CAPEX**

The cost of any product such as transformers or switchgear can be measured in a number of ways, from being a piece of unworked metal, to its final installation in working order and finally as a constituent of
capital expenditure. Different price levels are important in this supply chain. These are defined and analysed with % ratios for each step in the sequence. The value chain differs for different routes to market and is a fundamental issue for channel strategy.

Chapter 15– THE UTILITY LANDSCAPE

Customer list - utility landscape with transmission and distribution companies listed for 204 countries with hundreds of utilities named.

Chapter 16 - UTILITY CUSTOMER ANALYSIS

The world population of electricity distribution utilities summary analysis by country and size of customer base.

Chapter 17 - TRANSFORMERS SALES AT RETAIL PRICE AND INSTALLED COST

Demand by region is summarised at retail price and installed coast.

Chapter 18 - UTILITY, GSU & INDUSTRIAL POWER AND DISTRIBUTION TRANSFORMER INSTALLED CAPACITY, NUMBERS AND AVERAGE DISTRIBUTION TRANSFORMER KVA PER UNIT

A detail set of tables of Generator, Utility and Industrial Power and Distribution transformer capacity (MVA), numbers of units and kVA/unit for distribution transformers, by country and ownership, for 2017.

Chapter 19 - NETWORK TRANSFORMER LAYOUT

In the T&D industry, GSU, power network and distribution network transformers are one of the major components of equipment, in addition to switchgear, cables and other items of equipment. Transformers are needed at all stages in an electrical supply system when the voltage level changes, either up or down and the transport of power goes through several stages between generation and final delivery to the consumer. These stages vary according to the design of the system. The chapter outlines the various stages of the power networks in detail and identifies where the different types of transformers are positioned, flagging regional differences in practice, with regional summaries.

Chapter 20 - A REVIEW OF GENERATION

Categories of generation; central, captive, distributed, hidden.

Chapter 21 - HOSTING CAPACITY OF DISTRIBUTION NETWORKS AND DG PENETRATION

A review of overvoltage caused by superimposition of renewables on existing networks, power quality, power loss, solutions and rule of thumb hosting capacity calculations.

Chapter 22 - DISTRIBUTION TRANSFORMERS BY kVA UNIT CAPACITY

A regional breakdown of kVA distribution transformer capacity in Europe and North America, and counts for selected countries in Europe and in Asia.
Chapter 23 - THE LONG-TERM DEMAND CYCLE 1900-2050

Global installed transformer capacity has risen every year throughout the last and current centuries, from 22 GVA in 1900 to 45,188 GVA in 2016. The growth has been linear and it will continue as such until 2050. At face value the steady rise in installed capacity suggests that annual demand for power and distribution transformers will rise steadily every year on a linear path, but this is not the case. It was such an assumption as this which led to unsustainable surpluses of production capacity in the electro-technical industry in the 1990s and the demise of many hitherto respected and successful companies. Over 200 transformer factories were closed between 1970 and 2000. Figures plot installed transformer capacity and annual demand based on replacement cycles of 40 years for power transformers and 30 years for distribution transformers. The long-term demand cycle of new and renewal does not equate to short term expenditure. At present, if replacement had been carried out as needed demand would be going down. However, replacement has been delayed for years, especially in the transmission sector and short-term market is increasing. The long-term demand cycle is a tool for long-term planning, while the short-term expenditure projections are for immediate sales and marketing purposes.

Chapter 24 - TRANSFORMER:GENERATOR RATIOS - MVA:MW

The ratio of transformer capacity to generating capacity is a useful statistic because generating capacity is comprehensively recorded whereas transformer capacity is less well documented. This enables us not only to confirm snapshots of transformation capacity at any point in time but also to plot long term trends and demand cycles for transformers based on the historical data for generating capacity. Power transformers have along service lives, often 40 years or more, with some still in service aged 60-80 years and even a few 100 years old. It is therefore essential to plot long term installed capacity. There are variations between countries, which are the result of different network designs and voltage classes. The ratios are given for every country at four stages; GSU, power network, distribution network and total generator transformer capacity.

Chapter 25 - SMART TRANSFORMERS

Challenges such as the aging power grid, increasing energy demands, spiraling cost of generating electricity and its cost on the environment all point toward the need for a grid that can produce and distribute energy more efficiently and reliably. The smart grid is being developed to deal with these problems. Transformers serve as a hub for collection and distribution of energy and are a key component of a successful transition to a smart grid. The smart grid concept ties together all aspects of the power system, from the plug in the wall at a house or office to a factory, to the distribution system, to power plants of all kinds. For the smart grid to work efficiently, there will be a need for smart transformers. As part of the distribution network, there are millions of transformers in the world; unfortunately, very few have any intelligence or communication capabilities that meet advanced metering infrastructure (AMI) standards or are parts of an advanced sensor infrastructure (ASI) network.
Chapter 26 - N-1 STANDARD, N-2 AND 2N, REDUNDANCY AND REPLACEMENT

Redundancy is a crucial consideration in infrastructure design and has major implications for market size calculations. The following factors are reviewed; the impact of network failure, transformer failure, industrial reliability, network reliability, N-1 and the networks, contingency planning for network failure and electricity distribution.

Chapter 27 - PRICE TRENDS AND FACTORS DRIVING TRANSFORMER PRICES

In recent years, the prices of electrotechnical products have been volatile due to variations in many factors which affect them. Price trends are reviewed with commentary on PPI - Producer Price Index, industry trends, production capacity, and the manufacturing input cost composition. A review of electrical steel production and capacity is included.

Chapter 28- MEPS - MINIMUM ENERGY PERFORMANCE STANDARDS

Losses in transmission and distribution networks constitute the single biggest loss in any electricity system. Approximately 70% of the losses in electricity networks occur in the distribution network with conductor accounting for 42% of these losses and transformers about 30%. Transformers operate 24 hours/day, 365 days per year and have very long lifetimes, typically 40-50 years for power transformers and around 30 years for distribution transformers. Energy consumption during its service life is the dominant factor in their life-cycle assessment environmental impact. The increased use of electronic equipment can lead to increased harmonic currents and higher losses in transformers. Transformers are already efficient pieces of equipment, with efficiency in the range of 95 to 99. The issue is discussed and details of mandatory efficiency standards around the world supplied. MEPS Aer outlined for each major country.

Chapter 29 - HIGH EFFICIENCY TRANSFORMERS

Development of a new technology – amorphous core transformers. Amorphous core transformers (AMTs) significantly reduce no-load losses by using an amorphous alloy for the iron core, on which the transformer windings that carry the electricity are coiled. The technology and market penetration is outlined by region and major country.

Chapter 30 - TRANSFORMER PRODUCTION CAPACITY

Manufacturers of larger power transformers are easier to identify and their production capacity is either published or can be estimated. Most countries have numbers of small local producers of distribution transformers which are sold to local distribution utilities and are poorly documented. Some large countries have a lot of these companies, notably China, India, Europe and the United States. China, Europe and the United States have large numbers of distribution utilities, India fewer. The chapter surveys the global situation with detailed reports for the major countries.
Chapter 31 - THE SUPPLY CHAIN

Analysis of supply chains at a geopolitical level, with actions by the governments of the United States and Japan to replace the Chinese dominance of the world supply chains. Outline of the global supply chains for power transformers and regional and local supply chains for distribution transformers. Impact of Covid and its effect on the transformer industries and markets (see Chapter 3).

Chapter 32 - GLOBAL MARKET SHARE POWER AND DISTRIBUTION TRANSFORMERS, VALUE, 2017

Global market shares for the major transformer manufacturers.

Chapter 33 - LOGISTICS

Power transformers, especially GSU and quad boosters, are among the largest and heaviest pieces of equipment that must be transported, sometimes over long distances. Because of their size and the small numbers in service there are only a few manufacturers of the largest units in the world, thereby necessitating long and complex logistics. This is increasingly mentioned by vendors as a major cost and a consideration in locating manufacturing sites. It is not our purpose to provide a detailed survey of logistics in this report but to give a flavour of what is an increasingly important issue of the complexities of delivery of large, heavy equipment. The chapter contains some graphic illustrations of logistical problems and mishaps, which demonstrate the difficulties that planners face more effectively than any descriptions.

Chapter 34 - ELECTRIFICATION

The impact of increased electrification on future markets is described with its advantages in terms of electrical goods and aspirations, which vary according to the sophistication of the electrical market in a country. Factors driving the increase in numbers of electrical connections are assessed with tables of electrification levels for every country, from 1950 to 2050.

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THE POWER AND DISTRIBUTION TRANSFORMER MARKET

Total demand for power and distribution transformers in 2019 is estimated at XX GVA, rising by a cagr of XX% to XX GVA in 2026. The value in 2019 was $XX billion at ex-factory cost, increasing in nominal values by a cagr of XX% to $XX billion in 2026.

Table 1: Power and distribution transformer demand, MVA and $ in real and nominal values

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With surplus production capacity and falling metal prices, transformer prices...

Table 4: World transformer demand forecast, GSU/PT transmission/DT distribution, 2019-2026, GVA

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Table 2: World distribution transformer demand forecast, 2019-2026, Units

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Table 7 illustrates the growth of distributed generation. Although still a minority share of total generator capacity, by 2020 it had risen to three times its level of XX GVA in 2010.

Table 3: The global transformer fleet by transformer type, 2010-2025, generator and transformer capacity
NORTH AMERICAN TRANSFORMER MARKETS

Transformer stock

There are plentiful statistics about distribution transformers in the United States, including historical tables which enable us to plot the development of the distribution transformer stock over time in numbers and capacity and so to chart the development of transformers in size. The US distribution transformer fleet is the largest in the world, and accounts for XX% of the global total of DT units. There is less information for power transformers.

Table 4: US power and distribution transformer stock, 2010

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<td>All</td>
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Sources: DOE, various reports, StatPlan estimates

The total asset value of the North American power system is estimated around $1 trillion, with approximately 60% invested in power plants, 30% in distribution facilities, and 10% in transmission facilities. America operated a fleet of 21,892 generators in November 2018. Roughly 5,600 distributed energy facilities typically combine heat and power generation.

The North American market consists of the United States, Canada and Mexico. In previous editions Mexico was included in the LAC region. The United States market for power and distribution transformers is predicted to grow at a cagr of XX% in nominal value from XX billion in 2019 to XX billion in 2026. Demand for power transformers was strong in the latter half of 2019 and the first half of 2020, and has remained strong despite the Covid pandemic because of the investment plans already in place. Distribution transformer demand held up with an increasing population and the growth of renewables. Consumption of transformers in the United States has fluctuated over the last 30 years and has not risen constantly. Notably, the figures for 2009 were depressed as was the case in most countries, due to the financial crisis. In volume terms demand has risen steadily since then but in value growth has been held back by declining commodity prices and excess production capacity around the world.
Table 5: North America, total transformer sales forecast at ex-factory cost, 2019-2026, $ nominal million

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Table 6: North America, total transformer sales by voltage, HV, MV, LV 2019-2026, $ nominal million

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Table 7: North America, CGSU and network power transformer sales forecast, 2019-2026, MVA capacity

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Table 8: North America, DGSU and network MV distribution transformer sales forecast, 2019-2026, MVA capacity

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Table 9: North America, network and user LV transformer sales forecast, 2019-2026, MVA

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Table 10: North America, distribution transformer MV and LV before the meter sales forecast, 2019-2026, units

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Table 11: North America, LV transformers after the meter sales forecast, 2019-2026, units

<table>
<thead>
<tr>
<th></th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
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<th>2024</th>
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Table 12: North America, transformer by type - CGSU, Net PT, DGSU, Net DT - sales forecast, 2019-2026, MVA capacity

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<th>2020</th>
<th>2021</th>
<th>2022</th>
<th>2023</th>
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### Generator, Power and Distribution & LV User transformer capacity (MVA) by country, World, 2020

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<th>After the meter</th>
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<td>Network EHV/MV EHV/MV</td>
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<td>Total Grid &amp; User EH/MV/LV LV</td>
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<tr>
<td>Bosnia Herze.</td>
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### Regions 8

| Europe |             |             |             |       |
| CIS |             |             |             |       |
| Middle east |             |             |             |       |
| North Africa |             |             |             |       |
| Sub-Saharan Africa |             |             |             |       |
| AsiaPacific |             |             |             |       |
| North America |             |             |             |       |
| Latin America |             |             |             |       |
| World |             |             |             |       |

### Countries 156

|                      |             |             |             |       |
|                      |             |             |             |       |
|                      |             |             |             |       |
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#### Sample Pages

**Generator, Utility and Industrial Power and Distribution transformer capacity (MVA) by country and ownership, World, 2020**

<table>
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**Number and average capacity in kVA of Distribution transformers by country and ownership, World, 2020**

<table>
<thead>
<tr>
<th>Distribution transformers</th>
<th>Users</th>
<th>Average capacity per transformers</th>
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<tbody>
<tr>
<td></td>
<td>Number</td>
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<td>Utility</td>
<td>Industry</td>
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<td>Number</td>
<td>Number</td>
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<tr>
<td>World</td>
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</table>
DISTRIBUTION TRANSFORMERS BY kVA UNIT CAPACITY

As already outlined in the chapter providing information on the low voltage segment, there are two basic models for distribution systems, the European and the American, with combinations of the two employed by various countries. These models use different mixtures of distribution transformer, with the European system having a higher concentration of larger capacity higher voltage MV transformers and fewer small units, while the America system has a large number of small units nearer to the customer. The difference in the total configuration is marked. The distribution system in North America has 35% more capacity than the European system with 3,807 GVA versus 2,827 GVA, but it has 10 times more distribution transformers with 79 million DTs versus 7.2 million, the largest base of distribution transformers in the world. In each case the capacity of the higher voltage MV transformers has been increasing in the last two decades.

Europe, MV/LV distribution transformer population in units and total GVA capacity, by unit capacity in kVA, 2020

USA, MV/LV distribution transformer population in units and total MVA capacity, by unit capacity in kVA
HOSTING CAPACITY OF DISTRIBUTION NETWORKS AND DG PENETRATION

Renewable energy is rapidly developing across the world in response to technical, economic and environmental developments, as well as political and social initiatives. In the past, distribution systems were distinguished by the unidirectional power flow from centralised power generation stations to transmission and distribution networks. Nowadays, the deployment of DG technologies such as solar PV and wind energy resources in electrical power systems have changed the conventional power flow directions. Excessive penetration of distributed generation (DG) systems into electrical networks may lead to various problems and operational limit violations, such as over and under voltages, excessive line losses, overloading of transformers and feeders, protection failure and high harmonic distortion levels exceeding the limits of international standards.

In deregulated energy markets, a conflict of interest has been found among the DG owners/investors and DSOs, as the DG investors are looking forward to more and more DG integration into electrical networks, while DSOs are concerned about excessive DG penetration problems. These problems occur when the system exceeds its hosting capacity (HC) limit. Hosting capacity is defined as the level of penetration that a particular technology can connect to a distribution network without causing power quality problems. HC as a terminology was not previously used in electrical applications. However, it has been used in other domains, such as the computer sciences, where it is used to define the capacity of a web server to host many incoming access requests. The connection of solar PV generation in LV distribution networks has grown rapidly in recent years. PV microgeneration is characterised by low capacity factor and high intermittence, with the problem of causing networks to exceed their HC.

In a survey of more than 100 electric utilities across 23 countries carried out in 2018 it was found that DSO’s have economic concerns regarding the booming DG deployment worldwide. Utilities believe that they will suffer from revenue dropping as a consequence of high DG penetration. 59% of DSOs highlighted that the biggest DG-related impact on a utility network's HC comes from small-scale energy prosumers who are driving low voltage DG units, followed by medium or high-voltage connected DG such as a large-scale solar plant.

Authorities and distribution operators want HC limits to be established, i.e. the amount of PV that can be connected to the network without violating any of the operating conditions defined by regulations, in order to preserve the system integrity.................................
THE VALUE CHAIN - FROM MATERIALS TO CAPEX

The cost of any product such as transformers or switchgear can be measured in a number of ways, from being a piece of unworked metal, to its final installation in working order and finally as a constituent of capital expenditure. Different price levels are important in this supply chain, and the point of interest in the chain depends on the business to which the value is being applied. The value chain starts with the input of raw materials, such as cold rolled steel, GOES, copper, aluminium etc. These inputs typically constitute from 60-80% of the manufacturing cost of a finished product.

The value chain at 6 levels

1. **BOM, bill of materials** - Metal producers and refiners are concerned about the prices they can get for their output in its basic form, ingots, rods, plates etc. For the equipment manufacturers this price translates into the BOM (bill of materials) as a cost of production.

2. **Manufactured cost** - Adding the cost of fabricating the materials into finished products produces the manufactured cost.

3. **Factory gate price (MSP)** - The addition of non-manufacturing costs such as sales and finance costs brings it up to the factory gate price or manufacturer’s selling price. This does not include any transport cost. (Note: factory gate price is sometimes quoted with manufacturer’s profit and sometimes not.)

4. **Buyer’s price (equivalent to RSP)** - Products such as electrical equipment is almost always sold with a multi-channel strategy. Power and distribution transformers are a good example; there are usually two sales channels. Power and large distribution transformers are bespoke items, each one manufactured to a unique design for a unique purpose. They

The table below shows the costs and mark-up from Bill of Materials to Capex:

<table>
<thead>
<tr>
<th>Value chain level</th>
<th>Capex</th>
<th>Power Transformers</th>
<th>Distribution Transformers</th>
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<tr>
<td>Mark-up on MSP</td>
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<tr>
<td>Mark-up on RSP</td>
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<td>Added value</td>
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<tr>
<td>Mark-up on MSP</td>
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<tr>
<td>Mark-up on RSP</td>
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</tbody>
</table>

**End user total outgoings**

- **CAPEX**: 60%
- **Structural, indirect and owner’s cost**: 106%
- **Equipment purchase price**: 106%
- **Installed cost**: 106%
- **Transport and installation**: 106%
- **Buyer’s price**: 106%
- **Distributor**: 106%
- **Final price**: 106%
RECENT TRENDS IN TRANSFORMER CAPACITY, CENTRAL AND DISTRIBUTED, NEW & REPLACEMENT

In the last 70 years the global electrical supply infrastructure has multiplied at an accelerating rate, demonstrated by the growth of the transformer base from XXX GVA in 1950 to XX GVA in 2020 and it will exceed XX GVA by 2030. The development of the transmission and distribution grids has not only been in size but also in composition. Step down transformers, in both the transmission and distribution networks have increased in size, with DTs increasing in average capacity from XX kW in 2000 to XX kW today. These have been long term evolutions over the last seven decades, but the generation landscape is experiencing a radical realignment. These increases have been due to different drivers.

The transmission networks have increased capacity in the ten years from 2010 to 2020 at a cagr of XX% from XX GVA to XX GVA and distribution at XX% from XX GVA to XX GVA. Transmission capacity continues to grow to meet increasing demand and has been accelerated by the large expansion of utility scale wind and solar power. Distribution is also growing to meet increasing demand, but the greater part of expansion is due to increased electrification in the developing world.
UTILITY CUSTOMER ANALYSIS

In 2019 the estimated number of electricity consumers in the world was XXX million supplied by XXX DSOs. The total for China is summarised in two holding companies (SGCC and CSG), which own about 3,000 local DSOs.

Figure 1: Distribution utility customers by regions, 1950 to 2030

Table 13: Utility customer analysis; Transmission and Distribution utilities by size, World by Region, 2019

<table>
<thead>
<tr>
<th>Country</th>
<th>Total electricity connections</th>
<th>DSOs' customer base</th>
<th>Number of Electricity Transcos</th>
<th>Number of Electricity DSOs</th>
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</tbody>
</table>

Source: StatPlan Utility Customer Analysis Report
THE LONG-TERM DEMAND CYCLE 1900-2050

INSTALLED CAPACITY

Global installed transformer capacity has risen every year throughout the last and current centuries, from XX GVA in 1900 to XXX GVA in 2020. The growth has been linear and it will continue as such until it……………………….

*Figure 1: Installed capacity of power and distribution transformers, GVA, 1900 – 2050*

*Growth of installed transformer capacity is linear, but demand for equipment is cyclical.*

*Figure 2: Global installed transformation capacity and demand 1900 - 2050, GVA*
PRICE TRENDS AND FACTORS DRIVING TRANSFORMER PRICES

The prices of electrical equipment have been volatile over the years and will continue to be so. Many factors contribute to this. The principal factors influencing transformer prices are:

- Demand for transformers.
- Production capacity.
- Input prices of raw materials
- The economic and financial climate.
- Inflation.

PPI - Producer Price Index

The principal producing countries for power and distribution transformers are the EU, (especially Germany, Italy and France, followed by Poland, Portugal, Finland and Croatia), the USA, Japan, Korea and China. The following sections show the Producer Price Index figures for industrial manufactures, except..................

Covid-19..................