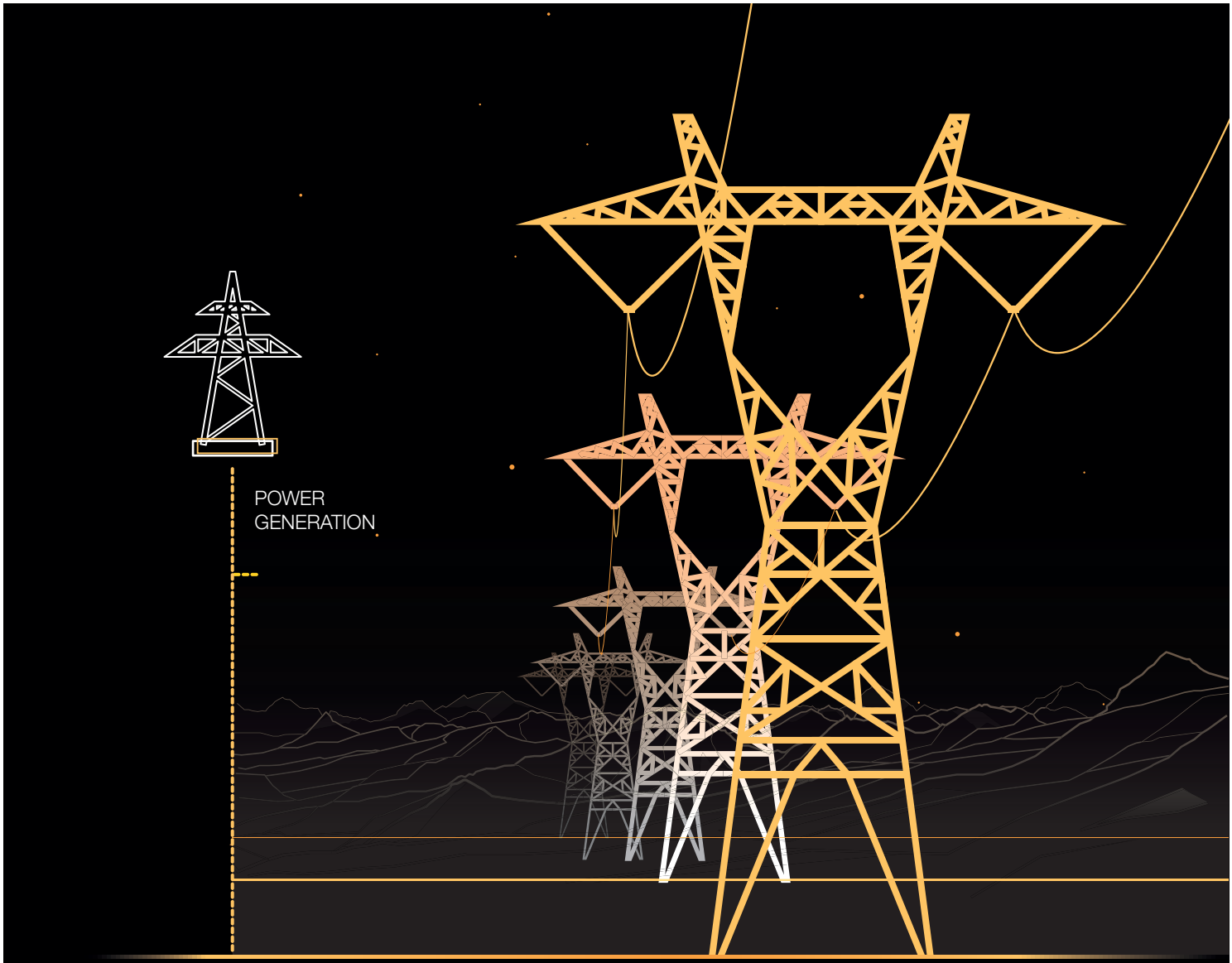


Trasfor
POWER GENERATION

TRASFOR

Introduction

Electricity generation is the process of creating electricity from other forms of energy.
Commercial electric utility power stations are most often constructed on a very large scale and designed for continuous operation.
Electric power plants typically use three-phase or mono-phase electrical generators to produce alternating current (AC) electric power at a frequency of 50 Hz or 60 Hz, depending on the location in the world.
The generator high voltage channels are connected to step-up transformers for connecting to a high voltage electrical substation (from 115 kV to 520 kV) for further transmission by the local power grid, where substations equipped with different step-down transformers supply energy to low voltage local users.

An electric generator or electric motor that uses field coils, rather than permanent magnets, will require a current flow, called excitation, for the device to be able to work.
As a matter of fact, if the field coils are not powered, the rotor in a generator will spin without producing any usable electrical energy, while the rotor of a motor may not spin at all.
In power plants, the excitation system has a powerful impact on a generator dynamic performance and availability.

A large variety of products can be supplied and customised by Trasfor for power generation application, such as cast resin, medium voltage transformers and reactors up to 25 MVA and 36 kV, with or without enclosure and protection degree from IP00 to IP66.

Nuclear Plant

Nuclear power is electrical power produced from controlled nuclear reactions. Commercial plants in operation to date use nuclear fission reactions. Electric utility reactors heat water to produce steam, which is then used to generate electricity. In 2009, 15% of the world's electricity came from nuclear power. It is often claimed that nuclear stations are inflexible in their output, implying that other, typically fossil, stations would be used to meet peak demand.
Whilst it may have been true for certain reactors, this is no longer true for at least some modern designs.

3 Single-Phase Excitation Transformers

- Power 3 x 3,5 MVA
- Primary Voltage 27 ±4x2.5%kV
- Secondary Voltage 966 V 50 Hz
- Protection IP21
- Cooling AF
- Weight 3 x 12.000 Kg

Coal Thermal Power Plant

The world's power demands are expected to rise by 60% within 2030. With the worldwide total of active coal plants over 50,000 and rising, the International Energy Agency (IEA) estimates that fossil fuels will account for 85% of the energy market by 2030. Electricity generation using carbon-based fuels is responsible for a large fraction of carbon dioxide (CO2) emissions worldwide.

Distribution Transformer with OLTC

- Power 12,0 MVA
- Primary Voltage 22 ±4x2.5%kV
- Secondary Voltage 6,2 kV
- Protection IP44
- Cooling AFWF
- Weight 24.000 Kg
- On Load Tap Changer 9 taps

Combined cycle plant

A combined cycle is characteristic of a power-producing engine or plant that employs more than one thermodynamic cycle. Heat engines are only able to use a portion of the energy that their fuel generates (usually less than 50%). The remaining heat from combustion (e.g. hot exhaust fumes) is generally wasted. Combining two or more thermodynamic cycles, such as the Brayton cycle and Rankine cycle, results in improved overall efficiency. In a combined cycle power plant (CCPP), or combined cycle gas turbine (CCGT) plant, a gas turbine generator generates electricity, and the waste heat is used to produce steam to generate additional electricity via a steam turbine.

Substation Distribution Transformer

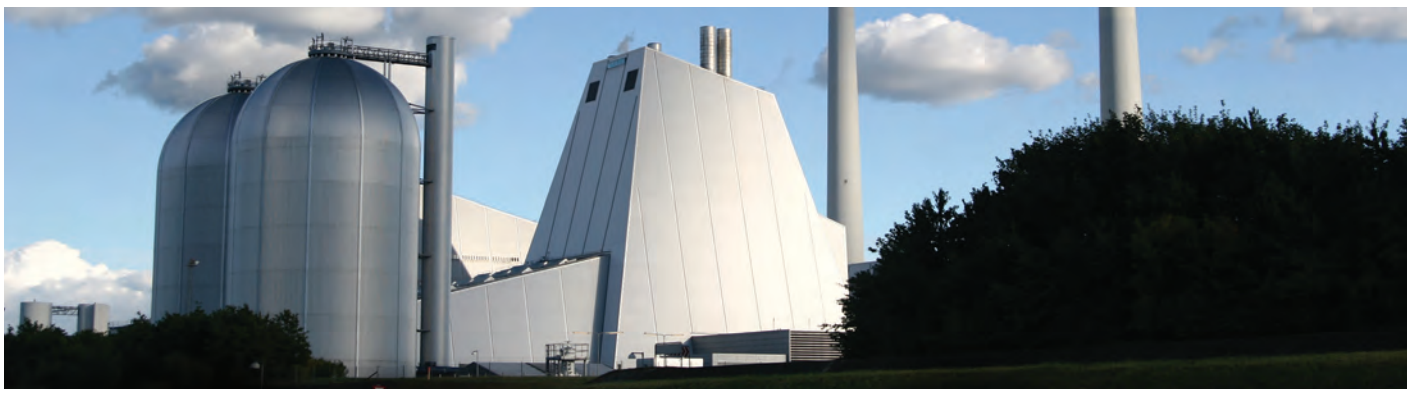
- Power 1250 kVA
- Primary Voltage 20 kV
- Secondary Voltage 400 V
- Cooling AF
- Outdoor application

Cogeneration Plant

Topping cycle plants primarily produce electricity from a steam turbine. The exhausted steam is then condensed, and the low temperature heat released from this condensation is utilised for district heating or water desalination.
Bottoming cycle plants produce high temperature heat for industrial processes, then a waste heat recovery boiler feeds an electrical plant. Bottoming cycle plants are only used when the industrial process requires very high temperatures, such as furnaces for glass and metal manufacturing. Large cogeneration systems provide heating water and power for an industrial site or an entire town.

Transformer for Potable Water Export Pumps

- Power 1,6 MVA – 4 x 400 kVA
- Primary Voltage 11 kV 50 Hz
- Secondary Voltage 4 x 1,8 kV
- Protection IP42
- Cooling AF
- Weight 5.800 Kg
- 1 x 4 windings for a quasi 48 pulse operation



Quality

- Quality as ISO certification 9001
- Quality as total respect of environment with ISO 14001
- Quality as OHSAS 18001
- Quality for the railway industry as IRIS - International Railways Industry Standard
- Quality of products through UL File E172880 and UL File E216928 certification
- Quality of welding through ISO EN 3834-2 and EN 15085 certification

Quality through entrustment by the following certifying bodies:
ABS - American Bureau of Shipping
BV - Bureau Veritas

Standards: all int. standards such as IEC, BS, CSA, UL, VDE/DIN, ABS, BV, ANSI, DNV, LRS, CCS, RMRS, etc.

Certificate of conformity to GOST R

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