

Industrial Motors

Commercial &
Appliance Motors

Automation

Digital &
Systems

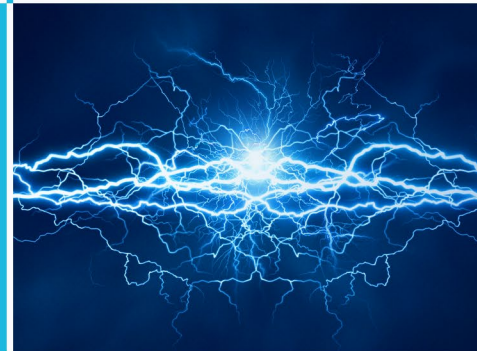
Energy

**Transmission &
Distribution**

Coatings

TRANSMISSION & DISTRIBUTION

Expertise in
**power supply
technologies**



Driving efficiency and sustainability





S U M M A R Y

Industrial Processes

05

Products

08

Retrofitting and Repowering Services

11

Conventional Substations

12

Mobile Solutions

13

Transportable Solution

13

SPCS

14

Digital Solutions

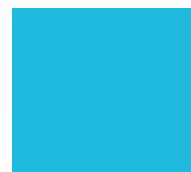
15

Technical Assistance

16

Supplies

17





WELCOME TO WEG TRANSMISSION & DISTRIBUTION

76 thousand MVAs/YEAR
REPRESENT MANUFACTURING CAPACITY

This capacity is the reflection of a manufacturing process highly verticalized, providing flexibility and short delivery time.

Focused on the industry, as well as on the generation, transmission and distribution, WEG Transmission & Distribution has 13 manufacturing plants (5 in Brazil, 3 in the United States, 2 in Mexico, 2 in South Africa and 1 in Colombia). The portfolio is composed of Products (a wide range of transformers, besides high voltage equipment), Complete Solutions (from turnkey conventional substations to mobile substations and transformers) and Services (which includes transformer retrofitting and repowering). This diversity represents an annual manufacturing capacity of approximately 76 GVAs.

LARGEST **MANUFACTURER OF TRANSFORMER IN LATIN AMERICA**

MARKET LEADER **OF MOBILE SUBSTATIONS IN BRAZIL**

QUALITY SYSTEM

WEG Transmission & Distribution has the ISO 9001/2000 certification granted by the Bureau Veritas Certification. The department of Quality Engineering coordinates the execution of internal and external audits, as well as the WEG Quality and Productivity Program, aiming at identifying opportunities for improvements in processes and products, so as to ensure the continuous development of their quality.

ISO 9001
ISO 14001
BUREAU VERITAS
Certification

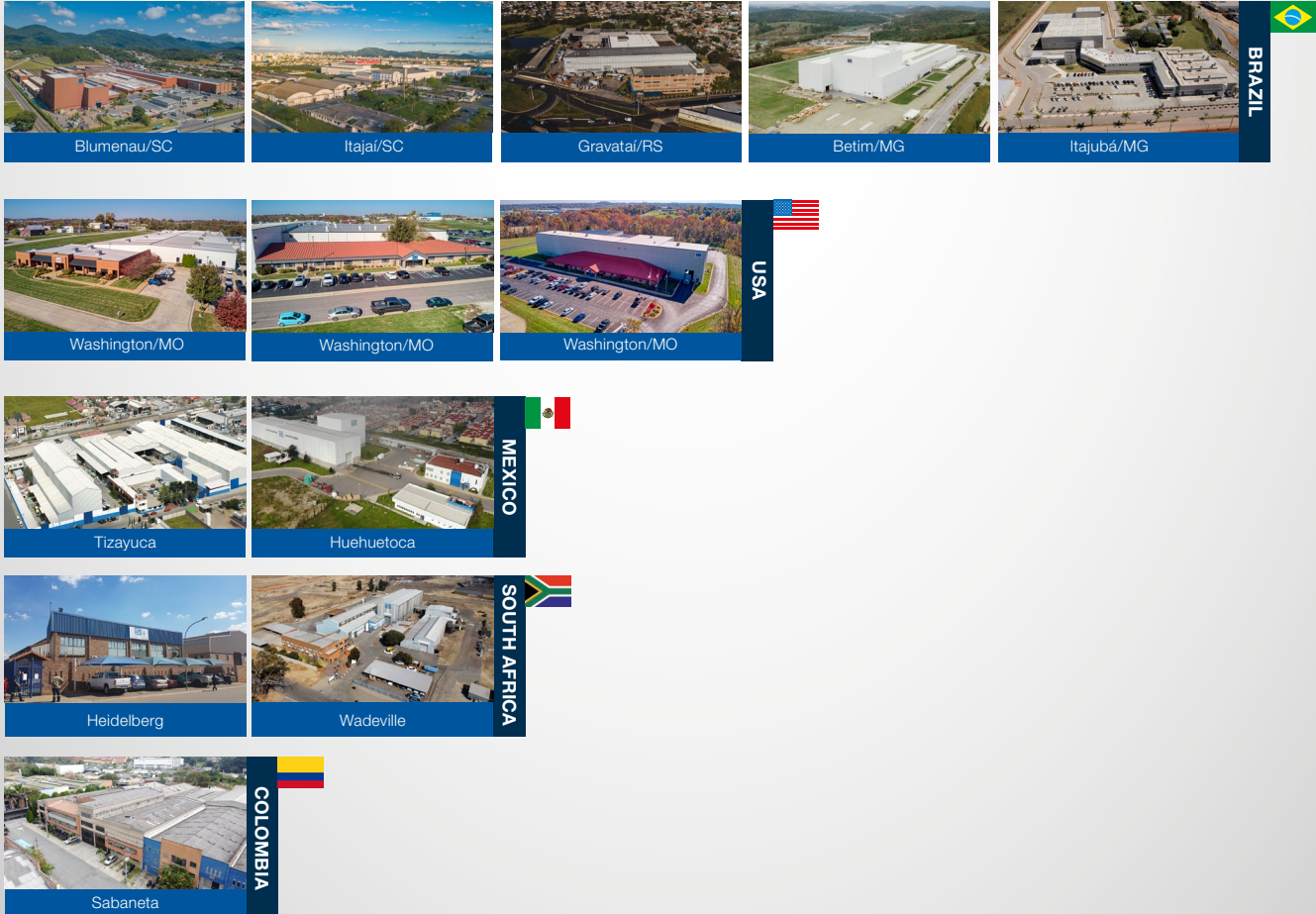


The T&D Factories in the World



Approximately 248.000 m²
of built area

Total Employees:
+ 5.000 employees



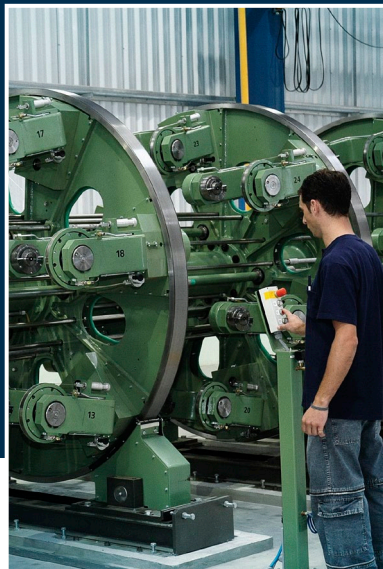
Industrial Processes

A vertically integrated process, combined with the customization of projects, are the advantages that WEG Transmission & Distribution offers. Those advantages provide the customers with more flexibility and shorter delivery time, besides ensuring a high quality standard during the manufacturing stages. Modern machinery and qualified technical teams ensure a wide range of products, adding value to every solution developed.



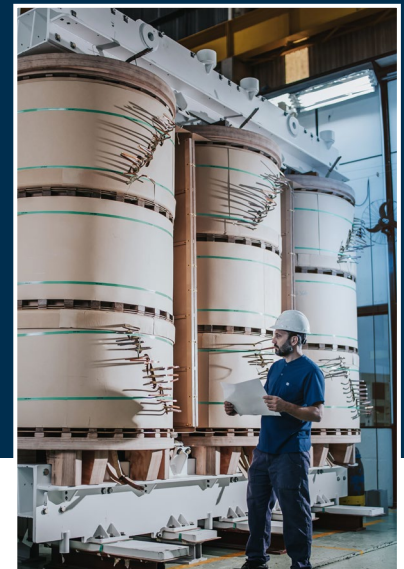
Engineering

WEG applies its own technology, fully developed by its technical staff. Our engineers and technicians constantly engaged in researching, developing and designing new solutions, so as to offer the customers products with high levels of reliability, efficiency and durability. In this specific structure, State of the art technical concepts and computer tools are available, combined with the capacity and experience of the WEG technical team.



Wire Drawing

The copper, aluminum and continuously transposed cables (CTCs) are made by WEG itself and the production capacity is 1,800 t/month. The manufacturing line of transposed cables uses copper wire insulated with varnish and/or thermally upgraded material (Class E 120 °C). Using this type of cable improves the mechanical and electrical quality of the windings, ensuring resistance to short circuit stresses, reduction of eddy current losses in the windings and shorter lead time. It evenly distributes the current between the wires of the turns and allows a more compact construction, reducing the weight of the transformer.



Cutting of Silicon Steel and Core Assembly

In the manufacture of the core, with production capacity of 2,000 t/month, WEG follows the core-type concept, and the assembly is done with step-lap design silicon steel laminations, which reduces noise, losses with no load and losses with exciting current. The fastening system of the core was developed to ensure that the laminations remain together, giving support to the windings. This design ensures an excellent resistance to short circuit stresses and safety in the transportation of the transformers.

Verticalization Process

FLEXIBILITY AND SHORT DELIVERY TIME.



Winding

The winding area complies with the strictest quality standards, combining cleanliness, state-of-the-art materials and high levels of control, which provides accuracy from the project to the execution. This is a dust proof environment with high control of temperature and air relative humidity.

The winding process can be accomplished by horizontal or vertical machines (platform and pit).



Assembly of Active Part

The assembly of the active part is performed in an isolated room with controlled temperature. All these factors provide better cleanliness, improving the process quality.



Phase Vapour

In order to dry the active part, WEG uses a controlled steam drying system. WEG manufacturing plants have vapor phase equipment manufactured by Micafil (Switzerland). This well-known method for drying active parts of large power transformers and reactors makes the treatment process fast and efficient, maintaining their durability.



Tank Manufacture

Specific area of 7,800 m² for the manufacture of tanks and structural components painted with WEG coatings for different processes, depending on the necessity/painting plans, according to the conditions of the environment where the product will be used.

Radiator Manufacture

The radiators are manufactured in an area of 3,150 m² with an automated manufacturing line, developed with Swiss technology (Schlatter) in a partnership with WEG tooling department. The radiator plant has a production capacity of 400 t/month and has tanks for specific treatments, providing the product with special features and increased protection.

Test Laboratory

Designed according to the latest concepts of high voltage technology, WEG laboratories are used to perform routine, type and special tests, following both national and international standards.



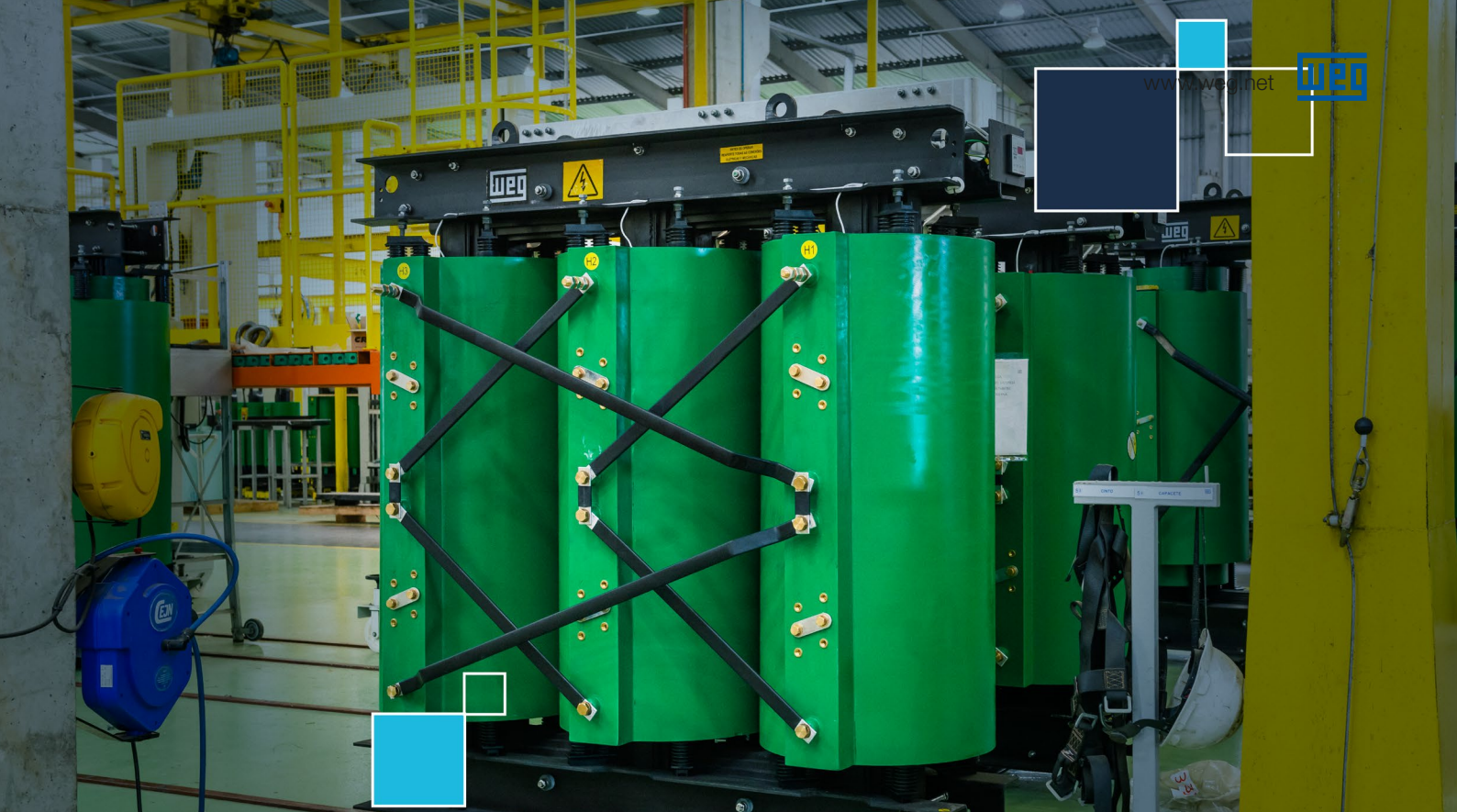
Products

Oil Transformers

Reduction of weight and dimensions, types of insulating oils, longer lifespan and monitoring systems are just some of the items evaluated by WEG's technical team in order to develop oil transformers that provide the customer with the best solution. The portfolio includes a complete line of distribution and power transformers up to 800 kV, with either mineral oil, reducing the equipment cost, or vegetal oil, significantly reducing environmental impacts.

- 1 Distribution Transformers
- 2 Industrial transformers
- 3 Underground-type and submergible transformers
- 4 Power transformers and reactors
- 5 Transformers for furnaces and for rectifier systems
- 6 Pad Mounted Transformers
- 7 Transformers for solar energy
- 8 Transformadores for wind energy





Dry-Type Transformers

The transformers insulated with epoxy are the best option to meet the demand for transformers that provide more safety, use less space and reduce installation and maintenance costs.

This product line offers solutions for all kinds of environments. The vacuum encapsulation process and the quality of the resin prevent partial discharges and significantly increase the lifetime of the transformer. They are available with power from 112.5 to 20,000 kVA, in voltage classes up to 36.2 kV, with degree of protection up to IP55.



Disconnectors

Offering more and more complete solutions, WEG also has a line of Disconnectors. Their function is to ensure the insulation of equipment, sections of lines or substations, allowing the visual confirmation that the insulated segment is de-energized. They are available in voltage levels from 15 to 550 kV, with current levels from 630 to 5,000 A and short circuit levels up to 63 kA/1s (other voltages, current and short circuit levels¹⁾ upon request).

Note: 1) The current and short circuit levels are not applied to all equipment and all voltage levels.





Instrument Transformers

Balteau has been part of the WEG Group since February 2022, expanding the Unit's product portfolio.

Balteau
Grupo WEG

Current Transformers - CT

Development of modern current transformers (CT) that reduce the current to low values in order to promote personnel safety, electrically isolate instrument power circuits and standardize the current values of relays and meters. CTs can be used indoors and outdoors and are produced for powers between 0.6 kV and 550 kV.



Potential Transformers - PT

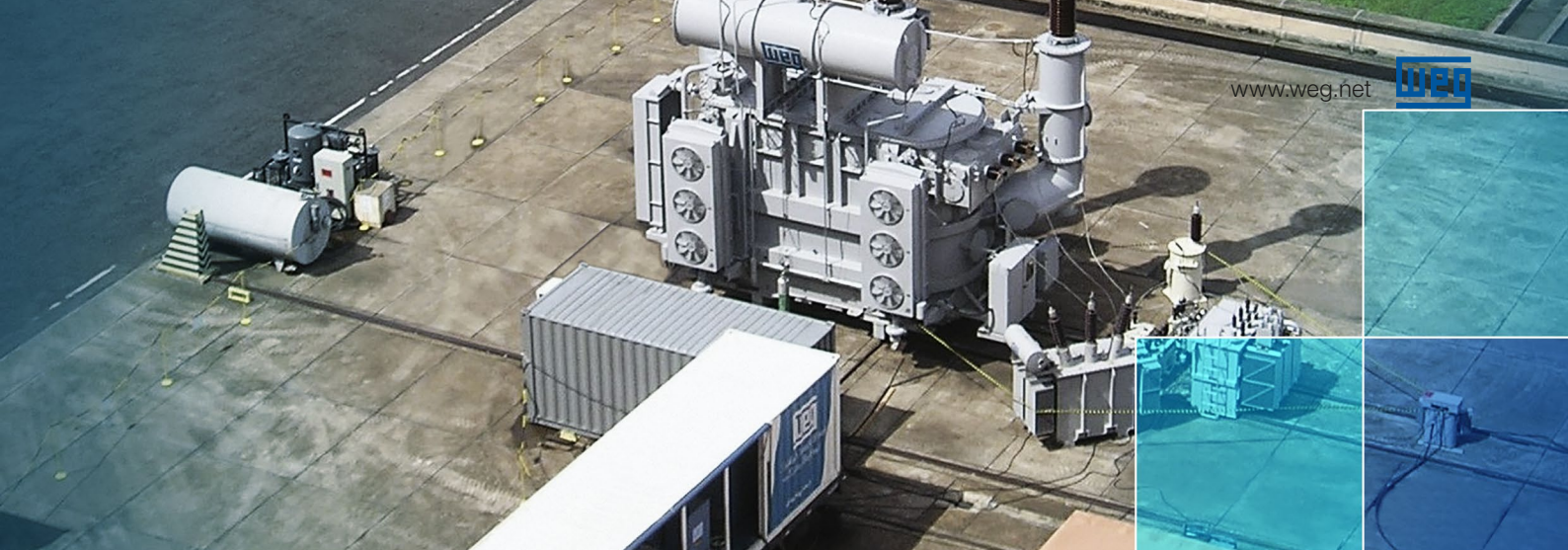
Potential Transformers can be used in all environments to reduce the voltage to low values in order to promote personnel safety, electrically isolate instrument power circuits and faithfully reproduce the voltage of the primary circuit on the secondary side. PTs can have inductive potential with powers between 7.2 kV and 138 kV or capacitive potential with powers between 72.5 kV and 550 kV.



Measurement Set

To meet the market demand to reduce problems with energy theft, Balteau provides measurement sets. They help identify possible scammers, being used by customers to improve the effectiveness of inspections and identify a greater number of frauds and anomalies. The measurement sets contain three modules (CT + PT) encapsulated with sharing to house the test switch, meter and remote, for powers between 0.6 kV and 36 kV.





Retrofitting and Repowering Services

With WEG quality standard, your service requests will be answered by our sales force with global presence.

Retrofitting and Repowering in Power Transformers up to 550 kV

Technical scope of the service

For repairs and repowering, a full assessment of the transformer operating conditions is carried out, including operational risks, capacity to withstand overloads and estimated remaining useful life. Transformers of any brand can be redesigned and rebuilt using the same technology applied in the manufacture of WEG transformers. Old transformers almost always allow redesign with increased power, with the main benefit of lower cost compared to the price of new equipment. All this work is carried out by experienced teams specialized in assemblies on site.

Main services

- Disassembly on site for transportation
- Receiving tests
- Opening of the equipment in the plant
- Disassembly of the active part
- Analysis/inspection of coils and complete rewinding
- Metal shop, sandblasting and painting services
- Disassembly and/or manufacture of new core
- Replacement or Inspection, cleaning and testing of the accessories
- Complete assembly of the equipment
- Testing according to ABNT 5356/5380
- Disassembly for transportation
- Assembly, installation and commissioning of the equipment

Repair on site

The repair of transformers on site is one way to ensure cost-effectiveness when the equipment is installed in remote places or places with difficult access. The road conditions, and even the installations, often make the removal troublesome. The work on site reduces lead time and eliminates complex and expensive transportation and logistics costs.

Structure for repairs on site

WEG has several tools and equipment necessary to prepare the site for the services, involving personnel and manufacturing resources, so as to ensure the same quality standards as of the projects executed at the factory. The on site service team performs technical inspections, disassemblies and assemblies (transformers, laminations, coils) and carries out routine high-voltage testing, ensuring the reliability of the equipment before connecting it to the power line.



LOW INVESTMENT
AND WARRANTY OF NEW PRODUCT



Conventional Substations

Full Turnkey Solutions

The substation department has an experienced and skilled team responsible for providing turnkey substations – from prospection, definition of a specific solution for the customer and project management and administration, to manufacture and assembly. It has proven experience, having already delivered and powered up over 430 substations in all voltage levels up to 550 kV.

A WEG analyzes and executes HV and MV projects, such as:

- Electric, electromechanic and civil
- Studies of DC/ Selectivity / Ground=grid / Protection / Systemic
- Supervisory System / Demand Control

WEG offers the customers contracts on a turnkey basis for high voltage substations, mobile substations and mobile transformers in all market sectors (industries, utility companies, generation – hydro, thermal and wind).

Another advantage is the interface with the other products that WEG offers:

- HV devices (disconnectors, circuit breakers, surge diverters, CTs, PTs)
- HV and MV/LV transformers (oil and dry types)
- Panels - control/protection and auxiliary services
- Cubicles - control/feeder bay protection
- Supervisory system
- Generators



CUSTOMIZED SOLUTIONS FOR YOUR COMPANY

Mobile Solutions Practical Solutions to Restore Power

Developed with the latest components of the market, the Mobile Solutions (Transformers and Substations) ensure dynamic operation and agility, being easy to install wherever necessary. They are used for emergencies and scheduled maintenances in power transformers and substations, allowing the service to be carried out without interrupting the power supply.

Main Benefits

- Mobility and flexibility in emergency situations
- Reduction of energy supply interruptions
- System reliability
- Easy preventive and corrective maintenance
- Multiple voltage ratios and taps
- Reduction of investments in spare equipment
- Optimization of size and weight of equipment
- Temporary supply for seasonal loads, new consumptions and events

Transportable Solution Safety and reliability for permanent or temporary applications

The Transportable Solution (SKID) is the result of WEG's know-how in manufacturing mobile solutions combined with alignment with market needs, which are increasingly demanding safety and reliability in temporary or permanent applications. Therefore, we have developed a complete line of **portable, compact and modular substations** that optimize implementation lead time and reduce civil work costs.

Main Benefits

- Less intervention in the field
- Plug & Play
- Reduction in implementation lead time
- Reduced physical space for installation
- Mobility
- Flexibility
- Versatility

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SPCS SUBSTATION PROTECTION, CONTROL AND SUPERVISION SYSTEM

Electrical energy systems depend on specific technologies for their operation. In substations, these technologies can be divided into primary, comprising equipment such as transformers, switch disconnectors and circuit breakers, and secondary, such as the **Substation Protection, Control and Supervision System (SPCS)**. WEG's Substation Business Center has extensive experience in supplying medium and high voltage electrical systems throughout Brazil. More than a product, we offer a complete solution for all stages of the project, covering basic design, executive design, electrical studies, supply of equipment and materials, execution, configuration and commissioning.

Advantages of the SPCS



WEG has its own specialized team for the technical management of the systems supplied, including studies, relay and supervisory configuration, execution, FAT and commissioning of the systems.



WEG creates its solutions using the most advantageous features of each Technology available on the market. Furthermore, it specializes in integrating several device manufacturers with cutting-edge technology, achieving a high level of sophistication and system versatility.



WEG can provide both the complete substation and just the SPCS and related services, ensuring flexibility for customers' projects and avoiding risks arising from scope segmentation and outsourcing of supplies.



In addition to the SPCS, WEG also provides billing measurement systems and telecommunication solutions for the electric system.



Another advantage is the experience with all types of systems: transmission, distribution, industry and generation, including solar and wind.



WEG offers its own after sales support, ensuring speed and efficiency.



WEG has extensive experience in substation retrofits.



WEG offers digital solutions to manage the conditions of our customers' transformer fleet, which will consequently reduce unnecessary expenses with unscheduled downtime and increase the energy efficiency of the electrical distribution system in Brazil.

WEG Transformer Fleet Management is the ideal solution to monitor online and manage the fleet of oil or dry-type transformers, enabling customers to maximize the efficiency of their operations, supporting the streamlined management of industrial plants, renewable energy generation and infrastructure. Its main resources are related to the management of the equipment operating condition, using intelligent algorithms to provide information such as useful life, energy management assessment and diagnostics of the installed park. In addition, the solution has a maintenance management module, configurable alarms, a mobile app and automatic generation of periodic equipment monitoring reports.



In turn, **WEG Power Transformer Specialist** is a power transformer monitoring system integrated into the **WEG Transformer Fleet Management ecosystem**. A customized solution in which data from a great variety of sensors installed on the transformer is centralized and forwarded to the online platform, where the customer will have access to the Management and Specialist layers upon subscription. Dashboards, artificial intelligence and the cloud-based platform **WEG Transformer Fleet Management** enable the precise management of the asset and transformer fleet.



Learn more about our digital solutions by watching the video:



TECHNICAL ASSISTANCE ACCREDITED ALL OVER BRAZIL



Warranty and Technical Assistance

WEG offers warranty against manufacturing and part faults of its transformers, when operated under normal operating conditions, with expiration dates as follows:

- Standard and engineered products: 12 months from the issue

It also provides its customers with full after-sales services, including supervision of assembly, commissioning and start-up. In Brazil there are over 40 accredited technical assistances, forming the country's largest network of technical assistance in transformers.



Lead Time and Logistics

WEG offers shorter lead time due to its vertical structure and a specific logistics department for land, air and sea transportation.

Supplies

Power transformers, retrofitting and repowering services



1 Nokian Capacitors (Scotland)

Transformer 225 MVA - 275 kV

2 Itaipu Binacional

Single-phase transformer 256 MVA - 525 kV - 60 Hz (Brazil)
Single-phase transformer 275 MVA - 525 kV - 50 Hz (Paraguay)

3 EDF Renewables (Brazil)

Biggest transformer made by WEG – 362 tons
Transformer 450 MVA - 550 kV

4 Anvil Mining (Democratic Republic of the Congo)

Autotransformer 150 MVA - 220 kV

5 COPEL (Brazil)

Transformer 155 MVA - 550 kV

6 Solar Turbines (USA)

Transformer 75 MVA - 169 kV

7 Energía Latina (Chile)

Transformer 100 MVA - 220 kV (2 units)
Transformer 100 MVA - 110 kV

8 ISA/CTEEP (Brazil)

Single-phase transformer 133.3 MVA - 362 kV (4 units)

9 Furnas (Brazil)

Transformer 350 MVA - 345 kV (4 units)

10 State Power Investment Corporation (SPIC)

Transformer 350 MVA - 550 kV (6 units)

11 Duke Energy (Brazil)

Transformer 200 MVA - 550 kV

12 GE Hydro (Brazil)

Transformer 311 MVA - 242 kV (4 units)



13 AES Gener (Chile)

Transformer 300 MVA

14 Eskom (África do Sul)

Largest Power Transformer manufactured by WEG

Transformer 500 MVA - 400 kV (2 units)

15 EDPR (Colômbia)

Transformer 120 MVA - 500 kV

16 Cia Mineira de Metais (Brazil)

Rectifier 44.5 MVA - 15 kV, 115 kA

17 Colbún (Chile)

Transformer 150 MVA - 230 kV

18 Furnas (Brazil)

Reactor 66.33 MVA - 72.5 kV

19 Aços Villares (Brazil)

Furnace Transformer 75 MVA + 20% - 23 kV, 50 kA

20 Atlantic Energias Renováveis (Brazil)

Transformer 275 MVA - 500 kV

21 Petrobras (Brazil)

Dry-Transformer 20 MVA - 34.5 kV

22 EDP (Brazil) – SE São Gonçalo do Maranhão/MA

Transformador de Corrente TCM-550

23 Equatorial Energia (Brazil) – SE Miracema/CE

Current Transformer TCM-550

24 EDP (Brazil) – SE Miranda II/MA

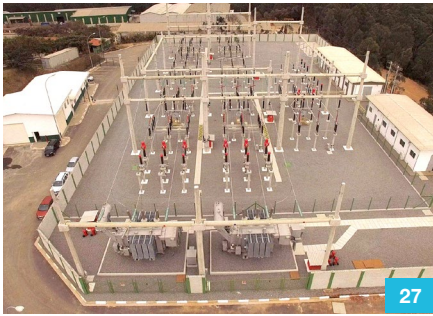
Current Transformer TCM-550

25 Rio Energy – SE Itarema V/CE

Disconnecter WSAC 245 kV - 2,000 A

26 Atlantic – SE Marmeleiro/RS

Disconnecter WSAV 550 kV - 5,000 A



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27 Termoverde Caieiras – SE Caieiras/SP

Disconnecter WSDAL/WSAVR 145 kV - 2.000 A

28 ISA/CTEEP – Florianópolis/SC

GIS Ratonas Substation – 2 transformers 150 MVA 230 kV and 2 reactors 50 MVar 230 kV

29 Aire (Colômbia) – Projeto Union

3 110/13.8 kV 50 MVA transformers, transformation expansions and GIS substation, replacement of medium voltage cubicles, capacitive compensations in the Manaure, Villanueva and Fonseca substations

30 CPFL – Itá/SC

07 single-phase transformation units 525/ $\sqrt{3}$ -230/ $\sqrt{3}$ -13,8 kV - 224 MVA, modules of bars interconnection, general infrastructure modules and transformer connection modules

31 CEMIG

SKID de 15 MVA – 138 kV (18 units)

32 ISA/CTEEP - Embu-Guaçu/SP

Embu substation 440/138 - 13.8 kV, 400 MVA and integral digital system

33 Vale – São Luiz/MA

Substation 242 kV, 180 MVA

34 EDP Renováveis – Pereira Barreto/SP

Turnkey substation with capacity of 220 MVA 145 kV

35 CPFL Renováveis – Maracanaú/CE

3 transformers 150 MVA 230 kV/69 kV, interconnection modules and infrastructure module

36 ENEL

Mobile substation 50 MVA 138 kV/13.8 kV

37 Energisa

Mobile substation 138 kV/13.8 kV

38 RGE

Mobile substation 40 MVA 69 kV/13.8 kV

The scope of WEG Group solutions is not limited to products and solutions presented in this catalogue.


To see our portfolio, contact us.

For WEG's worldwide operations visit our website



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Cod: 50032789 | Rev: 07 | Date (m/y): 05/2024.

The values shown are subject to change without prior notice.
The information contained is reference values.