



Renewable energy – page 4

WEG's Transformer is a key point at a Wind Farm.

Clean Industry – page 4

WEG can help avoid environmental damages.

Faster and stronger – page 2

See how WEG was capable to solve a great challenge.

WEG Building New Transformer Plant to Serve U.S. Customers

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Read more on page 2.



The energy that moves



Today, the evolution of power generation to meet demand in world markets is characterized by the role played by alternative energy sources and the continuing but less aggressive use traditional sources such as Small Hydropower Plants (SHP's). With effective management and direction provided by its own Energy Business Center department, WEG keeps itself in the forefront of this evolution; routinely supplying turnkey packages for power generation from hydro-electric or biomass sources. The packages offer the advantage of a single source responsibility (all the components are supplied by WEG) and include all the equipment necessary – generators, transformers, panels and cabinets, drives and supervision and control systems – for complete power generation solutions. *Read more on page 3.*

WEG at Itaipu Power Plant

Itaipu is considered to be the largest power plant in the world, providing more power than 10 nuclear power stations. It supplies zero-emission electricity to Brazil and Paraguay. It goes without saying that all products and equipment used at Itaipu must be of outstanding quality and highly resistant to the worst of atmospheric conditions.

These qualities are evident in the case of WEG paints, which are applied on 3 of the 20 main water tubes. From their strategic position at the forefront of the plant, the tubes serve as unique recognition symbols for visitors. Exposed to high moisture and weathering, they require high levels of anti-corrosion protection. This is provided by the application of a gray epoxy primer (Lackpoxi) with a high content of solids and pigmentation of zinc phosphate; a final coat of oxide of aliphatic acrylic polymethane is then added to provide the high coat thickness resistance to continuous weathering. In addition to paints, the package of WEG services to Itaipu, included technical follow-up, training of painting and sand blasting operators, which also extended to the Paraguayan servicing company Caldetec. The training program, provided in 3 modules, has achieved the objective of high levels consistency in the painting process.



One of the ducts painted with WEG paint

Transformer Logistics Application Story

Tight Timelines? Multi-Continent Logistics? No Problem for Power Transformer Developer

When a major US contractor needed custom power transformers for their Middle East substations, they contacted WEG Electric, a global leader in motors, energy and automation. The contractor had a new substation under development in the heart of the Middle East, and they needed top quality generator step-up power transformers that could provide reliable support for their operations.

Aside from the normal design-build specifications, the project faced WEG with two immediate challenges. Firstly, the power transformers had to be designed and developed rapidly, with every phase under a tighter timeline than usual. Secondly, and perhaps even more daunting, the logistics needed for the three massive transformers was unlike any other: each weighed 157,000 pounds and would need a unique solution to ensure they could make the journey successfully.

WEG has a strong history in the design-build of power transformers for both utilities and industrial substations, and their expertise in creating customized solutions was put to the test with this project. The transformers themselves were 52.3MVA, stepping up from 11kV to 110kV, and their development was closely watched by many interested decision-makers. At various points in the development phase, participants from the United States, South America, Germany and the Middle East descended on WEG's power transformer facility outside Mexico City for conferences, training and testing.

Once the transformers were fully constructed and tested, meeting or exceeding all of the client's expectations, WEG faced the challenge of coordinating the multi-continent logistics effort. Tight timelines meant that every step had to be flawless — installers and operators were already in place in the Middle East



substation, and moving the pieces had to ensure failproof, rapid movement from their Mexico City plant to their new home almost 14,000 kilometers away.

Carefully, but quickly, logistics engineers from WEG moved the transformers from the plant to Guadalajara, some 450 kilometers away. There, they were loaded onto a specially procured military plane, which was the only grade of aircraft in the world capable of transporting such heavy machinery. In two back-to-back trips, the plane moved the 70-ton transformers across the Atlantic and then heavy land transportation again moved them to the newly developed substation. Every timeline was met, and installation took place without an error. From start to finish, WEG had managed to move from unique specifications, through a time-constrained

development process and world-class logistics to meet the power transformer needs of their client.

Through their two plants near Mexico City, WEG specializes in creating custom power transformers with a top rate output from 10 – 400MVA and high voltage from 34.5kV to 550kV, all while meeting standards from ANSI/IEEE, IEC and ABNT. Though WEG develops a range of motors, automation and energy equipment, these two plants are dedicated solely to power transformers, and at full operational capacity can produce 35 units per month.

Headquartered in Brazil, and with locations on multiple continents, WEG offers its clients the strength of an expert team and the flexibility to innovate the best and most efficient in motors, energy and automation.

Power transformer to Basin Creek power plant



See how to save electric power and reduce CO2 emissions in your company

WEG delivered a 40/60/75MVA, 161/13,8kV GSU power transformer to the Basin Creek Power Plant located in Butte, MT-USA. The transformer was sold to Caterpillar Power Generation Systems, a division of Caterpillar Motoren GmbH & Co. The plant is powered by nine Caterpillar G16CM34 natural gasfired reciprocating engines with a combined generating capacity of 53MW. The plant is owned by Basin Creek Equity Partners, LLC and was designed and built under and EPC contract with Caterpillar Power Generation Systems. The plant will provide electricity under a 20-year Power Purchase Agreement North Western Energy Corporation, the utility serving Montana, South Dakota and Nebraska. The WEG GSU power transformer provides the vital link between the power plant and Northwestern transmission line.

Motors ensure cooling air

Two vertical motors of 1500HP, 6 pole 4160V, frame size 8810, have been installed in the cooling towers of the refinery Ing. Antonio Dovali Jaime in Salina Conj Oaxaca, Mexico. Offering several special features, including elevated facilities for inspection and

maintenance of bearings, the motors were supplied to Flowserve, a manufacturer of cooling equipment. This project consolidates WEG's presence with special medium and high voltage motors in the Mexican market.

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WEG's initiative in alternative energy is complementing a federal government incentive program (Proinfa) aimed at increasing alternative power generation sources in Brazil. This programme will start to deliver results over the next two years, following the establishment of several SHP's, aeolic and biomass power plants, all of which are expected to provide 1100 megawatts of energy within a pre-established period.

Water: A source of life and power

Over 45 generators were recently supplied by WEG to Small Hydropower Plants (SHP), in addition to another package of equipment to over 25 projects for same purpose. SHPs are power plants with installed power capacity below or equal to 30 megawatts.

They offer an easy expansion stage, compared to large hydropower plants, due their simple design requirements. With an equipment list that includes generators, panels, cabinets, auxiliary boards and upgrade substations, WEG supplies complete electrical solutions for SHPs, including assembly services.

WEG is currently supplying electrical equipment to eight different Small Hydropower Plants all over the country. Two of them – SHP Santo Antonio and SHP Comandai – are located in the southern region of Brazil and are administrated by Cooperluz (Power Generation and Development Consortium), of Santa Rosa (Rio Grande do Sul-Brazil). Both power plants are designed to supply energy to farming communities for the benefit of over 8000 families.

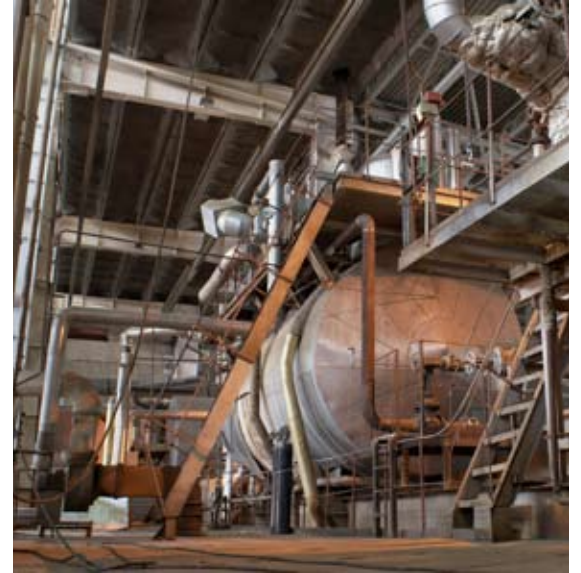
Through its representative in Passo Fundo – Automasul – WEG is supplying a turnkey project for both power plants including:

SHP Santo Antonio:

2 x 2.5 MVA, 4.16kV, 24 pole Generators;
2 x 2.5 MVA, 4.16-13.8kV Step up Transformers;
1 x Control Panel and Switchgear for 2 x 2.5 MVA, 4.16kV.

SHP Comandai:

1 x 1.5 MVA, 480V, 36 pole Generator;
1 x 1.5 MVA, 0.48-23, 1kV Step up Transformer;
1 x Control Panel for 1 x 1.5 MVA, 480V Generator.



Waste Gases

It is already possible to generate energy from the waste gases that result from industrial processes such as steel making (see schematic drawing below). In 2003, WEG supplied complete electrical packages for eight steel plants including one for Companhia Siderurgica Siderpa in Sete Lagoas (Minas Gerais-Brazil). This package includes a 1200kVA generator, control and distribution panels and the substation. The power generated is used to help meet the plant's own energy demands.



Tool simulates power savings in Industry

See how to save electric power and reduce CO2 emissions in your company

Reducing costs and optimizing processes is currently the big objective in the Industry. In addition to avoiding environmental damage, companies perceive a great opportunity to keep themselves more competitive in the market.

In the face of this, WEG has just made available two new versions of a tool that allows simulation

of return on investment of the motor and calculation of its power consumption, the associated costs of the equipment and verification of reduction of CO2 emissions in three situations: return on investment in a new installation, replacement of a motor in operation and replacement of a burnt motor.



WEG Transformer at Core of Michigan's Largest Wind Farm

WEG Electric Motor Co. has supplied a custom designed step-up transformer to Harvest Wind Farm, the first utility scale wind facility to operate in Michigan. The transformer is a key component in the substation serving the facility, in effect connecting the 32 Vestas V82 wind turbines to the utility power distribution grid. "Our WEG transformer team assisted WindConnect, the general contractor for the facility, in the specification and design

process," said Salvador Sordo, sales manager for transformers at WEG. "We are proud to be a part of the team that built this renewable energy resource for the people of Michigan." Located on 3,200 acres in Huron County, MI, the Harvest Wind Farm has a capacity to produce 53 MW of electricity – enough to power more than 15,000 homes. The facility is owned by John Deere Wind Energy.

Rectifier transformer of 115kA

A Rectifier transformer of 115,000Amps was recently supplied by WEG. Equipped with several special features, the unit is one of the largest ever manufactured in Brazil. The 115kA rectifier-transformer provides direct current to ovens in a zinc production process. Its massive specification includes 30 tons of copper bars and 30 coils. The equipment was delivered to Brazilian metal producer company Companhia Mineira de Metais (CMM).

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About WEG Electric Motors Corp.

Founded in 1961, WEG has grown into a global solutions provider of industrial electrical technologies. WEG is the largest industrial electric motor manufacturer in the Americas and one of the largest manufacturers of electric motors in the world producing over ten million units annually. Committed to growth on a global scale, WEG continually invests in state-of-the-art manufacturing facilities and processes, and the development of new and improved industrial electrical solutions. WEG offers a diverse and integrated product line that includes motors, drives, controls, transformers, and generators. WEG has committed to an R&D investment of 3% of annual, global sales.

Providing Pure Air cool simulates power

See how to save electric power and reduce CO2 emissions in your company

A partnership between WEG and American Electric Power – AEP – is set to guarantee cleaner air, in a Project for USA company, Montaineer Construction. A package of four, 8-pole motors in output ratings of 9900HP, (13,2kV 60Hz), has been supplied for use on a Flu Gas Desulphurization project. The application is environmentally friendly, since it cuts the emission of greenhouse gases into the environment. For WEG this project represents a worldwide reference in the power supply market.

AEP has a long-established partnership with WEG, which has already resulted in the supply of a large number of motors in power ratings of 2250, 5000 and 7000HP. WEG's current order book for AEP includes motors in power ratings of 11,700, 13,500 and 18,000HP.

