

Electrical Power

Overview

Unit: USD thousands

	2011	2012 (estimated)	2013 (estimated)
Total Market Size	8,105	8,510	8,935
Total Local Production	7,821	8,212	8,622
Total Exports	551	578	606
Total Imports	835	876	919
Imports from the U.S.	91	95	99

The estimated 2013 market for Brazil's power generation, transmission, and distribution (GTD) equipment market is projected at approximately US\$ 8.9 billion of which US\$ 919 million is projected to be imported with about US\$ 99 million of that total forecasted to be from U.S. sources.

Sub-Sector Best Prospects

In the power generation subsector, best sales prospect opportunities include the supply of control and supervision equipment, rectifiers, converters, inverters, heat recovery steam generators and condensers, power generation sets, heat exchangers, gas and steam turbines and parts.

Best equipment sales prospects for the power transmission subsector include compact substations, SF6 – gas insulation transformers, glass and polymer insulators for 600 kV bipolar DC transmission lines, electrical switches to open circuits, circuit breakers, capacitor banks, relays, and electrical protection panels.

The power distribution subsector offers equipment sales potential from monitoring systems to upgrade underground vaults, switches (15kV tension capacity; 125 Bil, with open, closed and grounded positions), power transformers (500 kVA), lightning arresters, ground and surge protection systems; relays, insulated electric conductors, surge suppressors, and innovative technologies to reduce technical and commercial losses, including smart grid technologies.

Opportunities

Generation

According to GOB's Power Expansion Plan (PDE) for 2011-2021, published by Brazil's Power Energy Research Company (EPE), the per capita electricity consumption in Brazil will increase from 2.4 MWh/inhabitant in 2011 to 3.5 MWh/inhabitant in 2020.

In the 2011-2021 PDE, the Brazilian government will focus on hydroelectric and renewable resources, relying on thermal power only when necessary.

A third nuclear power plant (Angra III) is currently under construction in Brazil. The plant, when operational in July 2016, will add 1,405 MW of nuclear generated electricity to Brazil's total of 2,007 MW electricity already generated by its two existing nuclear power plants

The growing focus on thermal power plants in Brazil is aimed at offsetting the country's dependency on hydropower generating plants, which are currently suffering from low levels of rainfall or in some cases drought conditions. Brazil's study of additional nuclear plants was interrupted after the Fukushima nuclear accident in March 2011. However, the recent power shortage in Brazil due to a shortfall in rain has made it clear to the Ministry of Mines and Energy that existing hydroelectric plants cannot be relied upon to meet the needs of the country for ever increasing amounts of electricity.

A new National Power Expansion Plan (PNE) will be published in 2013, which will define Brazil's energy demands through 2050. Industry sources anticipate that the PNE will include increasing the number of nuclear power plants.

The Brazilian Nuclear Energy Association sees positive prospects for the nuclear sector in 2013. Several projects are expected to continue making progress this year. Among them will be the selection of the consortium that will build the Angra III nuclear plant in the state of Rio de Janeiro. Furthermore, Eletronuclear, owner of the nuclear power plants, will contract for a number of plant inspections and upgrades, which will include maintenance of turbines, pumps, and the replacement of the Angra I water control system among other services.

Eletronuclear will also contract for the construction of an irradiated fuel storage unit, scheduled to start construction in January 2015 with a projected completion date of January 2018. The main systems required in connection with this new storage unit will include radiation controls, instrumentation, and monitoring equipment.

Additional opportunities in connection with the existing nuclear power plants, and possibly the planned Angra III nuclear power plant are related to the supply of the following items:

- Safety analysis and safety equipment (in view of the Fukushima accident);
- Instrumentation & control activities (the plants are transitioning from analogical to digital);
- Centrifugal horizontal pumps;
- Power transformers and parts;
- Decontamination basins plus supervision and assembly services;
- Humidity separators and filters; and
- Power conversion equipment.

The PDE estimates that the energy generation capacity will increase from 116.5 GW in 2011 to 182.4 GW in 2021. Of this new capacity, approximately 33.2 GW will come from hydropower, while 22.4 GW will be from renewable sources (wind, biomass and small hydropower plants), 8.9 GW from thermal power and 1.4 GW from nuclear.

The expansion in generation, for the period from 2011 to 2020, will require US\$ 90 billion in investments, of which 55% for hydropower and 45% for renewable energy (biomass, wind and small hydro).

Transmission

Total investments in transmission for the 2011-2020 period will reach around US\$ 23 billion, of which US\$ 15 billion will be in transmission lines and US\$ 8 billion in substations.

The interconnected transmission network currently in operation in Brazil surpasses the 100 thousand km extension. The 2020 PDE calls for an expansion in this network of around 42 thousand km, accounting for a 42% increase. The expansion in the transmission segment will involve 137 projects with tension equal or greater than 230kV and the extension equal or more than 10 km. Of these projects, 118 are expected to be installed by 2015.

Distribution

The Brazilian energy distribution network is composed of high, medium and low tension lines. Even though some transmission companies also have line with tension below 230 kV, most of the transmission lines between 69 kV and 138 kV are under the responsibility of the electrical energy distribution companies (utilities). These lines are known in the sector as sub-transmission lines. Besides the sub-transmission network, the energy utilities also operate the medium and low tension lines, called primary and secondary networks, respectively.

The Brazilian energy distribution sector is one of the mostly regulated in the electrical energy sector. The private sector is responsible for 67% of the total energy distributed in Brazil, while state-owned companies are responsible for the remaining 33%. To reach the goal of energy universalization, the electrical energy distribution sector invested approximately US\$ 5 billion in 2012 in new equipment, training, expansion of the system and others.

Several local energy utilities have recently completed their R&D projects in smart grids and are ready to begin studying and implementing full-scale smart grid projects. Because of numerous technical questions, local energy utilities are interested in learning from the U.S. experience as well as consider U.S. suppliers to meet the requirements of their future projects.

On August 7th, 2012, Agencial Nacional de Energia Elétrica (ANEEL) approved the resolution that establishes the minimum requirements for smart meters. Smart metering will be compulsory for all new meter installations, and for old meters that are currently being replaced. However, there will not be a mass replacement of all meters by 2020, as had been previously announced. This decision frustrated some companies that expected a mass replacement. Nevertheless, the current implementation is projected to create a market of about US\$36 billion through 2022. Through this initiative, Brazil will transform into one of the 10 largest global markets for these modern networks.

With the Normative Resolution 582 that allows for micro-generation, smart grids may also signify a revolution in the consumers' role. Aside from choosing differentiated rates, the consumer may be able to generate his or her own energy at home and obtain credit from the system. In addition to making the use of energy more rational - which will increase productivity - and requiring less investment in new plants, it can also transform the user into a micro energy generator, thus reducing losses in the interconnected system, increase energy effectiveness, modify relations between public utility concessionaires and clients, and allow further progress regarding alternative sources, such as solar and wind power, in the matrix.

The major challenges faced by Brazil in the electrical energy distribution segment include the management and reduction of non-technical losses in several regions of the country, as well as the question of reliability and interconnection.

Trade Events

- Power-Gen/Distribute Brazil: <http://www.powergenbrasil.com/en/index.html>

Web Resources

- Brazilian Electrical and Electronics Industry Association: www.abinee.org.br
- Eletrobras: www.eletrabras.com.br
- EPE (Empresa de Pesquisas Energéticas): www.epe.gov.br
- Ministry of Mines and Energy (MME): www.mme.gov.br
- National Electrical Energy Agency: www.aneel.gov.br

- For more information about export opportunities in this sector, please contact the U.S. Commercial Service Industry Specialist Igly Serafim: lgly.serafim@trade.gov