



Mexico: Cogeneration opportunities in PEMEX-CFE

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Summary

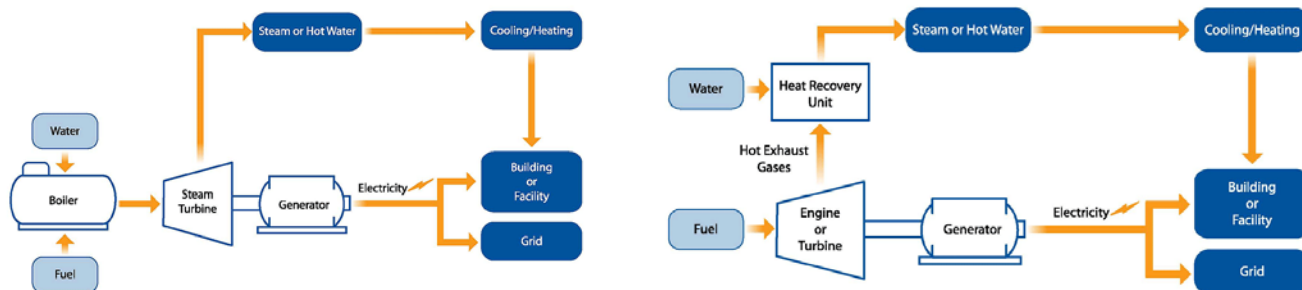
PEMEX (Petróleos Mexicanos – Mexican parastatal oil company) and CFE (Comisión Federal de Electricidad – Federal Electricity Commission, also a parastatal) have the opportunity to obtain important savings from joint cogeneration projects in PEMEX facilities. CFE can obtain low-cost electricity using combined cycles, while PEMEX can obtain important savings in the production of its process vapor. This cogeneration initiative by these two important state-owned companies in Mexico serves as a model for the private sector and great potential for the sale of related equipment and technology. Other benefits support the use of these technologies, such as energy savings, improved power quality and supply control, lower emissions and faster return on investment. The development of cogeneration by the private sector in Mexico is projected to increase in the following years.

Market Demand

Cogeneration in electrical production refers to the process of capturing both electrical energy and heat from combustible, nuclear, or other thermal energy sources. In a typical power plant, much of the energy of spent fuel is lost in the form of escaped heat. By using thermal energy that otherwise would escape into the atmosphere, cogeneration systems create energy savings that translate into financial savings and fewer greenhouse gas emissions (see image below for illustration of this process). Furthermore, by generating energy closer to consumption points, it not only reduces costs but helps manage energy transportation and distribution better—providing more reliable and higher quality energy in many cases. Cogeneration systems can reduce energy costs up to 50 percent, improve power quality and efficiency by reducing losses by up to 50 percent, and result in a power supply that is environmentally friendly as fuel use is potentially cut in half.

As a major player in global oil production, Mexico has a great opportunity to benefit from cogeneration procedures. Mexico's oil and natural gas production – centralized in the state-owned petroleum company, PEMEX—creates cogeneration potential of more than 10,000 MW. Increasing environmental concerns have led to the incorporation of cogeneration as an element in PEMEX's plans to reduce carbon emissions. These projects fall under Mexico's National Development Plan and the Energy Sector Program¹ that are committed to make more efficient use of fossil fuels, mitigate their environmental impact, and develop and promote renewable energies. PEMEX has begun to realize large scale, highly efficient and reliable electric energy production through cogeneration. Furthermore, it has the potential to generate employment and new areas of investment.

¹ http://www.sener.gob.mx/res/PE_y_DT/pub/2012/ENE_2012_2026.pdf



Source: "Combined Heat and Power: Basic Information." EPA.
<<http://www.epa.gov/chp/basic/index.html>>

Market Data

Below is a timeline of the development of cogeneration in Mexico.

- 1975-1992: The Public Electricity Service Law (Ley del Servicio Público de Energía Eléctrica - LSPEE) dates from 1975, but underwent a significant reform in 1992 that allowed the participation of the private sector in cogeneration.
- 2006: The Cogeneration Amendment (Reforma de Cogeneración) was published to allow PEMEX to develop new cogeneration projects by itself and in collaboration with CFE.
- 2007-2012: In accordance with the National Development Plan and the Energy Sector Program, PEMEX outlined its electricity optimization strategy, which focused on self-supply of electric power, improved efficiency, and lower operation costs.
- 2008: Project "Nuevo Pemex" is launched with two objectives: self-supply of electric power and to transfer of surplus electric power to the national electric power system.
- 2008: The Renewable Energy Development and Financing for Energy Transition Law (Ley para el Aprovechamiento de las Energías Renovables y el Financiamiento de la Transición Energética - LAERFTE) is passed, giving cogeneration the same preferential treatment as renewable energies.
- 2009-2012: Plant development begins at Nuevo Pemex.
- 2009-2013: Bid process and development begins at PEMEX in Salamanca.

Renewable Energy Incentives that apply to cogeneration:

The Mexican government has also begun incentivizing cogeneration by treating it as a renewable energy source. Pollution control equipment or equipment for research and technological development in renewable energy are exempt from general import and export taxes. Mexican policy outlines accelerated depreciation for investments in renewable energy, allowing 100% depreciation on investment "for machinery and equipment for generating energy from renewable sources." Further opportunities for funding of renewable energy projects can be found through the Mexican Secretary of Energy (SENER).² Incentives and funding programs

² <http://www.renovables.gob.mx/renovables/portal/Default.aspx?id=1660>

for cogeneration projects can also be found through the Mexican Secretariat of the Environment and Natural Resources, SEMARNAT.³

Best Prospects and Key Suppliers

The industries with significant cogeneration potential include petroleum, petrochemicals, chemicals, sugar mills, and paper and pulp.

The technology supplied to industries incorporating cogeneration plants into their business is specialized and is supplied from private sector contractors. Cogeneration systems require different equipment, depending on their design. Using as reference the Catalog of CPH (Combined Heat and Power) Technologies of the US Environmental Protection Agency⁴, we can determine that in cogeneration projects there are opportunities for companies offering CPH systems and individual components (heat engines, generator, heat recovery unit, electrical interconnection, etc). Manufacturers of CPH Technologies, such as gas turbines, microturbines, spark ignition (SI) reciprocating engines, compression ignition (CI) reciprocating engines (dual fuel pilot ignitions), steam turbines and fuel cells, are also best prospects for this market.

Cogeneration projects also create a market for associated services including installation, engineering, automation and control, operation, maintenance, and construction services.

The companies listed below are examples of international corporations currently involved in or working on current cogeneration projects and technology in the Mexican market.

- (1) Abengoa, Spain
- (2) General Electric, U.S.
- (3) Iberdrola, Spain
- (4) Rolls Royce, England
- (5) Siemens Power Generation, Inc, U.S./Germany
- (6) Wärtsilä, Finland

Prospective Buyers

These are companies that received cogeneration permits from the Mexican Energy Regulatory Commission (Comisión Reguladora de Energía - CRE) in 2011-2012 and, therefore, are prospective buyers of products and services associated with cogeneration.

- (1) Atlatec, S.A. de C.V.
- (2) Asociación de Colonos del Fraccionamiento Valle Real, A.C.
- (3) Bio Pappel, S.A.B. de C.V.
- (4) Destilería del Golfo, S.A. de C.V.
- (5) Energía MK KF, S.A. de C.V.
- (6) Grupo Celanese, S. de R.L. de C.V.
- (7) Huixtla Energía, S.A. de C.V.
- (8) Minera y Metalúrgica del Boleo, S.A. de C.V.
- (9) Pemex-Gas y Petroquímica Básica
- (10) Sigma Alimentos Centro, S.A. de C.V.
- (11) Tlalnepantla Cogeneración, S.A.P.I. de C.V.

³<http://www.semarnat.gob.mx/informacionambiental/publicaciones/Publicaciones/Guia%20de%20Programas%20de%20Fomento%20de%20Energ%C3%ADas%20Renovables.pdf>

⁴<http://www.epa.gov/chp/basic/catalog.html>

Market Entry

Regulations for power generation, transformation, distribution, and supply are outlined in the Public Electricity Service Law (Ley del Servicio Público de Energía Eléctrica – LSPEE).⁵ Since the law's amendment in 1992, the private sector has been able to participate in electric generation, including cogeneration, self-supply, independent power producer, small producer, importation and exportation of electricity. Private sector involvement and capacity in electric generation has been increasing significantly during the last few years and it is projected to increase in the following years. For private sector participation, the appropriate permits and licenses need to be acquired from Mexican Energy Regulatory Commission (Comisión Reguladora de Energía - CRE). Contact the U.S. Commercial Service in Mexico for more information.

Market Issues & Obstacles

There are few significant barriers for the development of this market in Mexico. An initial high cost for cogeneration facilities is the main financial barrier. The regulatory framework and lack of understanding of cogeneration on behalf of the users may also affect development in this market. It is recommended that organizations contracting other companies to install cogeneration systems maintain a technical team with the necessary understanding and knowledge of cogeneration projects and technology to assure optimal utilization of the plant.

Trade Events

Green Expo 2012, September 25-27, Mexico DF, Mexico. <http://www.thegreenexpo.com.mx>

Power Gen International 2012, December 11-13, Orlando, Florida. <http://www.power-gen.com>

The Commercial Service Mexico recruits U.S. companies to participate in Certified Trade Shows in Mexico as well as Mexican buyer delegations to participate in leading trade shows in the United States. If you would like to learn more, please contact Claudia Salgado, Commercial Specialist of the Energy Sector, at Claudia.Salgado@trade.gov.

Resources & Contacts

Mexican Secretary of Energy (SENER) <http://www.sener.gob.mx>

Mexican Secretary of Energy (SENER) - Renewable Energy. <http://www.renovables.gob.mx/>

Mexican Energy Regulatory Commission (CRE). <http://www.cre.gob.mx/>

Mexican Federal Electricity Commission (CFE). <http://www.cfe.gob.mx/>

For More Information

The U.S. Commercial Service in Mexico City, Mexico can be contacted via e-mail at: Claudia.Salgado@trade.gov; Phone: 52-55-5140-2639; Fax: 52-55-55-661115; or visit our website: <http://export.gov/mexico>

⁵ <http://www.renovables.gob.mx/portal/Default.aspx?id=1658&lang=1>

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Comments and Suggestions: We welcome your comments and suggestions regarding this market research. You can e-mail us your comments/suggestions to: Customer.Care@mail.doc.gov. Please include the name of the applicable market research in your e-mail. We greatly appreciate your feedback.

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