Alstom in the United States

Over 100 years of energy and rail innovation

Key U.S. Locations & Activities

Corporate
Washington, D.C. – U.S. Corporate Headquarters

Power Generation
Amarillo, TX – Wind turbine manufacturing
Chattanooga, TN – Turbine & boiler manufacturing
Concordia, KS – Air preheater manufacturing
Danville, IL – Turbine service center
Denver, CO – Thermal services center
Erlanger, KY – Boiler service center
Harrisburg, PA – Boiler service center
Houston, TX – Boiler service center
Jupiter, FL – PS&M, O&G gas turbine services
Knoxville, TN – Environmental control systems
Littleton, CO – Environmental & manufacturing, Hydra U.S. headquarters
Melville, NY – Sigma Energy Solutions
Monroe, WA – Hydro controls & governors, engineering
Richmond, VA – Turbine generator engineering, manufacturing, workshop
Schofield, WI – Hydro controls & governors, engineering
Suwanee, GA – Boiler service center
Tyler, TX – Boiler service center
Wellsfield, NV – Air preheater engineering & manufacturing
Wexford, PA – Energy recovery engineering & manufacturing
Windor, CT – Boiler engineering, manufacturing, R&D, NAM gas business headquarters

Rail Transport
Naperville, IL – Train life services
Hornell, NY – Rolling stock manufacturing
Mare Island, CA – Train life services
New Castle, DE – Train life services
New York City – U.S. headquarters
Rochester, NY – Transportation information solutions

Power Transmission
Canton, OH – Grid engineering procurement & construction services
Charleroi, PA – High voltage switchgear, disconnect switches
Coca, FL – Grid service center
Huntsville, AL – Oil & Gas Sada Systems
Philadelphia, PA – U.S. headquarters & power electronics
Phoenix, AZ – Digital instrument transformers
Redmond, WA – Worldwide center of excellence for network management solutions
Stow, OH – Power transformer services
Waynesboro, GA – Instrument transformers
San Jose, CA DBBizNet & solution consulting

Corporate Social Responsibility

Alstom is committed to positively impacting the communities where we operate and encourages our U.S. employees to volunteer within the community and support opportunities for the company to extend support. Our charitable and community outreach activities have benefited a number of organizations to date. These include but are not limited to:

- Boys & Girls Club of Greater Washington
- Special Olympics of Connecticut
- Everybody Wins USA
- Boys & Girls Clubs of Metro Richmond

In 2013, the Alstom Foundation launched a project to support several educational initiatives located in Florida. Working closely with a local non-profit organization ‘iAutism Project of Palm Beach County’, a program has been created to help children with autism, involving a community of Alstom volunteers and incorporating several sustainable concepts. The program will provide environmental learning centers, a hybrid vehicle used to transport students, a skilled job coach and a large level of employee involvement for the long term. A sister program has also led to a hydroponic garden being built at the neighboring elementary school. Alstom also is working to reduce the environmental impact of our U.S. operations and has pledged to reduce SF6 emissions 3% per year, lower energy and water consumption 20%, and increase waste recycling by 80% - all by 2015. Many of these goals were realized in the new Alstom Power manufacturing facility in Chattanooga, TN and will continue playing a critical role in our U.S. activities.

Overview & History

Since its founding 1912 as Combustion Engineering, Alstom’s U.S. business has become a leading supplier of innovative and environmentally-friendly technologies for power generation, power transmission and rail transportation. Alstom has delivered critical equipment for 1 of every 2 U.S. power plants, manufactured over 7,000 rail vehicles, and installed technology that manages 40% of the country’s electrical grid.

Key milestones in our U.S. history include:
1912: Alstom’s U.S. Boiler manufacturing company (formerly Combustion Engineering) is formed.
1950: The highest temperature and pressure supercritical boiler ever designed is supplied by Alstom at Philadelphia Electric’s Edddystone Station.
1972: The world’s largest steam turbine generating set is delivered by Alstom to a Tennessee Valley Authority (TVA) plant in Cumberland, Tennessee.
2009: Alstom and American Electric Power (AEP) unveil the world’s first Carbon Capture and Storage (CCS) project on a coal-fired power plant in New Haven, WV.
2010: Alstom completes delivery of over 1,000 R160 metro cars for New York City Transit (NYCT).
2012: Alstom ships the first ever GT24 gas turbine manufactured by its state-of-the-art facility in Chattanooga, TN.
2013: Unveiling of the Citadis Spirit light rail vehicle, which is custom-built to meet the needs of North American cities.
2013: Launch of a U.S. Corporate Headquarters in Melville, NY.

7,500 + permanent employees in 46 states and the District of Columbia
10,000 + employees including contract workers

Technology, products and services for:
- Power Generation
- Rail Transportation
- Energy Transmission
Alstom in the United States
Over 100 years of energy and rail innovation

Activity Overviews

Power Generation
Alstom equipment can be found in approximately half of all U.S. power plants. The company offers advanced technology for coal and gas-fired plants, a complete range of environmental control systems, conventional islands for nuclear plants, and renewable energy solutions for a wide range of wind, solar, and geothermal markets. To meet the clean power challenge, Alstom believes in a comprehensive strategy consisting of CO2-free technologies, increased production efficiency for existing plants, and Carbon Capture & Storage (CCS) technologies. Alstom ensures that plants of any type operate efficiently and reliably by offering a range of operation and maintenance solutions, including retrofit and rehabilitation. Alstom also offers a complete range of technologies for capturing traditional air pollutants such as Hg, NOx and SOx.

Alstom’s key Power customers in the U.S. include:
- American Electric Power (AEP)
- Ameren
- Dominion
- Duke Energy
- Tennessee Valley Authority
- U.S. Army Corps of Engineers

Rail Transportation
Alstom has manufactured or modernized over 7,000 rail vehicles and operates the largest rail manufacturing facility in the U.S. Among our offerings is a full portfolio of turnkey products and services for the U.S. rail market - from rolling stock to vital signaling and infrastructure systems including switch machines, relays, track circuits, interlocking products, signals, onboard equipment and the Positive Train Control (PTC) family of products supported by our state-of-the-art manufacturing center in Rochester, NY. Transport also provides service and maintenance support for existing fleets and rail lines. Alstom is a proud partner of the country’s only high-speed rail line - Amtrak’s Acela – which operates in the Northeast corridor.

Alstom’s key Transport customers in the U.S. include:
- Amtrak
- Massachusetts Bay Transit Authority (MBTA)
- Port Authority Transit Corporation (PATH)
- Metropolitan Atlanta Rapid Transit Authority (MARTA)
- New Jersey Transit (NJT)
- New York City Transit (NYCT)
- Washington (D.C.) Metropolitan Area Transit Authority (WMATA)

Power Transmission
Alstom Grid is the number 1 U.S. supplier of advanced energy management software and systems, with solutions operating today that control 40 percent of all power flowing through the U.S. energy grid, and Market Management Software managing 50 percent of the country’s 7 energy markets. Alstom’s world-class High Voltage Direct Current (HVDC) and Flexible AC Transmission Systems (FACTS) solutions provide the safest, most secure and most efficient way of transmitting large quantities of electricity over very long distances, with a focus on power quality, reliability, and the integration of renewable energy sources.

Alstom’s key Grid customers in the U.S. include:
- American Electric Power (AEP)
- Duke Energy
- Northeast Utilities
- PacificCorp
- PJM Interconnection
- Xcel Energy

U.S. Power Generation Projects
Nuclear Steam Turbine Retrofit
Dominion Louisa County, VA - Alstom completed a steam turbine upgrade at Dominion Power’s two-unit, 1,863 MW North Anna Power Station in Louisa County, Va. The retrofits work on units 1 and 2 resulted in a power output increase of 60 MW per unit.

New HRSG’s: Brunswick & Warren Country, VA - In 2012, Alstom was selected to provide three state-of-the-art heat recovery steam generators (HRSGs) for Dominion Virginia Power’s new 1,300 MW Brunswick County Power Station. The contract will be the largest HRSG’s supplied by Alstom for the NAM market and be coupled with MH361G gas turbines. Alstom is also supplying Dominion with three HRSG’s coupled with MH401G gas turbines at its Warren County Power Station.

NID Emission Control System Indiana County, PA - In 2012, Alstom was awarded at $95MUSD contract to supply NID Dry Flue Gas Desulphurization (DFGD) Systems for two 660 MW coal-fired units at the Homer City Generating Station in Pennsylvania. The systems will be supplied by Alstom’s Knoxville based Environmental Control Systems (ECS) team and will help significantly reduce plant emissions.

U.S. Rail Transportation Projects
Fuel Modernizations: Massachusetts Bay Transit Authority (MBTA): In 2012, Boston’s Massachusetts Bay Transportation Authority (MBTA) awarded Alstom transport two rail fleet modernization contracts - the first includes the full modernization of 86 articulated light-rail vehicles operating on MBTA’s Green Line. The second project will retrofit 74 bi-level MBTA commuter rail cars.

Train Control Upgrade: Metropolitan Atlanta Rapid Transit Authority (MARTA): In 2011 MARTA, Metropolitan Atlanta Rapid Transit Authority awarded a $110 MUSD contract to Alstom as part of the agencies efforts overhaul its aging train control and rail safety systems.

Rolling Stock: New York City Transit – In partnership with Kawasaki, Alstom produced new rail car units for the New York City subway system. This single purchase of new rolling stock, valued at just under $1 billion, is the largest in the history of the Metropolitan Transit Authority (MTA).

U.S. Grid Projects
Alaska Intertie® Transmission Line Modernization: In April 2012, Alstom won a contract to fully modernize three outdated Static VAR Compensators (SVCs) on the critically-important 170-mile Alaska Intertie® transmission line. Alstom is replacing the core power electronics and thyristors, installing new digital controls and user interfaces, and upgrading the existing cooling systems. The modernized units are scheduled to be operational by December of 2013.

Smart Grid Demonstration Project: Alstom was selected to provide its e-terramark platform to the U.S. Department of Energy’s Smart Grid Demonstration project. The project will evaluate how smart grid technologies can help MECO reduce peak demand, improve service quality, inform consumer energy use decisions, and integrate renewable energy. Alstom’s e-terra platform will integrate information from the smart grid network to improve monitoring and control of MECO’s distribution system and distributed energy resources (DER).

PJM Interconnection Upgrade: In 2012, Alstom implemented a new market management software platform enabling the PJM Interconnection to more efficiently deploy fast-ramping energy resources in response to surging demand for electricity. This installation of Alstom’s upgraded e-terramark platform made PJM compliant with Federal Energy Regulatory Commission (FERC) Order 755, which establishes a performance-based...
Alstom in the United States

Over 100 years of energy and rail innovation

Activity Overviews

Power Generation
Alstom equipment can be found in approximately half of all U.S. power plants. The company offers advanced technology for coal and gas-fired plants, a complete range of environmental control systems, conventional islands for nuclear plants, and renewable energy solutions for the wind, solar, and geothermal markets. To meet the clean power challenge, Alstom believes in a comprehensive strategy consisting of CO2-free technologies, increased production efficiency for existing plants, and Carbon Capture & Storage (CCS) technologies. Alstom ensures that plants of any type operate efficiently and reliably by offering a range of operation and maintenance solutions, including retrofit and rehabilitation. Alstom also offers a complete range of technologies for capturing traditional air pollutants such as Hg, NOx and SOx.

Alstom’s key Power customers in the U.S. include:
- American Electric Power (AEP)
- Ameren
- Dominion
- Duke Energy
- Tennessee Valley Authority
- U.S. Army Corps of Engineers

Rail Transportation
Alstom has manufactured or modernized over 7,000 rail vehicles and operates the largest rail manufacturing facility in the U.S. Our company offers a full portfolio of turnkey products and services for the U.S. rail market - from rolling stock to vital signaling and infrastructure systems including switch machines, relays, track circuits, interlocking products, signals, onboard equipment and the Positive Train Control (PTC) family of products supported by our state-of-the-art manufacturing center in Rochester, NY. Transport also provides service and maintenance support for existing fleets and rail lines. Alstom is a proud partner of the country’s only high-speed rail line - Amtrak’s Acela – which operates in the Northeast corridor.

Alstom’s key Transport customers in the U.S. include:
- Amtrak
- Massachusetts Bay Transit Authority (MBTA)
- Port Authority Transit Corporation (PATCO)
- Metropolitan Atlanta Rapid Transit Authority (MARTA)
- New Jersey Transit (NJT)
- New York City Transit (NYCT)
- Washington (D.C.) Metropolitan Area Transit Authority (WMATA)

Power Transmission
Alstom Grid is the number 1 U.S. supplier of advanced energy management software and systems, with solutions operating today that control 40 percent of all power flowing through the U.S. energy grid, and Market Management Software managing 40 percent of all power flowing through the U.S. energy grid, and Market Management Software managing 5 of the country’s 7 energy markets. Alstom’s world-class High Voltage Direct Current (HVDC) and Flexible AC Transmission Systems control 40 percent of all power flowing through the U.S. energy grid, and Market Management Software managing 5 of the country’s 7 energy markets. Alstom’s world-class High Voltage Direct Current (HVDC) and Flexible AC Transmission Systems control 40 percent of all power flowing through the U.S. energy grid, and Market Management Software managing 5 of the country’s 7 energy markets. Alstom also supplying Dominon with three HRSG's supplied with MH60G gas turbines. Alstom is also supplying Dominon with three HRSG's supplied with MH60G gas turbines. Alstom is also supplying Dominon with three HRSG's supplied with MH60G gas turbines. Alstom is also supplying Dominon with three HRSG's supplied with MH60G gas turbines.

Alstom's key Grid customers in the U.S. include:
- American Electric Power (AEP)
- Duke Energy
- Northeast Utilities
- PacificCorp
- PJM Interconnection
- Xcel Energy

Nuclear Steam Turbine Retrofit Dominion Louisa County, VA - Alstom completed a steam turbine retrofit at Dominion Power’s two-unit, 1,863 MW North Anna Power Station in Louisa County, Va. The retrofits work on units 1 and 2 resulted in a power output capacity increase of 60 MW per unit.

New HRSG’s: Brunswick & Warren Country, VA - In 2012, Alstom was selected to provide three state-of-the-art heat recovery steam generators (HRSGs) for Dominion Virginia Power’s new 1,300 MW Brunswick County Power Station. The contract will be the largest HRSG’s supplied by Alstom for the NAM market and be coupled with MH60G gas turbines. Alstom is also supplying Dominon with three HRSG’s coupled with MH60G gas turbines.

NID Emission Control System Indiana County, PA - In 2012, Alstom was awarded at $95MUSD contract to supply NID Dry Flue Gas Desulfurization (DFGD) Systems for two 660 MW coal-fired units at the Homer City Generating Station in Pennsylvania. The systems will be supplied by Alstom’s Knoxvile based Environmental Control Systems (ECS) team and will help significantly reduce plant emissions.

U.S. Grid Projects

Alaska InterTie® Transmission Line Modernization - In April 2012, Alstom won a contract to fully modernize three outdated Static VAR Compensators (SVCs) on the critically important 170-mile Alaska InterTie transmission line. Alstom is replacing the core power electronics and thyristors, installing new digital controls and user interfaces, and upgrading the existing cooling systems. The modernized units are scheduled to be operational by December of 2013.

Smart Grid Demonstration Project - Alstom was selected to provide its e-terramarket platform for two demonstration projects, one each in New York City and the New Jersey Turnpike. Alstom’s e-terramarket platform will enable electric utilities and retail marketers to optimize the use of renewable energy resources.

PJM Interconnection Upgrade - In 2012, Alstom implemented a new market management software system enabling the PJM Interconnection to more efficiently deploy fast-ramping energy resources in response to surging demand for electricity. This installation of Alstom’s upgraded e-terramarket platform made PJM compliant with Federal Energy Regulatory Commission (FERC) Order 755, which establishes a performance-based...
Alstom in the United States

Over 100 years of energy and rail innovation

Key U.S. Locations & Activities

<table>
<thead>
<tr>
<th>Corporate</th>
<th>Power Generation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Washington, D.C. – U.S. Corporate Headquarters</td>
<td>Amarillo, TX – Wind turbine manufacturing</td>
</tr>
<tr>
<td></td>
<td>Chattanooga, TN – Turbine &amp; boiler manufacturing</td>
</tr>
<tr>
<td></td>
<td>Concordia, KS – Air preheater manufacturing</td>
</tr>
<tr>
<td></td>
<td>Danville, IL – Turbine service center</td>
</tr>
<tr>
<td></td>
<td>Denver, CO – Thermal services center</td>
</tr>
<tr>
<td></td>
<td>Erlanger, KY – Boiler service center</td>
</tr>
<tr>
<td></td>
<td>Harrisonburg, PA – Boiler service center</td>
</tr>
<tr>
<td></td>
<td>Houston, TX – Boiler service center</td>
</tr>
<tr>
<td></td>
<td>Jupiter, FL – PSIM, GEM gas turbine services</td>
</tr>
<tr>
<td></td>
<td>Knoxville, TN – Environmental control systems</td>
</tr>
<tr>
<td></td>
<td>Littleton, CO – Environmental engineering &amp; manufacturing, Hydro U.S. headquarters</td>
</tr>
<tr>
<td></td>
<td>Mehville, NY – Sigma Energy Solutions</td>
</tr>
<tr>
<td></td>
<td>Monroe, WA – Hydro controls &amp; governors, engineering</td>
</tr>
<tr>
<td></td>
<td>Richmond, VA – Turbine generator engineering, manufacturing, workshop</td>
</tr>
<tr>
<td></td>
<td>Schofield, WI – Hydro controls &amp; governors, engineering</td>
</tr>
<tr>
<td></td>
<td>Suwanee, GA – Boiler service center</td>
</tr>
<tr>
<td></td>
<td>Tyler, TX – Boiler service center</td>
</tr>
<tr>
<td></td>
<td>Wellsville, NY – Air preheater engineering &amp; manufacturing</td>
</tr>
<tr>
<td></td>
<td>Wexford, PA – Energy recovery engineering &amp; manufacturing</td>
</tr>
<tr>
<td></td>
<td>Windsor, CT – Boiler engineer, manufacturing, R&amp;D, NAM gas business headquarters</td>
</tr>
</tbody>
</table>

Mail: [link]

Over 100 years of energy and rail innovation

Alstom in the United States

Over 100 years of energy and rail innovation

Alstom Innovation. Coast-to-Coast

7,500 + permanent employees in 46 states and the District of Columbia
10,000 + employees including contract workers

Corporate Social Responsibility

Alstom is committed to positively impacting the communities where we operate and encourages our U.S. employees to volunteer within the community and support opportunities for the company to extend support. Our charitable and community outreach activities have benefited a number of organizations to date. These include but are not limited to:

- Boys & Girls Club of Greater Washington
- Special Olympics of Connecticut
- Everybody Winst USA
- Boys & Girls Clubs of Metro Richmond

In 2013, the Alstom Foundation launched a project to support several educational initiatives located in Florida. Working closely with a local non-profit organization ‘Autism Project of Palm Beach County’, a program has been created to help children with autism, involving a community of Alstom volunteers and incorporating several sustainable concepts.

Overview & History

Since its founding 1912 as Combustion Engineering, Alstom’s U.S. business has become a leading supplier of innovative and environmentally-friendly technologies for power generation, power transmission and rail transportation. Alstom has delivered critical equipment for 1 of every 2 U.S. power plants, manufactured over 7,000 rail vehicles, and installed technology that manages 40% of the country’s electrical grid.

Key milestones in our U.S. history include:

1912: Alstom’s U.S. Boiler manufacturing company (formerly Combustion Engineering) is formed.
1960: The highest temperature and pressure supercritical boiler ever designed is supplied by Alstom at Philadelphia Electric’s Eddystone Station.
1972: The world’s largest steam turbine generating set is delivered by Alstom to a Tennessee Valley Authority (TVA) plant in Cumberland, Tennessee.
2009: Alstom and American Electric Power (AEP) unveil the world’s first Carbon Capture and Storage (CCS) project on a coal-fired power plant in New Haven, WV.
2010: Alstom inaugurates a new, $300MUSG turbomachinery manufacturing facility in Chattanooga, TN, that will produce the company’s ARABELLE nuclear steam turbines, the largest of their kind in the world.
2011: Alstom acquires Areva’s Transmission activities to form third sector, Alstom Grid, and inaugurates a new disconnect switch factory in Charleroi, PA.
2011: Alstom completes delivery of over 1,000 R160 metro cars for New York City Transit (NYCT).
2012: Alstom ships the first ever GT24 gas turbine manufactured by its state-of-the-art facility in Chattanooga, TN.
2013: Unveiling of the Citadis Spirit light rail vehicle, which is custom built to meet the needs of North American cities.
2013: Launch of a Condition Based Maintenance Training Center at the Alstom Transport facility in Delaware.

Alstom Power’s state-of-the-art Systems Manufacturing facility - Chattanooga, TN

© Alstom Feb. 2014 - Page 1