Fleet360* Plant Services Solutions

CUSTOMER SUCCESS STORIES
The New Power Services

Power Services delivers Fleet360 total plant solutions, regardless of configuration or asset mix, across your operational life cycle. While delivering tailored solutions for all major power plant components, our broadened understanding of system-wide operation is applied to unleash better performance, lower risk and realize greater value across your power generation operations and assets. Power Services brings GE’s digital industrial culture to life for you by blending advanced hardware and software technologies to help achieve productive outcomes for both your operational and business goals.

Our team brings 230 years of collective experience across 90+ OEM brands to customize solutions around:

- Planning and installation
- Maintenance and repairs
- Advanced technology upgrades
- Outcome-based multi-year agreements
- Scalable plant-level solutions
- Plant recommissioning/relocations

FLEET360 – Steam Power Plant Customer Success Stories

- Full steam ahead at steel factory plant in South Korea
- First Steam Turbine-generator upgrade in Turkey delivers more power for the future
- GE helps Veolia turn up the heat in Poland
- Boiler solution improves air quality in Czech Republic

FLEET360 – Gas Power Plant Customer Success Stories

-Boosting reliability of big plants with little robots
-GE solution delivers a more efficient plant in California
-Blend of hardware and software breathes new life into Italian plant
-Rhode Island facility boosts efficiency with GE’s Enhanced Steam Path
FLEET360 – Steam Power Plant
Customer Success Stories

- Full steam ahead at steel factory plant in South Korea
- First Steam Turbine-generator upgrade in Turkey delivers more power for the future
- GE helps Veolia turn up the heat in Poland
- Boiler solution improves air quality in Czech Republic

FLEET360 – Gas Power Plant
Customer Success Stories

- Boosting reliability of big plants with little robots
- GE solution delivers a more efficient plant in California
- Blend of hardware and software breathes new life into Italian plant
- Rhode Island facility boosts efficiency with GE’s Enhanced Steam Path
**Customer Need**

POSCO, one of the world’s leading steel-making companies is continually challenged to keep pace with a fiercely competitive industry where efficiency is key. This became increasingly difficult at POSCO’s Pohang Works steel factory in South Korea, operating with 50-year old Toshiba steam turbines. POSCO needed to modernize this equipment while achieving important production targets to maintain its competitive position.

**Solution**

GE collaborated with POSCO to develop a solution blending hardware upgrades with new digital technologies. Additionally, the team tapped into the China-based Mobile Machine Shop to deliver new parts to the site faster.

**Benefits**

This package of solutions increased Pohang’s output ~78 megawatts (MW) while achieving a 3 percent increase in steam turbine efficiency. The facility’s supply of process steam also increased from 40 tons per hour to 70 tons per hour—nearly doubling the ability to generate process steam used for steel production.

“The performance gains from these upgrades are significant.”
– Mr. Kwan-Soo Song, group leader of the head office of finance and investment division of POSCO.

- Output increased by ~78 megawatts (MW)
- Steam turbine efficiency increased 3 percent
- Process steam expanded from 40 to 70 tons per hour
First steam turbine-generator upgrade in Turkey delivers more power for the future

**Customer Need**
Turkey’s electricity generating capacity is expected to grow more than 60 percent by 2023† to meet increasing demand. Private power producer Bereket Enerji has launched a modernization initiative at the Yatagan steam power plant as part of an effort to satisfy the country’s anticipated 6 percent annual energy demand growth.

**Solution**
GE is helping Bereket Enerji support Turkey’s growing energy demand with upgrades to cross-fleet equipment including Zamech steam turbines, and replacements for Dolmel generators as well as static excitation systems.

**Benefits**
This modernization project is being implemented during a previously planned outage and will deliver significant operational improvements for Bereket Enerji—including an increase in component availability by 28 percent, extending the facility’s operating life by an additional 15 years and increasing output by more than 20 percent.

“With Turkey’s energy demands continuing to grow, we are pleased to work with GE to increase our output and long-term reliability.”
− Ali Yağlı, co-owner and co-founder of Bereket Group.

† Investment Support and Promotion Agency of Turkey.
GE helps Veolia turn up the heat in Poland

Customer Need
Recognizing the need to strengthen its position as the largest private operator of district heating networks—and third-largest cogeneration plant in Poland—Veolia turned to GE to improve the output and flexibility of their operations.

Solution
Putting its cross-fleet servicing capabilities to work across numerous OEM brands, GE will modernize three Zamech-made steam turbines at the Veolia Energia Poznań ZEC SA, a 275 megawatts (MW) district-heating plant†.

Benefits
GE’s technologies are anticipated to boost the plant’s turbine efficiency by up to 6 percent and to increase its output by up to 6 megawatts (MW), with the extra power being delivered to the local grid. Additionally, to improve operational flexibility during periods when there is no demand for electricity, Veolia will be able to divert the power for district heating water only.

“This project will help the station operate more efficiently, as we want to strengthen our position in a very competitive environment.”
– Jan Pic, member of the board and operational director of Veolia Energia Poznań ZEC.

• Increase of 6 megawatts (MW)
• 6% steam turbine efficiency increase

† Polish Information and Foreign Investment Agency.
Boiler optimization solution improves air quality in Czech Republic

**Customer Need**
Amid evolving environmental regulations and growing air quality concerns, ČEZ Group—the largest utility in Central and Eastern Europe—demonstrated its commitment to improving emissions through an advanced boiler modernization project involving two steam power plants in the Czech Republic.

**Solution**
GE applied primary and secondary NOx reduction measures on the boilers in 10 cross-fleet units—representing a combined 1,130 megawatts (MW) of electricity generating capacity at ČEZ’s Počerady and ČEZ subsidiary Energotrans a. s. ‘Mělník I steam power plants.

**Benefits**
The upgrade solutions reduced the power plants’ nitrogen oxide (NOx) emissions by 60 percent, enabling the stations to supply power and heat to households and industries in compliance with European Union emissions standards.

“Refurbishing the Mělník I power plant guarantees Prague, Neratovice and Mělník reliable, long-term deliveries of heat generated in an environmentally sound manner.”
– Miroslav Krpec, CEO of Energotrans.

- NOx emissions reduced by 60 percent
- Maintains compliance with European Union’s Industrial Emission Directive

“Each boiler passed demanding stress tests, and we are very satisfied with the performance of the new equipment and the project execution of the GE team.”
– Jiří Kulhánek, CEO of the Elektrárna Počerady, a. s. power plant of the ČEZ Group.
FLEET360 – Gas Power Plant
Customer Success Stories

- Full steam ahead at steel factory plant in South Korea
- First Steam Turbine-generator upgrade in Turkey delivers more power for the future
- GE helps Veolia turn up the heat in Poland
- Boiler solution improves air quality in Czech Republic

- Boosting reliability of big plants with little robots
- GE solution delivers a more efficient plant in California
- Blend of hardware and software breathes new life into Italian plant
- Rhode Island facility boosts efficiency with GE’s Enhanced Steam Path
Boosting reliability of big plants with little robots

**Customer Need**
Alinta Energy recognized the need to adopt a more predictive condition-based maintenance strategy across its fleet of seven power plants in Australia and New Zealand to reduce cost and improve reliability. Alinta’s historic practice with schedule-based maintenance programs became unsuitable in the region down under where plants needed quicker responsiveness to sporadic renewable generation.

**Solution**
Alinta selected GE’s Diagnostic Inspection Rotor In-Situ (DIRIS) and TurboRotoscan robotic solutions to inspect 19 fleet generators manufactured by GE, Alstom, Mitsubishi, and Brush. These technologies enable faster generator inspections without rotor removal, and can be done on virtually any OEM. Additionally, this process alerts the sites to potential generator issues in advance, allowing them to evaluate their options before operations are impacted.

**Benefits**
Alinta Energy’s deployment of these inspection solutions will reduce its fleet downtime up to 40%, while eliminating risks associated with rotor removal.

- GE’s robotic inspection solutions have been endorsed by Alinta’s insurance company as a best practice for gas-fired power plants
- Downtime reduction up to 40%

**WATCH VIDEO**
Generator Condition Assessment
GE solution delivers a more efficient plant in California

Customer Need
The Mountainview Generating Facility is a 1,054 megawatts (MW) power plant in Redlands, California. Due to the region’s increasing presence of renewable energy, the site needed more flexibility to respond faster to California’s ISO system demands. The state’s share of electricity from renewables has more than doubled to 25 percent today, up from 12 percent in 2008.

Solution
The Southern California Edison-owned plant collaborated with GE to develop a package solution that will reduce its start-up times, and lower emissions without using additional water. The combination of Advanced Gas Path (AGP), Dry Low NOx 2.6+ (DLN2.6+) combustion and OpFlex* software upgrades positioned Mountainview to help balance the region’s grid demands.

Benefits
SCE will benefit from a boost in its station’s output by about 48 megawatts (MW), an increase in efficiency and longer intervals between maintenance outages. By expanding Mountainview’s flexibility, the project will help SCE protect the grid from volatility, while also strengthening its competitive position in California.

“GE’s solution gives us a more efficient plant, creating greater value and savings for our customers.”
– Stuart R. Hemphill, senior vice president, Power Supply & Operational Services, Southern California Edison

- ~48 megawatts (MW) output increase
- Better efficiency
- Longer maintenance intervals

* Trademark of General Electric Company

---

Customer Success Stories

- Full steam ahead at steel factory plant in South Korea
- First Steam Turbine-generator upgrade in Turkey delivers more power for the future
- GE helps Veolia turn up the heat in Poland
- Boiler solution improves air quality in Czech Republic
- Boosting reliability of big plants with little robots
- Blend of hardware and software breathes new life into Italian plant
- Rhode Island facility boosts efficiency with GE’s Enhanced Steam Path

SOUTHERN CALIFORNIA
EDISON
An EDISON INTERNATIONAL® Company
Blend of hardware and software breathes new life into decommissioned Italian plant

**Customer Need**
A2A, Italy’s biggest multi-utility company, was forced to shut down its Chivasso facility three years ago due to limited response time to grid demands. While requiring more robust flexibility, A2A also needed to improve both the site’s efficiency and emissions to operate compliantly.

**Solution**
GE developed a hardware and software-blended solution that brought the Chivasso plant back to life. The package included Dry Low NOx 2.6+ combustion technology, OpFlex advanced controls, and Asset Performance Management—as well as Operations Optimization software technologies that positioned Chivasso to be economically viable during its most profitable hours of operation.

**Benefits**
Chivasso now benefits from a ramp up rate that is 2.5 times faster, and a 6% efficiency improvement at partial load, making the plant flexible and lean. Today, A2A consistently responds to the grid when it needs more power, simulating grid requirements in advance and reacting quickly in a profitable way.

“With GE’s hardware and software solutions, we can now react more quickly to market conditions while reducing operating costs and improving the plant’s environmental footprint.”

– Valerio Camerano, CEO of A2A.

• 2.5 times faster ramp rate
• 6 percent efficiency improvement
• Improved flexibility and response time
Rhode Island facility boosts efficiency with GE’s Enhanced Steam Path

**Customer Need**
At its 583 megawatts (MW) combined cycle plant in Johnson, Rhode Island, the Rhode Island State Energy Center faced operational issues when it encountered rotor vibration and other aging steam turbine concerns.

**Solution**
GE provided an Enhanced Steam Path (ESP) upgrade for the site’s D-11 steam turbine. This solution could be installed within a routine outage, allowing the plant to return to operation without any additional downtime. As part of the project the plant became one of the first units of its kind remotely monitored by GE’s Monitoring & Diagnostics (M&D) Center, allowing the site to foresee any arising issues.

**Benefits**
GE’s advanced technology increased the plant’s overall output capacity by about 26 megawatts (MW)—which will allow the site to increase average revenue by more than $4 million per year over the next five years.

- Average revenue increase of $4+ million a year for five years
- Output increased ~26 megawatts (MW)