

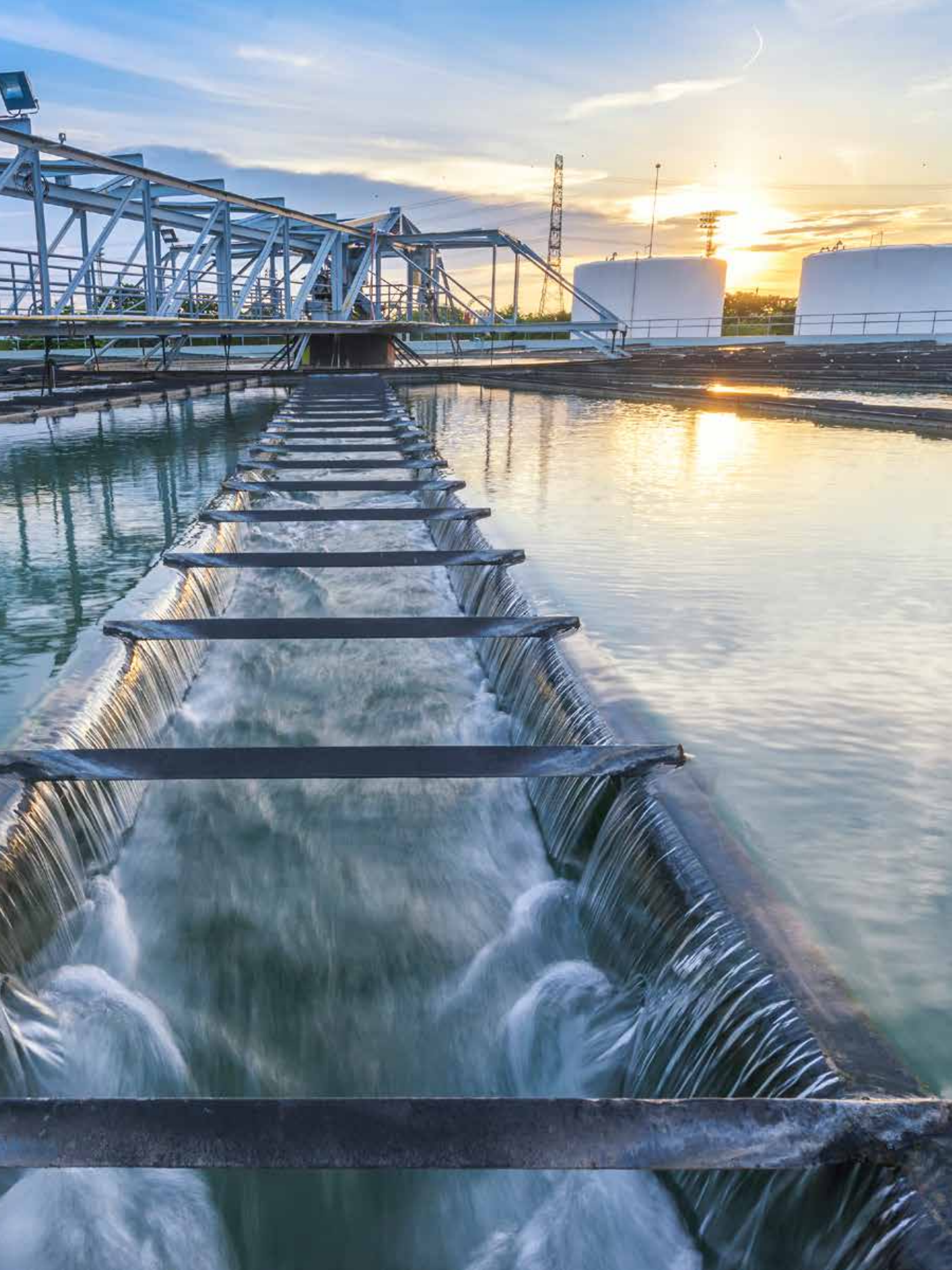
# WATER TREATMENT FACILITIES EXPERIENCE OVERVIEW

[Generac.com/Industrial](http://Generac.com/Industrial)



**GENERAC**<sup>®</sup>  
**INDUSTRIAL**  
**POWER**





# NO TASK IS MORE CRITICAL THAN KEEPING THE WATER FLOWING

The world's water supply is being taxed like never before, with human demand doubling every 20 years. With less excess capacity and tighter environmental regulations, every water treatment facility is even more critical. Whether the critical demand is due to the need to provide water to homes and businesses, or keep wastewater and run off properly treated, there has never been a time that water treatment is more important and in need of reliable power systems.

To prevent a public health crisis during power outages, it is important for water treatment facilities to meet EPA regulations and the tight water quality standards set by local and national ordinances at all times. Choosing the right back-up power system can be a daunting task, especially when the stakes are high, but that is why Generac is here to help.

Generac builds our diesel and natural gas standby generators to exceed the demands of your critical power needs. We offer a range of products and configurations to address smaller lift station and pump station applications through large plant systems. We work with you, by offering sizing and engineering assistance early in the project to help design the most cost effective and reliable solution that meets your treatment plant needs.



***Our Generac generators have worked flawlessly each time we have needed them. Knowing we can rely on the Generac units to supply power during a utility outage allows us to operate the treatment plant at near rated capacity, which prevents us from having to divert untreated waste to another plant in our system. Our operations team has confidence in Generac.***

*— Plant Operations Supervisor, Generac Customer*



# THE GENERAC INDUSTRIAL POWER ADVANTAGE

Generac did not become one of the largest generator manufacturers by accident. For six decades, Generac has driven innovation in the industry by considering generators from a unique perspective—yours. We evaluated the common problems involved in specifying, configuring, installing and maintaining generators, and created unique solutions to make Generac the best choice.

## Power Is All We Do – Power as an integrated system

- ▶ Generac Industrial Power only builds power systems.
- ▶ We engineer and manufacture each product family as an integrated system. Our systems with single-source responsibilities are under warranty for up to 10 years.

## Constantly Updating – Code compliant

- ▶ Generac provides reliable backup power while simultaneously maintaining compliance with the ever-changing regulations, codes, and industry standards.

## Natural Gas Technology Leader – Reliable, cleaner, smarter

- ▶ Generac designs and manufactures advanced gaseous-powered systems that start fast and respond quickly to block loads.

## Demand Response Ratings – The flexibility to unlock value

- ▶ All Generac Industrial Gas models are factory EPA certified for emergency and non-emergency use. They can be used as part of a utility demand response program and will never require expensive field emissions testing.

## Proven Power – Response, power, longevity

- ▶ Generac offers a wide variety of diesel-powered generator solutions from 10 kW to 3.25 MW.

## Peace of Mind – Redundancy for emergency

- ▶ We believe redundancy reduces the chance of failure, so we pioneered integrated paralleling to provide redundancy without penalty. Redundant generators reduce the chance for a total power outage for the same or less cost per kW as a single generator.

## Factory-Certified Technicians – Support you can trust

- ▶ Generac's team of engineers, and over 4,000 certified technicians, have worked in the field for decades and are there to support you from design stages of a project through the life of the product. The certification process requires each technician to master troubleshooting and servicing of the entire system to provide help in your darkest hour.

## FUEL FLEXIBILITY

When designing a standby generator system, there are several options when it comes to fuel – gaseous, diesel and bi-fuel. Diesel generators have traditionally dominated the water and wastewater sector, however, several options are emerging to address issues such as smart grids, grid reliability, and environmental regulations. Fuel prices, supply, and maintenance are key factors in lifecycle costs and reliability for power generation. It is important to know the reliability and flexibility of each option before specifying a fuel choice for the system.



### DIESEL

#### THE TRADITIONAL CHOICE FOR STANDBY POWER

- ▶ Code compliant
- ▶ Great option for when on-site fuel storage is required
- ▶ Efficient choice for high kW applications



### NATURAL GAS

#### THE SMARTEST FUEL CHOICE

- ▶ Clean, reliable and easy to maintain
- ▶ Great option for facilities that don't want the hassle and cost of on-site diesel
- ▶ Unmatched runtime



### BI-FUEL

#### THE ONLY TRUE BI-FUEL SOLUTION

- ▶ Combine the power of diesel with the reliability and clean operation of natural gas
- ▶ Runtime is four times longer on a given amount of diesel fuel

**REGARDLESS OF FUEL TYPE, ALL GENERAC INDUSTRIAL GENERATORS COMPLY WITH NFPA 110, TYPE 10, AND NFPA 70 STARTING REQUIREMENTS FOR STANDBY POWER SYSTEM APPLICATIONS**



# COST EFFECTIVE BACKUP POWER SOLUTIONS

**THAT ARE RELIABLE, FLEXIBLE, AND SCALABLE FOR SMALL REMOTE STATIONS,  
AND LARGE PLANT-WIDE SYSTEM BACK-UP**

## **SINGLE UNITS FROM SMALL TO LARGE**

Our generators have won us many awards, but the real benefits for the customer are reliability, durability and reduced maintenance. We have found that most large commercial and industrial applications have unique needs requiring custom specifications. This may include factors such as the electrical or fuel requirements of the generator – or the installation location – on an outside pad, indoors, parking garage or up on a rooftop. Generac's team of engineers and technicians have worked in the field for decades, so there isn't much we have not seen when it comes to design, configuring, and installing gen-sets. Our custom industry solutions combined with our experienced staff can help you get the job done right the first time.

- ▶ Small units for lift stations and water booster stations (typical 30 kW to 175 kW)
- ▶ Large units for the entire treatment plant (typical 500 kW to 3.25 MW)
- ▶ Low voltage options from 230VAC to 600VAC, and medium voltage options available
- ▶ On-board paralleling options for redundancy, fuel diversity, and easy expandability



# MODULAR POWER SYSTEMS (MPS)

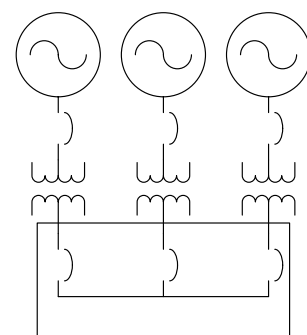
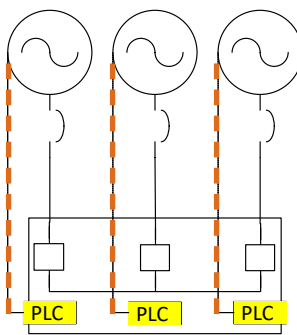
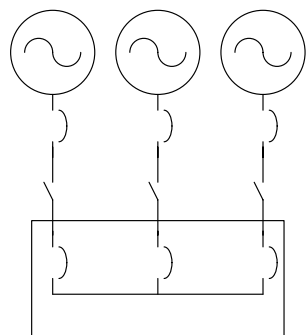
## TRULY INTEGRATED PARALLELING

For water and wastewater facilities, two or more paralleled generators are often superior to a single unit due to the unique requirements of the pump systems and the need for redundant backup. Generac has taken the complexity out of paralleling with our Modular Power systems (MPS). All synchronizing and paralleling controls are integrated on-board the generator; eliminating the need for external paralleling switchgear. In addition, MPS increases power system reliability. Generac's MPS can offer up to 99.999% reliability with multiple points of redundancy.

 <p>99.999% Reliability with Multiple Points of Redundancy</p>	 <p>On Engine Mounted System – No Control Room</p>	 <p>Scalability for Planned and Unplanned Growth</p>	 <p>More Cost Effective than Traditional Paralleling Solutions</p>	 <p>Loads are Protected During Servicing</p>	 <p>Short Lead Times with High Volume Production Engines</p>	 <p>Gen-sets can be in Multiple Locations within the Same Site</p>
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## INTEGRATED PARALLELING FLEXIBILITY

	Integrated Paralleling (MPS)	Traditional Switchgear	Medium Voltage MPS
<b>Description</b>	Standard generators with on-board paralleling on integrated gen-set, protection, relay function and PLC controls	Standard generators with off-board, custom PLC-based paralleling and controls	Integrated, on-board paralleling with step up through transformers to meet distribution voltages
<b>System Cost</b>	\$	\$\$\$	\$\$
<b>Paralleling Communications</b>	Internal - factory installed/tested	External - 30+ wires installed on site per gen	Internal - factory installed/tested
<b>Scalability</b>	Yes	Yes, but requires full system recommissioning	Yes
<b>System Controller</b>	Power Zone®	Custom PLC®	Power Zone®
<b>Applications</b>	Systems with a need for redundancy or increasing capacity	Systems with complicated load add/shed schemes	Large facilities or facilities with large motors (300HP+)



# CODE COMPLIANCE

## PERFORMANCE UNDER THE WORST CONDITIONS

Before production, we evaluate, analyze and test every component down to the tiniest detail. This includes:

- ▶ Full Spectrum Sound Testing
- ▶ Endurance Testing
- ▶ Torsional Analysis Testing
- ▶ Transient Response Testing
- ▶ Maximum Motor Testing
- ▶ Structural Soundness Testing

This stringent testing process and design verification ensures each engine meets every major industry standard, including UL2200, CSA and NFPA 110. Generac's gen-sets are also factory EPA certified for emergency and offer an option for EPA certified non-emergency/demand response. This EPA certification eliminates the need for costly emission tests in the field.

# CONNECT AND COLLECT

## SIMPLE INTERFACE TO YOUR PLANT SCADA

Monitor and report on the top operational and maintenance related generator parameters all within your Plant SCADA system. Generac provides an optional gateway to Ethernet/IP and add-on instruction (AOI) for Allen-Bradley Control Logix PLCs for all of our generator controllers:

- ▶ Engine Status: Battery volts, coolant temp, oil temp, runtime, etc.
- ▶ Alternator Status: Line to line voltage, current per phase, frequency, total kW, etc.
- ▶ Automatic Transfer Switch Status: Current switch position, number of operations, etc.

# SINGLE SOURCE RESPONSIBILITY

GENERAC PRODUCES A FULLY INTEGRATED SYSTEM SO THAT OUR CUSTOMERS CAN CONTROL COSTS, MAXIMIZE SPACE AND OPTIMIZE INTEGRATION.



### GENERATOR ENCLOSURE

Generac manufactures its own enclosures, ensuring each unit combines the highest level of durability, noise reduction, weather resistance and streamlined design.



### GENERATOR PARALLELING

Generac's Modular Power Systems (MPS) boast a rate of up to 99.999% system availability, and are more cost-effective and flexible than single generators with the same load capacity.



### TRANSFER SWITCHES

The Power Series Transfer Switch (PSTS) offers open, delayed and closed transition options. Available from 100–5000 amps, ISO 9000 certified, meet all relevant NEC codes, and are rated for full load transfers.



### POWER MANAGER

Concurrently manages up to 15 units to simplify the system and increase performance.

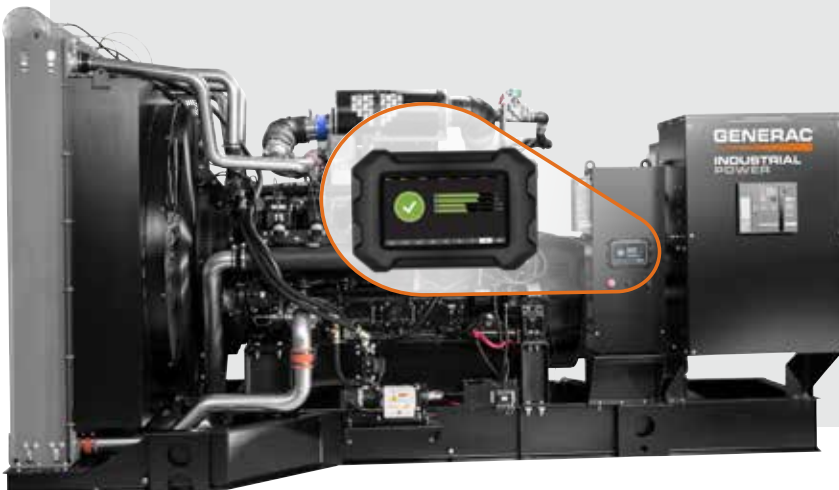


### INTEGRATED PARALLELING SWITCHGEAR

Provides flexibility for location of switching and load sequencing. Contactor-designed for repetitive switching; it is the most reliable way to switch.

# POWER ZONE® CONTROLLERS

Generac's innovative Power Zone® controller is the first in the market to feature bluetooth, Wi-Fi, and a color touch screen.



Remote Monitoring and Customization Control with No Additional Cost



Improved Diagnostics and New Onboard Self-Help Manuals



Connectivity and Easy-to-Use Operator Interface



Improved Reporting and Log History



Make Maintenance a Proactive Proposition



Expandable and Flexible

## ADVANTAGE IN ACTION:

### HOME FARM WATER TREATMENT PLANT// SHREWSBURY, MA

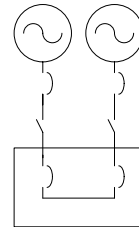
Home Farm is the second largest biological filtration plant in North America and was built to help address the potential effects of rising manganese levels in the system that also causes discolored water. High exposure to manganese has been associated with toxicity to the nervous system, producing a syndrome that resembles Parkinsonism.

To ensure the facility never lost the capability of providing clean water, Generac offered 2 x 500 kW natural gas generators. Paralleling multiple generators offered the facility increased reliability through redundancy. If one unit goes down for maintenance, the other generator would be able to handle the critical load.

## QUICK FACTS

- ▶ 2 x MG 500 natural gas
- ▶ 480V, 1000 kW

### Configuration:



## ADVANTAGE IN ACTION:

### DELTONA EAST WATER RECLAMATION // DELTONA, FLORIDA

The mission of the Deltona Water Treatment Plant is to provide people in the community with safe and a sufficient supply of quality water and treated wastewater that is economically viable and environmentally sound.

Deltona Water required a permanently mounted standby power generator system of sufficient size so that potable water could be treated and/or pumped to the most distant portion of the distribution system during power outages. To meet that requirement, they chose a Generac 2000 kW system because it met the average daily demand while maintaining a minimum residual pressure of 20 psi.

## QUICK FACTS

- ▶ 1 x 2000 Diesel
- ▶ 480V, 2000 kW

### Configuration:





## ADVANTAGE IN ACTION:

### BATON ROUGE CITY + PARISH DPW // BATON ROUGE, LA

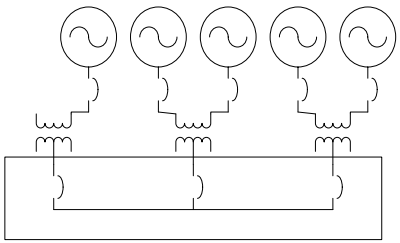
Major hurricanes knocking out power had been an issue for public works facilities in Baton Rouge, LA. To solve the problem, the city installed generators. Thanks to Generac, when the Parish of Baton Rouge needed to back up the Northwest Water Treatment Plant, they were able to do so while planning for the future.

Generac helped design a 5x1MW integrated paralleling system utilizing step-up transformers feeding the emergency bus for the plant. Currently an N+1 system for capacity, there is space at the plant to add one additional 1MW unit for any additional plant expansion.

## QUICK FACTS

- ▶ 5 x MD 1000 Diesel
- ▶ 480V, 5000MW

### Configuration:



## ADVANTAGE IN ACTION:

### DAVIS WASTEWATER TREATMENT PLANT // DAVIS, CA

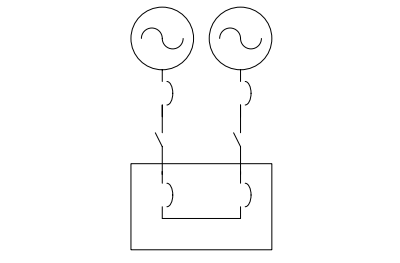
Davis Wastewater Treatment Plant underwent the city's largest capital-improvement project in history. The upgraded facility moved from a land-based treatment of sewage to an activated sludge system. This project expanded the capacity of the of the wastewater treatment plant to 12.6MGD so the city of Davis could operate the city's sanitary sewer system efficiently, economically, and environmentally protect the local wetlands.

To help meet the new demands and ensure the plant is always operational, Generac was able to design a system that would meet current and future back up power needs. Generac helped install 2 x 1000 kW diesel generators operating in parallel to give the redundancy and scalability the facility needed.

## QUICK FACTS

- ▶ 2 x MD 1000 Diesel
- ▶ 480V, 2000MW

### Configuration:

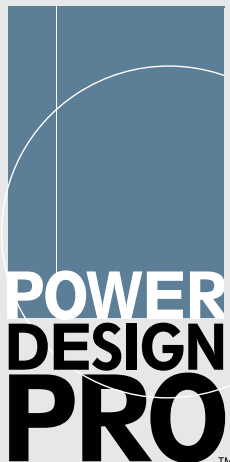


# TRUE PARTNERSHIP: FROM DESIGN TO COMMISSIONING

Every water or wastewater treatment facility is unique. It has unique process control requirements that impact generator sizing related to total motor loads, load sequencing and the type of motor control device that is required. Therefore, modeling tools used to size the generator system and select the fuel type are most important. Generac offers consultative engineering support to ensure your system is sized right from the start.



**FROM INITIAL PROJECT PLANNING AND DESIGN TO POST-INSTALLATION: GENERAC INDUSTRIAL POWER SUPPORTS THE CUSTOMER AT EVERY STAGE OF THE POWER SYSTEM LIFECYCLE.**



## POWER DESIGN PRO™ INDUSTRIAL POWER DESIGN FOR PROFESSIONALS

Consulting engineers depend upon reliable technology and intelligent applications to ensure they are specifying the right backup power solution for each application. Generac's Power Design Pro™ is intended to make specifying generators as easy as possible. The one-stop solution center offers specification sheets, installation drawings, emissions information, a specification text library with full inclusive design notes and the ability to link directly to supporting dealers for budgetary quoting and additional support.

Other features that you can find on Power Design Pro™ include:

- ▶ Load-shedding capabilities that enable the user to shed loads entered into the program and evaluate the effects of running those loads against any selected generator configuration.
- ▶ Gas piping capabilities to determine the required pipe size for gaseous-fueled generators.
- ▶ Hybrid architecture, making Power Design Pro™ the fastest, most accurate and up-to-date sizing tool on the market.
- ▶ Medium voltage product options for sizing projects.
- ▶ Dynamic calculations for real-time results.
- ▶ Try it today, [PowerDesignPro.com](http://PowerDesignPro.com)



**GENERAC**

**INDUSTRIAL  
POWER**



## PROVEN SOURCE. POWERFUL SOLUTIONS.

We are a global company with more than 4.6 million square feet of vertically integrated manufacturing and distribution capacity. We are one of North America's largest suppliers of power generation equipment with an intense focus on innovation that creates a disruptive force in the marketplace. We design and manufacture natural gas, diesel and bi-fuel generators that can work alone or be paralleled to provide you with a more robust gen-set solution. We also provide a world-class Industrial Distribution Network that stands behind you 24/7/365, as well as access to our in-house engineers and technical support.

**Our inventive Industrial Power gen-sets are standing by, ready to meet virtually any application.**

For more information, such as FAQ's,  
visit us online at [GeneracIndustrialPower.com](http://GeneracIndustrialPower.com)  
844.ASK.GNRC

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