

WHITE PAPER

The Use of Natural Gas Generators in Beyond Standby Applications

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INTRODUCTION

Traditionally, generators were considered a standby source of backup power. Meaning if a utility power failure occurred and the building lost power, the generator would come online and provide backup to that facility. Depending on the size of the generator, it may be backing up the whole facility or only supplying power to the life safety and emergency circuits. The key thing to note here is that in a standby application, the generator is sitting idle, only to be utilized in case of a power failure. In some instances, the duration between two consecutive power failures could be several weeks or months. This paper will introduce the concept of using a natural gas-fueled generator in beyond standby applications and it will provide a working knowledge of what can be achieved with the existing technology.

In recent years, concepts such as energy management, distributed energy, micro grids and Nano grids have revolutionized the power systems industry. These concepts, along with several others, have changed the perception of the standby generator, as not only a way to provide the emergency backup to the facilities, but also to utilize their potential to reduce the running cost and generate revenue by maximizing the generator use.

Demand Response



Microgrids



Energy Storage

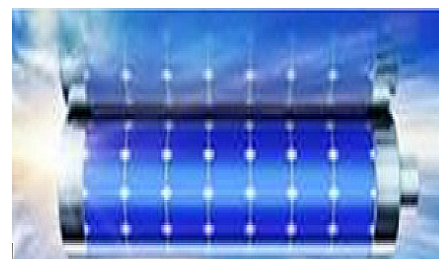


Figure 1:
Natural Gas Generators can be used for more than standby applications. These additional concepts have helped to revolutionize the power systems industry.

Combined Heat & Power



PROsumers



ENERGY MANAGEMENT

We can define energy management as a systematic and organized managing of energy, in our case a natural gas generator or set of generators, in the most cost-effective way to increase the availability of power, achieve overall emission reduction, manage risk and increase efficiency. With the growing needs and increasing energy demand, concepts such as energy management are being utilized more on a daily basis.

The emergency standby generators that are required by the National Electric Code (NEC) can and are used for beyond standby needs. Energy is considered to be one of the top five operating costs for many businesses and strategically managing the energy demand would directly affect the bottom-line cost and expenses. Effective energy management can help to manage the energy costs by utilizing the available means in a smarter way. By utilizing the onsite generator during the peak demand periods, it would lower the overall utility power use and it would result in avoiding high-energy charges from the utility company. In other words, the user who is utilizing their natural gas generator for beyond standby non-emergency applications is getting an increased ROI on their generator.

The use of a natural gas generator provides several benefits; firstly, natural gas is a cleaner fuel source when compared to

other fossil fuels such as coal and diesel. The cleaner emission from a natural gas generator would result in less carbon discharge to the atmosphere, which contributes towards a cleaner environment. In a microgrid and distributed energy type application, a natural gas generator is a perfect solution for electric power production and storage. Combined heat and power (CHP) is also a beyond standby application that utilizes a natural gas generator, which provides several environmental, economic, and reliability benefits.

THINGS TO CONSIDER

Numerous factors must be considered before utilizing a generator in beyond standby applications such as:

Emissions

Generators used in a non-standby application have different emissions requirements that are set by the Environmental Protection Agency (EPA) and require a different emissions certification than a standby generator. Generac Industrial Power's natural gas generators are factory EPA certified to be used in a non-emergency application (demand response), meaning the end user does not have to apply for a generator emissions certification and they do not need any type of site testing to obtain an emissions certification.

Local Utility

In order to enroll in an energy management program, the first step is to contact your local utility supply company to

understand the details and any terms and conditions that a client may have to satisfy before they may enroll into an energy management program (demand response, Peak shaving, etc.)

Controls and Hardware

Depending on the type of energy management program, the end user may be required to meet specific levels of control and hardware requirements. The experts at Generac can facilitate this process and provide expertise in determining the hardware and controls needs that may be required for your application.

Generator Maintenance and Serviceability

Maintenance and serviceability requirements for a generator used in a non-emergency application are very different from a standby generator. The standby generator operates for a limited number of hours as compared to the generator that is being used in a non-emergency application, which has longer run hours. The longer hours requires more frequent maintenance and serviceability.

CONCLUSION

Natural gas generator units offer the ability to reduce the user's overall energy cost while supporting the local utility. Utilities can defer or eliminate the need for costly substation, transformer and feeder upgrades with generation assets can provide a no-risk, no-cost opportunity for organizations to help offset the capital and operational cost of a stationary generator set. Beyond standby applications are best suited for natural gas generators, as costs for achieving diesel emissions compliance in a nonemergency application often exceed the potential benefits.

AUTHOR BACKGROUND

Muhammad Armaghan is a Product Manager at Generac Power Systems. He is responsible for the Industrial Generator product line. Armaghan has experience working in industrial power generation markets and has supervised several multimillion-dollar projects throughout the United States. These include power plants, healthcare facilities, data centers and municipal projects. Armaghan has also worked closely with consulting and specifying engineers, as well as general and electrical contractors and end users.