

# Sizing and purchasing a **DEUTZ** GENERATOR SET

## HOW DO YOU PLAN TO USE YOUR DEUTZ GENERATOR?

Deutz Generators are used to perform a wide variety of tasks; our generators provide a high quality power source that is reliable and convenient.

### Typical applications:

- ▶ Home Standby
- ▶ Light industrial
- ▶ Heavy industrial
- ▶ Marine- on board
- ▶ Construction
- ▶ Engineering
- ▶ Airports
- ▶ TV / Film production
- ▶ Military
- ▶ Agriculture
- ▶ Industrial

## HOW QUIET DOES YOUR DEUTZ GENERATOR NEED TO BE?

Our Deutz generators are known for quiet operation. Deutz engineered exceptionally quiet models, but offers less costly options that may serve your application at a lower cost. While a household application may require a super quiet series choice (55-60 DBA), construction applications would be satisfied with an industrial series model, and some applications will allow for the economy series that do not have the additional features required providing quiet operation.

## WHAT DO I NEED TO KNOW WHEN INSTALLING A DEUTZ GENERATOR SET?

Location – you will need to think of where you want to place the generator set – ideally it should be located in a place with adequate access and lighting for service and maintenance purposes. Deutz Generators can be located inside or outside your premises – Deutz Dieselpower offers Sound Attenuated Canopies when generators are to be located outside. Mounting – Deutz generator sets should be mounted on a level base and use anti-vibration mounts when necessary.

### What is the difference between 3 phase and single-phase electricity?

A **phase** is the fractional part of the period of a sinusoidal wave, usually expressed in electrical degrees.

A **single-phase** circuit is an alternating-current using only one, sine wave type, current flow.

A **three-phase** circuit consists of three different sine wave current flows, different in phase by 120 degrees from each other.

Now let's have the more practical, "down to earth" definition - something that the average homeowner would at least have a chance of understanding:

**Single phase:** a circuit that consists of three wires – live, neutral, and ground (earth). The main breaker in a single-phase system is a single pole breaker, resembling the others in the panel, only with a higher capacity.

**Three phase:** a circuit where the main breaker switches off three poles. For most homeowners this is the equivalent of having 3 separate main breakers that are divided among the circuits of the home. There are 5 wires that normally constitute a three-phase line, although in many homes the three phases simply supply the main and sub panels, but continue throughout most of the home as single-phase lines. In most homes there are not many devices that run on three-phase electricity. However, examples may include a three phase central air conditioner, a three-phase oven, a 3-phase swimming pool pump, or a large 3-phase hot water boiler.

## IS ELECTRIC START REQUIRED?

Deutz generators are renowned for the ease of starting. We offer many models with the convenience of electric start for applications that may require remote start or where the ease of electric start is preferred.

## Different types of engine control panels

AMF- Automatic Mains Failure- Popular suppliers of engine control equipment Lovato and Deepsea.

### Typical AMF panel incorporating engine protection system:

- ▶ 3 x Ammeters
- ▶ Frequency indication
- ▶ Voltage indication
- ▶ Hours run indication
- ▶ Fuel gauge and sender unit
- ▶ Battery Ammeter
- ▶ Battery charger (automatic trickle)
- ▶ Load terminal block
  
- ▶ 3-pole Alternator circuit breaker
- ▶ High engine temp. Shutdown protection with indication
- ▶ Low oil pressure shutdown protection indication
- ▶ Battery charge light with indication
- ▶ Genset stop & start /reset buttons
- ▶ Set Changeover contactors
- ▶ 1 x 3-pole Mains isolator
- ▶ Base load- Manual switch over.

### Manual electric start panel incorporating engine protection systems:

- ▶ 3 x C.T. driven Ammeters
- ▶ Frequency Meter
- ▶ Voltmeter with 7-position selector (Ph/Ph-N)
- ▶ Hours run meter
- ▶ Fuel Gauge
- ▶ 3-pole air circuit breakers with overload & short circuit protection
- ▶ 3 phase Alternator circuit breaker
- ▶ Set of relays
- ▶ Set of Low oil pressure & High engine Temperature protection cut-out & indication
- ▶ Over speed protection & indication

## DO YOU REQUIRE EASY TRANSPORT?

While all Deutz Generators are Portable by definition, many models include standard lifting kits for easy movement of the generator from storage to the work site. Consider the options when selecting the right model for your application.

## HOW MUCH POWER DO YOU NEED?

Deutz Generators produce AC voltage, very similar to the voltage available in your home, however while your electric utility company produces sufficient power for all your electric powered devices, a Deutz generator is limited in power output directly relational to the engine horsepower. The amount of power that a Deutz generator can produce is rated in watts. Rated power is generally 90% of maximum power as certain components lose efficiency as they are heated from use.

To determine wattage requirements you should determine which devices need to be powered simultaneously and what the starting requirement of the device is. Remember that with simple "Power Management" techniques, a small generator can provide adequate power for home or recreational applications.

### “MAXIMUM” AND “RATED” POWER

A generator should never be operated at its MAXIMUM power output for more than 30 minutes.

RATED power, or the power that a generator can produce for long periods of time, is a more reliable measure of generator power. Typically the RATED power is 90% of the MAXIMUM power.

For Example, a 2500-watt generator produces a MAXIMUM 2500 watts of power. This means at maximum power this generator could light up 25 100-watt light bulbs at the same time. The rated wattage of this generator would be 2300 watts and should only be used to power 23 - 100 watt light bulbs. When considering your power needs, first determine the highest power application such as a well pump for home power or air compressor for the job site. The power required to start the capacitor motor on these applications will determine the rated power of the generator you should choose for your application.

## TYPES OF LOADS

In the previous example, the light bulbs are the LOAD of the generator. A 2500-watt generator can handle a LOAD of no more than 2500 watts maximum.

**RESISTIVE LOADS:** The light bulb example is called a RESISTIVE type load and the POWER it requires is pretty easy to understand. Other RESISTIVE types of LOAD are things like toasters, convection ovens, hot plates, curling irons, coffee makers, stereos and TV's. RESISTIVE LOADS are usually appliances that do not have electric motors.  
RESISTIVE LOADS = 1 x Power

**A REACTIVE LOADS** contains an electric motor. Some household appliances like a furnace or refrigerator have internal fans that come on intermittently, so extra wattage/power is needed to start the fan. Another example is power tools. An appliance or tool with a reactive load may require up to three times as much power (wattage) to START as it does to keep it running.

### Examples of REACTIVE type loads:

- ▶ Refrigerators / freezers
- ▶ Furnace fans
- ▶ Well pumps
- ▶ Air conditioners
- ▶ Bench grinders
- ▶ Air compressors
- ▶ Power tools

**REACTIVE LOADS = 3 x Power**

### RESISTIVE LOADS:

The equation shows the relationship between watts, volts and amps in a PURELY RESISTIVE load. If you know any of the two variables, the third can be calculated.

**Example:** You want a generator to power a 1000-watt floodlight. The light is 120V and requires 1000 watts of power. Using the equation, we can calculate that the floodlight will draw 8.3 amps of electrical current.

For REACTIVE loads, the equation shows only a general relationship between watts, volts and amps. That's because the power requirements for REACTIVE loads changes with operating conditions.

Resistive Loads – Volts x Amps = Watts

### REACTIVE LOADS:

When determining the proper generator for REACTIVE type loads, you must consider three modes of operation:

**STARTING** - The electric motor requires more power to start. The starting power required can be up to THREE times the running amount.

**RUNNING** - The power required to run the electric motor once it has been started.

**LOADED** - When the electric motor begins to work (saw begins cutting wood, drill begins drilling thru a wall), its power requirement will increase. This is not applicable for most household appliances.

Contact our professional sales team to ensure that your purchase the right generator for the right application – You can always rely on a Deutz.