

### Alternating Current (AC)

The flow of electrons in a conductor measured in amperes. It's 50 or 60 cycles per second.

### Direct Current (DC)

direct current always flows in the same direction at 0 cycles per second.

### Voltage (Volts)

The measurement of the electromotive force or potential, which will make electrons flow in a circuit.

### Watt, Kilowatts, Kilowatt Hours

Electrical power consumption is measured in watts. A Kilowatt Hour is 1000 watts used for one hour

### KVA (Kilovolt Amperes)

KVA is the apparent power of generator delivered to a circuit with a power factor 1. KVA is the measure of the voltage multiplied by the amperes.

### KVA(R)

The measure of the amount of reactive KVA that is necessary to raise a lagging power factor toward unity.

### Power Factor (PF)

Is the ratio of Electrical power KW to Apparent Power KVA.

### Prime Power

Prime power is the power available at variable load for an unlimited number of hours. A 10% overload capacity is available at Standby Power

Output available with varying load for the duration of the interruption of the normal source power. Typical operation is 200 hours per year, with maximum expected usage of 500 hours per year

### Useful formulas

#### Calculation of Cycle

$$\text{Hz} = \frac{\text{RPM} \times P}{120}$$

#### Power (Kw)

$$P = \frac{2 \Pi \times T \times N}{1000}$$

Total Apparent power (KVA)  $KVA=3 \times I \times V$   $KVA=3 \times I \times V$

Total Active power (KW)  $KW=I \times V \times \cos(\phi)$

Total Reactive power (KVAR)  $KVAR=I \times V \times \sin(\phi)$

Resistors in series connection  $R_{SERIES} = \sum R_i = R_1 + R_2 + R_3 + \dots$

**Resistors in Parallel Connection**

$$R_{\text{PARALLEL}} = \frac{1}{\frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} + \frac{1}{R_4} \dots}$$

**where:**

HZ: Alternator Hertz,

RPM: Rotation per minute,

P: Number of poles.

T= Torque (Nm)

N=Engine speed=  $\frac{\text{RPM}}{60}$

Cos(φ)= Power factor (Assumed to be 0.8 at average load).

V= Phase to neutral voltage in V.

I= Phase current (Effective) in A.