GENERATOR SET
KW & KVAR LOAD SHARING
IN A PARALLELED SYSTEM

LOAD SHARING

Load sharing is defined as the proportional division of the **kW** and **kVAR** total load between multiple generator sets in a paralleled system.

Load sharing is essential to avoid overloading and stability problems on the systems' generator sets.

ACTIVE POWER (KW) LOAD SHARING

When generator sets operate in parallel, the **engine speed governor** of each generator set determines the proportional sharing of the total **active power requirements** (**kW**) of the system.

The **kW load sharing** is achieved by increasing or decreasing fuel to the systems' engines.

As the fuel to the engine of one generator set in a group is **increased** it will not lead to an increase in speed and hence frequency (as it would if it were operating alone) but it will lead to an increase in the proportion of the total **kW** load that it will deliver.

As the fuel to the engine of one generator set in a group is **decreased** it will not lead to a decrease in speed and hence frequency (as it would if it were operating alone) but it will lead to a decrease in the proportion of the total **kW** load that it will deliver.

The control system of the generator sets (via the engine speed control system) monitors and controls the sharing of the total **kW** load in proportion to the relative rating of the **engines** on the systems' generator sets.

REACTIVE POWER (KVAR) LOAD SHARING

When generator sets operate in parallel the **alternator field excitation system** of each generator set controls the proportional sharing of the total **reactive power requirements** (**kVAR**) of the system.

The **kVAR load sharing** is achieved by increasing or decreasing the field excitation to the systems' alternators.

As the field excitation of one generator set in a group is **increased** i.e. over-excited it will not lead to an increase in voltage (as it would if it were operating alone) but it will lead to an increase in the proportion of the total **kVAR** load it will deliver and a decrease in its power factor.

As the field excitation of one generator set in a group is **decreased** i.e. under-excited it will not lead to a decrease in voltage (as it would if it were operating alone) but it will lead to a decrease in the proportion of the total **kVAR** it will deliver an increase in its power factor.

An undesirable circulating reactive current (cross current) will flow in the system if the excitation of the alternators is not matched.

The voltage control system of the generator sets (via the alternator voltage control system) monitors and controls the sharing of the total **kVAR** load in proportion to the relative rating of the **alternators** on the systems' generator sets.