

INTRODUCTION TO DUAL OUTPUT SYSTEMS

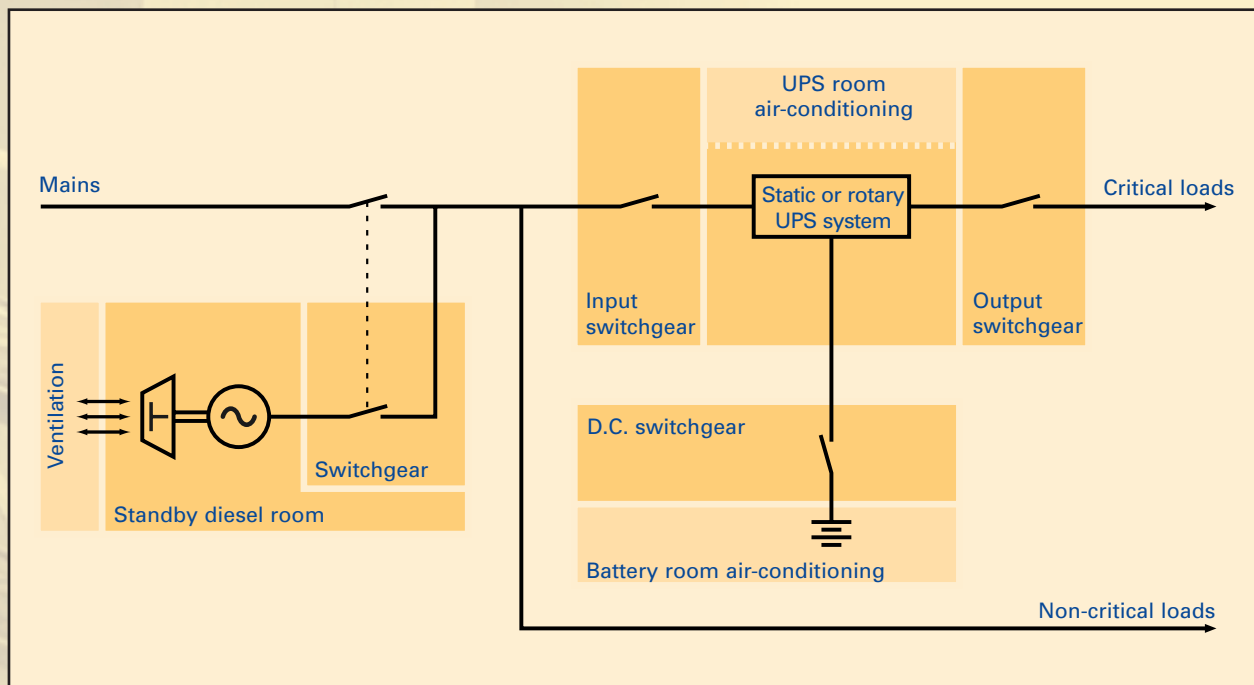
A Dual Output system provides all the back-up supplies required for any given installation. These “back-up” supplies will typically comprise the critical (UPS) loads together with non-critical (standby diesel) loads.

The conventional approach

When a battery (DC)-driven static or rotary UPS is utilised the overall power for the ‘site’ will be supplied as individual components. These can be summarised as:

- 1) standby diesels
- 2) UPS modules
- 3) battery systems
- 4) DC switchgear
- 5) AC switchgear
- 6) air-conditioning
- 7) electrical installation
- 8) mechanical installation
- 9) ventilation

As each power system (standby diesel, UPS and batteries) are supplied as independent components then separate room areas must be provided to house each of them. In practice this means large areas of ‘net lettable’ space are often used to house the UPS and battery systems.

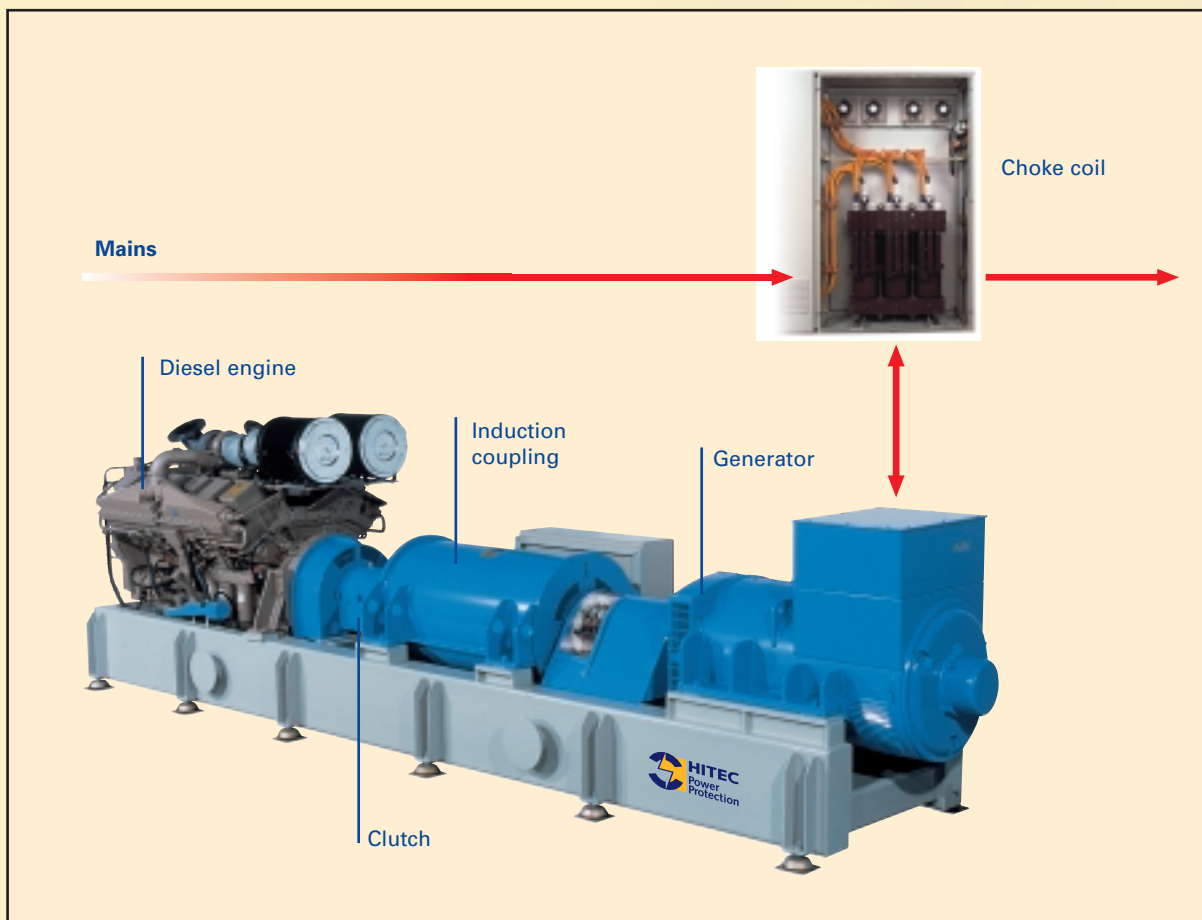


This approach not only creates a large number of interfaces (diesel UPS, UPS battery, UPS load etc.) but also increases the system component count, thus causing the overall MTBF of the ‘power chain’ to fall.

Various attempts have been made to reduce the interfaces within the system, to decrease the component count and to reduce the physical size of each component parts, but none of these has proved as successful as the approach taken by Hitec Power Protection.

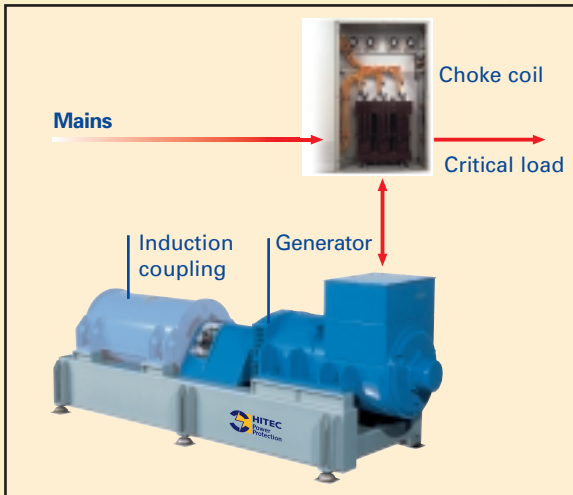
Hitec Power Protection approach

A diesel UPS is comprised of four major components: diesel engine, generator, induction coupling and choke. The induction coupling, generator and choke work together to provide the power conditioning and ride-through energy for the UPS system, whilst the diesel engine provides the long term back-up in the event of mains failures.

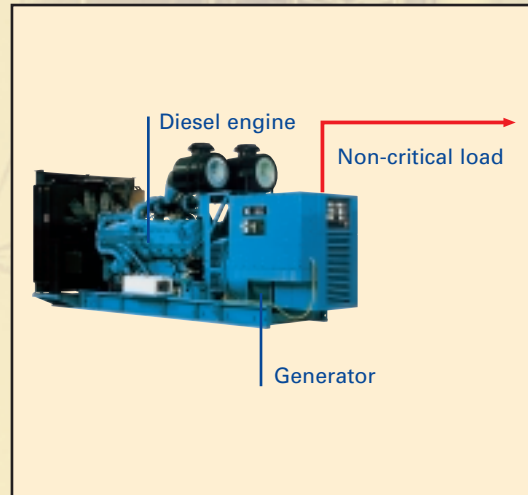


HITEC POWER PROTECTION DIESEL UPS SYSTEM

The components which comprise the UPS part of the systems can be viewed as independent from those which comprise the standby diesel. In practice this means the rating of each sub-system can be viewed as being independent from the other.



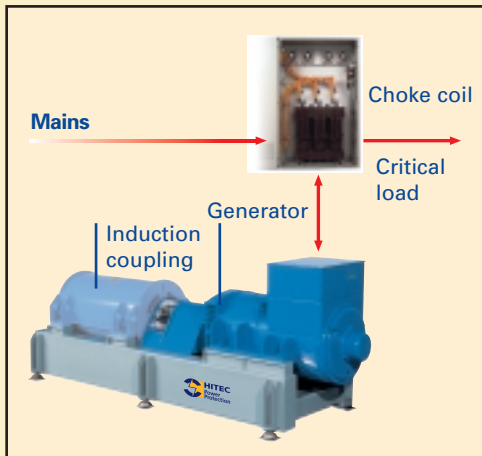
UPS COMPONENTS



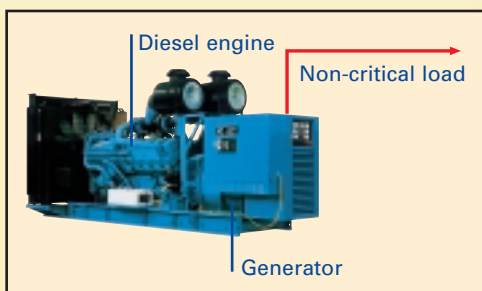
STANDBY DIESEL COMPONENTS

It is clear that by adopting this novel approach the specifier or end user is now free to select his UPS and standby requirements separately and then to incorporate them into a single integrated system.

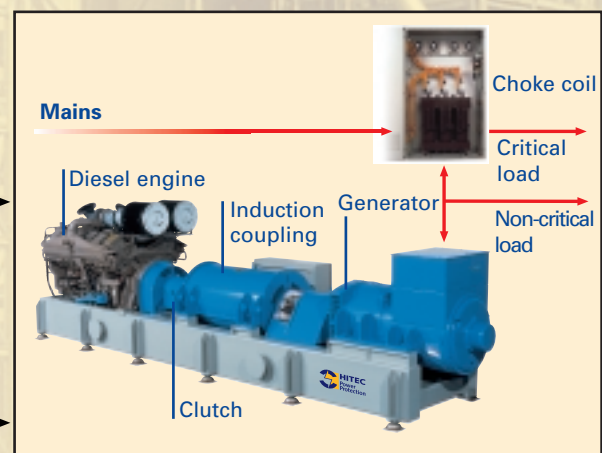
TYPICAL INTEGRATED SYSTEM



UPS SYSTEM



STANDBY SYSTEM



DUAL OUTPUT SYSTEM

EXAMPLE: If we were looking for 800 kVA of UPS and 2000 kVA of standby diesel power, then the induction coupling and choke systems would be rated to supply 800 kVA whilst the generator and diesel would be rated to supply 2000 kVA.

The flexibility offered by such an approach is obvious, with the building designer now being freed from the constraints of providing separate spaces for the UPS modules, battery systems, UPS switchgear systems and the associated UPS & battery environmental requirements. Now the integrated 'Dual Output system' can be located in basement areas, at rooftop level or in power houses situated remote from the prime installation.

Obvious differences between the Dual Output system and other systems

Mechanical	Electrical
<ul style="list-style-type: none">• Only one room is required (this gives up to 50% saving over battery-backed systems).• No air-conditioning required (ventilation only).• Single installation of diesels (no separate UPS).• Low component count gives high reliability.	<ul style="list-style-type: none">• UPS & standby loads are mixed without detriment.• High non-linear load capability is created.• High peak current (typical 15-20 I nom).• Fuse clearing capability is high.• Low input distortion.• High input power factor.• Load flexibility (UPS/standby ratio is easily altered).• Can be paralleled for capacity and or redundancy.

Costs: These can be 20% less than with a combined static UPS/diesel solution, and can be 30% less than a combined rotary UPS/diesel solution.