

# TransGen Mains Supply and Multi-Generator Control System

## Features

- Fully automatic & integrated.
- Efficient and reliable.
- Very convenient.
- Reduces fuel consumption.
- Controls two different sized generators. Large generator for peak load. Small generator for normal load.
- Controls a generator working with the mains supply starting the generator to reduce the peak load.
- Reduces maintenance costs.
- Reduces replacement costs.
- Ideal for applications where there are high peak electrical loads.
- Reduces pollution and greenhouse gasses.
- Each generator operates according to the load or timed periods.

## Overview

TransGen is an automatic control and changeover panel that is used to control two different sized generators, or a generator in conjunction with the mains supply to operate during peak load periods. The purpose is to cut operating costs by reducing fuel use and maintenance. Generator replacement costs are also significantly reduced.

Two examples are described as follows:-

1) On-grid with peak loads.

For example a chicken farm where the mains supply is rated at 100 Amps but the peak load is 150 Amps.

2) Off-grid sites with peak loads.

Some off-grid sites have a peak electricity demand to power a large load that is only operated for part of the time that the site is open.

For example a milking parlour may need 100kVA to operate during milking times probably 3 hours morning and again in the afternoon. The rest of the



A TYPICAL  
TRANSGEN SYSTEM

time, 18 hours, the load consists of controls, heaters, chillers, agitators, lights and pumps with a total load of less than 20kVA.

Running a 100kVA generator for all or most of the 24 hour period is a very costly option.

## Fuel Efficiency

When a generator is loaded more than 60% the fuel used to generate each kilowatt of power is relatively constant. As the load decreases below 60% the fuel used to produce each kilowatt of power increases disproportionately.

In the first example the generator runs for 18 hours

with less than 20% load. This is very inefficient and will use more fuel per kilowatt increasing costs.

When a generator runs consistently at a low load the fuel does not burn properly increasing pollution and producing carbon deposits internally and soot externally. This not only increases fuel consumption but also increases maintenance.

## Replacement and Maintenance

Using our previous example if the two generators share the duty the 100kVA generator will operate for a shorter period and will not need to be replaced so soon. It is more cost effective to put the duty onto the 20kVA because it is less costly to replace.

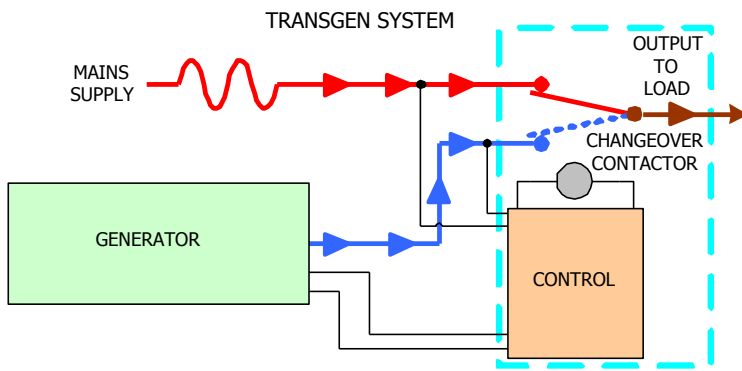
The maintenance costs will also be considerably more for the 100kVA than the 20kVA. Especially as long periods of light load running increase maintenance costs in the medium term.

## Generator and Mains Supply

Taking the example of the chicken farm the available mains supply is not large enough to power the proposed chicken farm. The rating of the mains supply is 100 Amps and the peak load of the chicken farm is 150 Amps. The solution is to have a generator capable of supplying part - more than 50 Amps - or all of the peak load of 150 Amps.

**powerguard**

**Tel: +44 (0)1507 600 688**  
**Sales@powerguard.co.uk**  
**www.psw-powerguard.com**



The above sketch shows a typical layout for the mains input, generator and a TransGen System.

When the load is normal the mains supply feeds the load via the changeover contactor - path shown in red.

When the mains supply is about to be overloaded the generator is started and part or all of the load is transferred by the changeover contactor - path shown in blue.

The process is reversed when the load reduces to within the rating of the mains supply.

Normally the mains supply will provide the power for the farm.

The peak load may only happen intermittently for relatively short periods during the day. TransGen will monitor the mains supply and if it anticipates an overload it will start the generator and transfer part or all of the load. When the load reduces back within the rating of the mains supply the load is transferred back and the generator stopped. TransGen monitors the load and also the trend of how the load is varying. Overloads are predicted and the load is usually transferred before they occur.

TransGen is a very cost effective solution in applications where the mains supply cannot provide enough power all the time.

## Standby Power

TransGen also acts as an efficient standby power system starting the generator and transferring part or all of the load when the main supply fails. When the mains is restored and the load is stable it will be transferred back and the generator stopped.

## Two Generators

Taking the example of the milking parlour and running two generators - 100kVA for the heavy load and a 20kVA for the lighter load - makes sense in every respect. Saving fuel, pollution, maintenance and replacement costs.

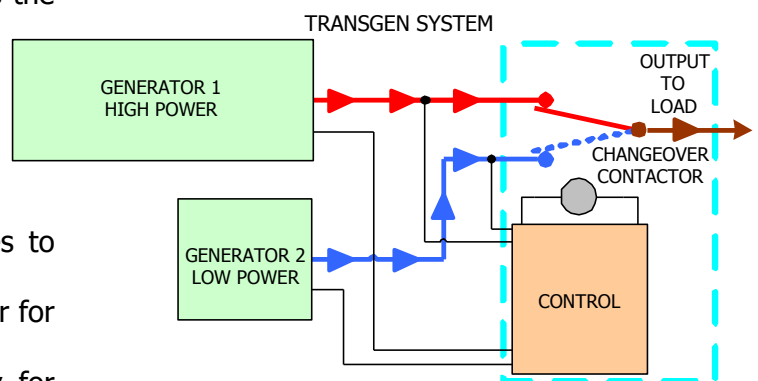
TransGen is ideal for any application that requires a

high peak load for part of the operating period. The Powerguard TransGen controls the power system automatically switching the load between the two generators as required.

The sketch below shows a typical layout for two generators and a TransGen System.

When the load is high Generator 1 is started and the power goes to the load via the changeover contactor - path shown in red.

Generator 2 is started when the load falls within its rating. The load is transferred by the changeover contactor - path shown in blue. Generator 1 is then shut down. The process is reversed when the load increases beyond the rating of Generator 2.



## Additional System Features

TransGen is fitted with a real time clock and calendar so that automatic operation can be overridden and either of the generators can be run for pre-determined periods during the day.

This can be used to anticipate a period when heavy loads are being applied regularly and intermittently and it is more convenient to have continuous operation. This would prevent frequent changeovers between the generators. Operation of either generator can also be inhibited for timed periods probably during the night or when the site is closed.

The system is very flexible controlling the generators to save fuel. For example TransGen could be set to bring the generator on for two hours in every three to power a cooler that does not require continuous operation to maintain a satisfactory performance.

The Powerguard TransGen is designed and built to cut operating costs. This is done by sophisticated control preventing the generators operating for long periods on light loads. The generators can also be shutdown for periods when they are not needed.

The Powerguard TransGen is designed for use in industrial conditions and will cut operating costs dramatically.

The Powerguard TransGen is fully automatic, fully integrated, efficient and reliable.