

## Powerstar's Patented Design

Powerstar is the only voltage optimisation system on the market with a patent on its design. The patent number for the system is: UK PATENT 1014460.8.

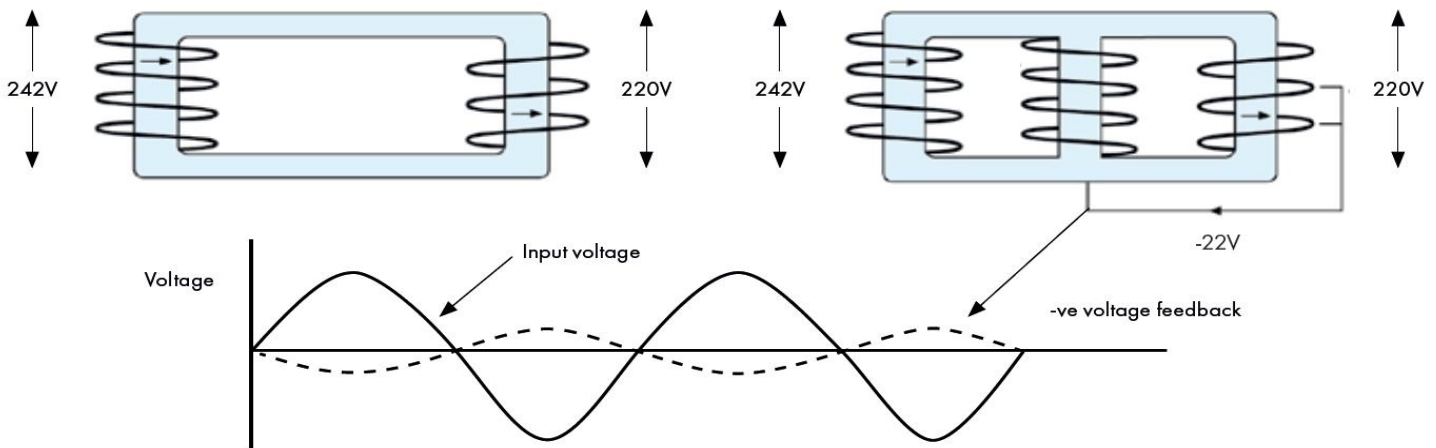
The patent applies to the three phase voltage optimisation technology used in the HV and LV commercial and industrial systems. The patent ensures that no other voltage optimisation solution, although similar in principle and application is able to replicate the exact design specification of a Powerstar system. It is through this patented design that Powerstar is able to generate negative power feedback (back EMF).

### Most voltage optimisation systems

Traditional systems transform the entire power output from one voltage to another and although they reduce voltage, they also increase current

### The patented Powerstar system

Due to the patented design of Powerstar, and the third control winding, Powerstar creates negative power (back EMF) whereby any excess voltage is chopped and sent in the direction of the supply. This ensures only around a tenth of power is transformed resulting in reduced voltage AND current



Powerstar is a transformer-based system used to optimise the characteristics of the current supplied at the source (first current), according to current characteristics required at the load (second current).

1. The first current is typically an alternating voltage in which case the resultant voltage is increased or decreased, this transformation routinely results in excess transformed voltage
2. The supply current flows from the first winding into the second winding, wherein the magnetic flux causes the induction of a reverse current, which is a fraction of the supply current, typically 10%
3. This reverse current then flows in the opposite direction to the supply current, wherein it is directed back to the electricity supply
4. Because this reverse current is real energy, which is distinct from apparent or reactive energy, there is a direct effect on the consumption of the load. This effect is a reduction of power consumed by a load, seen by actual kWh savings

**IN SIMPLE TERMS, ANY EXCESS VOLTAGE ABOVE THE POWERSTAR SET-POINT IS SUBTRACTED FROM THE INPUT VOLTAGE. THIS RESULTS IN GENERATION OF NEGATIVE POWER (BACK EMF), WHICH FLOWS TOWARDS THE SUPPLY AND IS SUBTRACTED FROM THE INCOMING POWER.**