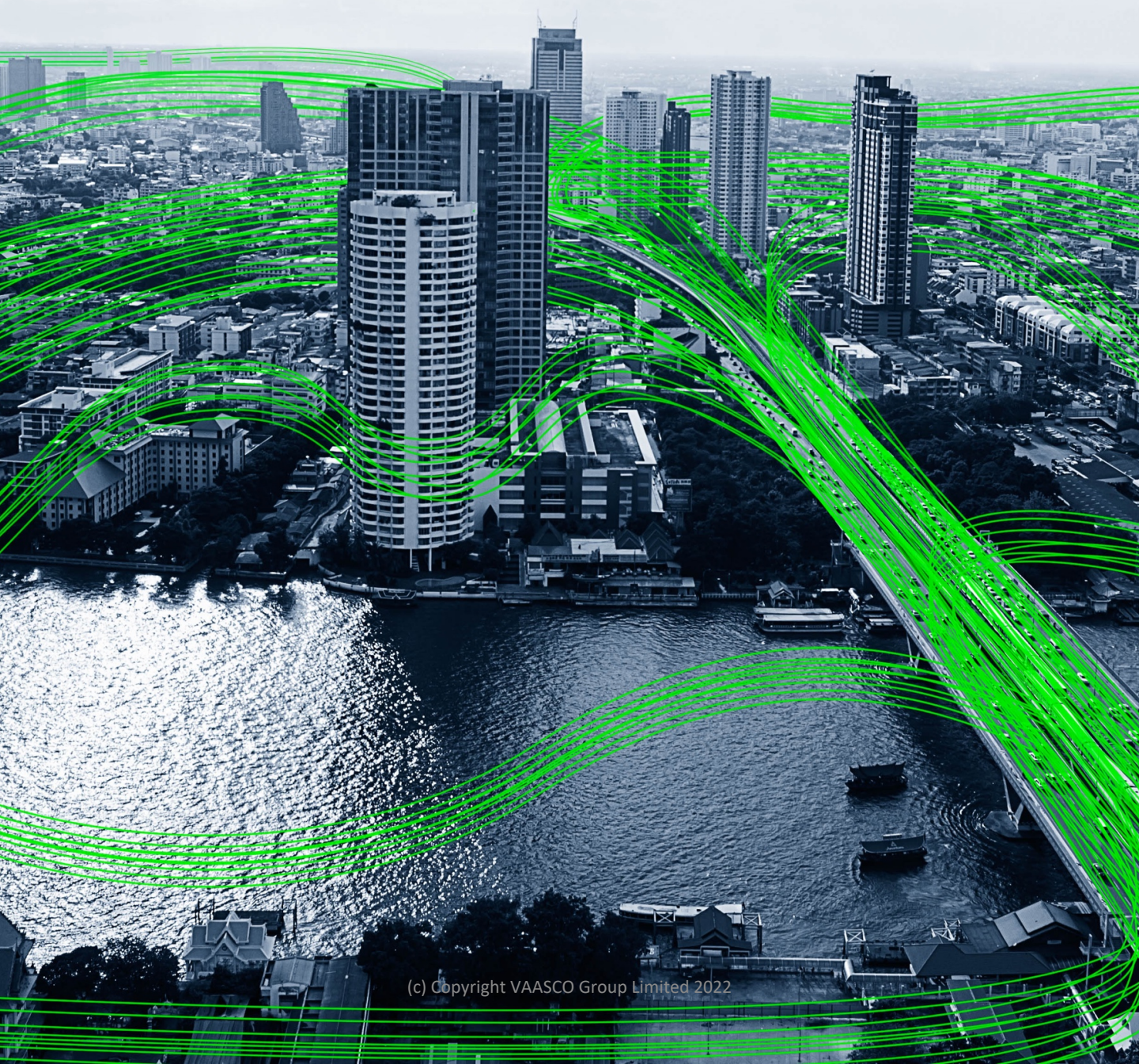


20th May 2022

grid voltage control for commercial,
industrial & government
an effective step towards net zero energy

VPO specification



Responsive Power Optimisation™ (RPO™)

powerPerfector technologies have evolved with the introduction of the most advanced electronic voltage control technology available - The **powerPerfector iQ**.

The **pPiQ** is the fastest, most accurate and precise Electrical Supply control technology on the market and is designed specifically to address the Power Quality risks from your supply whilst also saving you money.

The security of supply benefits, coupled with the high ROI, make the **pPiQ** essential technology for future proofing the building.

A single installation on your incoming supply is all it takes to take control of your power supply for the first time. To find out how the **pPiQ** can benefit your site, please contact your distributor for further information or email:

enquiries@powerperfector.com

Why Responsive Power Optimisation™ (RPO™)

Recent reports have shown that Power Quality and Voltage Stability are deteriorating, resulting in supply risk with reduced performance and increased wear of equipment, requiring an advanced solution - **RPO™** from the **pPiQ** ensures that:

- Voltage instability and fluctuations are eliminated
- Site equipment benefits from a highly stable voltage
- Equipment efficiency is maximised due to active 3 phase balancing
- The site is protected against harmful voltage dips, sags, intervals and swells
- Precise output voltage control is provided across the whole site
- Cost and energy savings will be 25% higher than VPO technology
- Integrated Wi-Fi remote monitoring & intelligent control

powerPerfector iQ is the UK's only Responsive Power Optimisation™ (RPO™) Technology (patent pending) designed to maximise security and cost savings.

powerPerfector Technology has evolved after a four year research and development program in response to the deteriorating Power Quality and increasingly Unstable Voltage supply from the electrical networks.

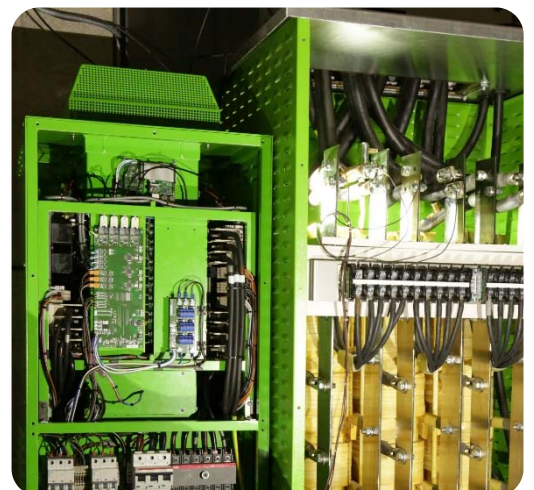
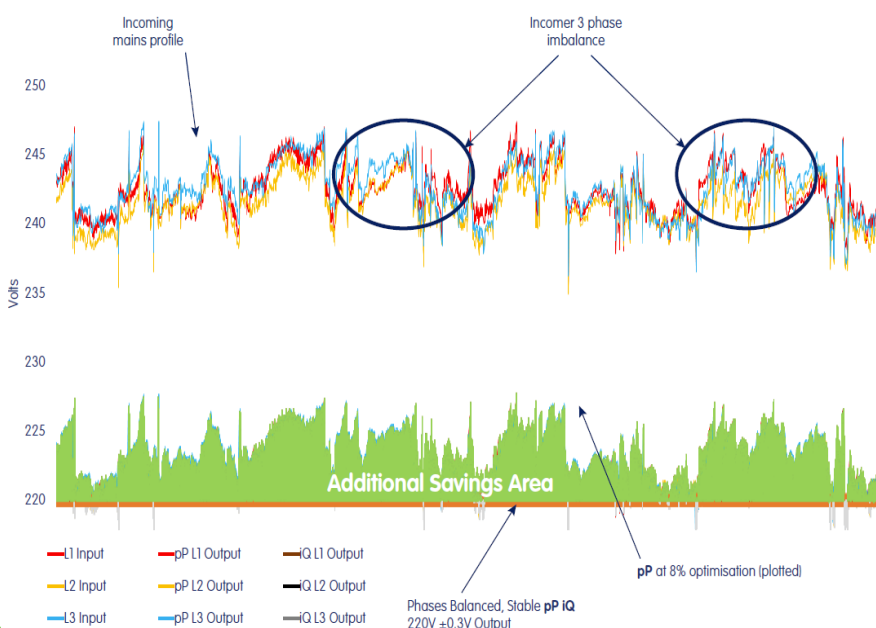
In the past centralised generation could control and supply clean power that had little to disturb it except for the occasional transient before its delivery at 400/415V to you. Now; with Wind and Solar farms, Micro generation and Hydro power feeding the networks, that control has been lost. Waves of power fed into the networks from these sustainable, but highly inconsistent generation technologies, switching in and out of supply, need homogenisation so that supply quality is improved, transient activity is suppressed and voltage balanced and stabilised.

The **pPiQ** has been designed to mitigate these risks to business operation and supply you with efficient, high quality and stable power so that all of your assets are protected and operating efficiently.

The **pPiQ** future proofs your building, gives you control of your power for the first time - and reduces your energy costs.

A risk mitigation technology that pays for itself multiple times from the generated savings.

Realtime 7 Day voltage profile pre and post iQ activation



Responsive Power Optimisation™

Attributes	Benefits
Precise Voltage Stabilisation	Site equipment is protected with a highly stable voltage supply of $\pm 0.5V$ irrespective of up to 11% supply fluctuations above or below your optimum selected Voltage level (see graph).
Active 3 Phase Balancing	Improves equipment operational efficiency and life span by actively correcting phase voltage imbalance, of up to 5%, to within ± 0.5 volts of each other.
Super-fast Correction	Reduces exposure to voltage spikes protecting site equipment and maximising cost efficiencies with uniquely super-fast voltage correction. The iQ utilises the latest power electronic techniques and components to control output voltage - reacting to supply voltage changes in under 250ms.
Intelligent Voltage Control	The iQ is a 440 step electronic controller ensuring that the site operates at an optimal voltage. The target voltage can be pre-determined at 0.1V intervals - tuned to maximise your Power Factor.
Voltage Recovery	The site is protected against harmful voltage dips, sags, intervals and swells improving business continuity by its capability to boost the voltage if supply voltages reduce to $\sim 190V$. This ensures that equipment receives voltages within EN regulations, increasing site resilience.
Programmable for Demand Side Response services	Generate revenue, after a software upgrade, from selling Demand and Fast Frequency Response services to your National or Network provider.
Wi-Fi/LAN Remote Monitoring and Control	The pPiQ has a built in remote monitoring & intelligent control platform with multiple individual secure logins. Energy consumption and voltage data information is captured, stored and can easily be accessed and communicated when configured via MODBUS.
The powerPerfector optimiser	The pPiQ Optimiser suppresses harmonics, reduces Reactive Power (by up to 50%) protects from common transients and improves Power Factor (by up to 20%) from a single installation on your incoming supply.



For more information on the powerPerfector iQ please contact our distributor network or email us at;

enquiries@powerperfector.com

powerPerfector iQ

Specification Sheet



powerPerfector iQ	
Responsive Power Optimiser Product Description	A powerPerfector with embedded winding for harmonic attenuation. Power Response achieved using the latest power electronic techniques and components without any mechanical switching parts to control the output voltage.
Nominal Input Voltage	400V $\pm$ 20%
Nominal System Frequency	50/60 Hz
Wire Connection	3 Phase – 4 wire (Neutral connection for iQ reference only)
Construction (powerPerfector)	Handmade optimiser with the highest purity cold-wound ribbon copper conductor, grain orientated sheet silicon steel
System Rating	175kVA (250A) · 220kVA (315A) · 280kVA (400A) · 350kVA (500A) 440kVA (630A) · 560kVA (800A) · 690kVA (1000A) · 830kVA (1200A) 1000kVA (1450A) · 1250kVA (1800A) · 1500kVA (2150A)
Intelligent Voltage Control	Precise output target voltage selection at 0.1V increments offering at least 440 optimisation steps.
Output Voltage Range	+11% to – 11% automatically selected based on pre-determined target voltage
Response Time	Immediate reaction within 250mS of an input voltage change and response within 500mS
Output Voltage Accuracy	Stable voltage profile within 0.5V of target voltage irrespective of input voltage fluctuations (dips/swells/sags/intervals)
Active 3 Phase Balancing	Actively corrects phase voltage imbalance to within 0.5V phase to phase
Voltage Recovery	Ability to boost incoming voltage during dips and sags as required to pre-determined target voltage
Harmonic Attenuation	Passive low filtration offered by powerPerfector primary winding plus a tertiary delta winding wrapped around the core to maximise attenuation.
User Interface	iQ has a built in Wi-Fi or LAN remote monitoring & intelligent control platform with multiple user logins. Energy consumption and voltage data information is stored and can easily be accessed and communicated (MODBUS) when configured.
System Efficiency	Peak efficiency 99.94%
System Impedance	0.5% ensuring that electrical integrity is not compromised, nor do existing circuit breaker timer settings require alteration
Insulation Class	H - 180°C (powerPerfector)
Short-Circuit Withstand – Tested (powerPerfector)	175kVA (250A) · 18kA for 1 second 350kVA (500A) · 35kA for 1 second 440kVA (630A) and above · 50kA for 1 second
Voltage Withstand - Tested	3kV
Environmental Operating Range	-10°C to + 40°C
Enclosure Descriptions (see separate dimensions sheet)	powerPerfector housed in a floor standing cabinet with louvre vents on each panel to allow natural airflow, fitted with aluminium lid for easy cable entry. For added safety and security panel removal requires multiple tools. Separate enclosures to allow for easy delivery and interconnection options. iQ power electronics self-contained within a floor standing cabinet with louvre vents on each panel to allow natural airflow. An access panel is provided to safely gain entry to the iQ protective devices. In the event of malfunction the iQ reverts to an automatic voltage bypass to 0% without mechanical parts. The power electronics can be isolated and removed without interruption to site supply.
Cooling Type	powerPerfector Natural Air (AN) iQ auto-temperature control with a ceramic fan offering assisted cooling (25yrs life)
Duty Type	Continuous Operation
CE Mark	EN 60076:11 · IEC 61439
Electromagnetic Compatibility	EN61000-6-2 · 61000-6-4
Standards	ISO 9001 · ISO 14001 · ISO 500001 · BS OHSAS 18001 · RoHS/REACH Compliant

General information

About VAASCO

- Voltage as a Service (VAAS)[™] is a unique offering from VAASCO Group Ltd, an Australian public company.
- VAASCO Group Ltd provides the asset management service for the VO solution, and is a sister company to several engineering and product distribution companies within the group.
- VAASCO Group companies together, with our value chain partnerships, have extensive Australian and global experience in Voltage Optimisation technology, modelling, verification and project delivery.



- EMSc Asia Pacific



- Engineer and distributor for EMSc UK range of Powerstar VO



- Ultima Grid Solutions



- Engineer and distributor for iESCO range of PowerPerfector VO
- Engineer and distributor for UST Power range of PowerPerfector VO



iStar

- Smart Utility Services
- Engineer and distributor for iStar range of VO and grid monitoring solutions

Voltage as a Service (VAAS) is a registered trademark of VAASCO Group Ltd.



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