



Electrical and Energy Efficiency Products & Solutions  
for commerce and industry worldwide



# SIX STAGES TO SUCCESS

SDC Industries guides you through the Energy Saving process – from your initial enquiry, right through to installation and beyond – we are here for our clients every step of the way...

## STAGE 1

### ENQUIRY STAGE

- Client contacts SDC Industries
- Sales Engineer decides if client's site is feasible for installation of Energy Saving equipment by performing a desktop feasibility study
- Sales Engineer decides from the desktop feasibility study if client site is suitable for installation of Energy Saving equipment
- If the desktop study is of interest to the client then we will arrange a site visit to investigate further\*

## STAGE 2

### SITE VISIT STAGE

- Client speaks with Sales Engineer
- Sales Engineer visits site to carry out comprehensive site survey
- Measure site conditions, which can include single/three phase voltages, power factor, loads, load types\* and usage patterns.
- Arrangement may be made to perform on-site monitoring
- Measure up for installation
- Site survey form is completed

\*Dependant and independant loads

## STAGE 3

### QUOTATION STAGE

- Analysis taken from site monitoring/measurements
- Project cost
- Savings performance guarantee
- Savings in £, including CO2, kwh, KVAh & KVA, as applicable
- Contract conditions attached on our proposal
- Payback period
- Alternative finance options

## STAGE 4

### ORDER STAGE

- Client Official Purchase Order received by SDC Industries
- Order Acknowledgement sent to Client
- Dedicated Project Manager appointed
- Project Meeting organised between all parties involved
- Timescales are agreed
- Production scheduled

## STAGE 5

### MANUFACTURE/ INSTALLATION STAGE

- Installation Manager visits site to discuss installation\*\*
- Measurements and readings are taken
- Definite Installation plan is put in place, includes shutdown details, etc
- Installation Manager and installation staff meet to discuss the arranged project
- Documentation issued (e.g. Drawings, O&M Manuals, etc)

## STAGE 6

### POST INSTALLATION

Three months post installation, half-hourly data and monthly billing should be provided by the client to SDC Industries to obtain complete details of the savings being achieved by installation energy saving equipment.

\*Initial site survey within UK Mainland – at SDC Industries' expense.

\*\*Installation Inspection built within ordered cost.



# INTRODUCTION

SDC Industries, established in 1978, has an extensive number of years experience in the design and manufacture of power quality and energy efficiency products for industrial and commercial customers. We are market leaders in our field due to our innovative design and cutting edge technology.



## Products :

- **Power Factor Correction Capacitors**
- **Harmonic Filters**
- **Voltage Optimisation**
- **Electrical Distribution Equipment**
- **Reactive Compensation**
- **High Voltage Projects**
- **Surge Suppression.**

## Services :

- **Annual Maintenance**
- **Thermal Imaging**
- **Power Systems Analysis**
- **HV/LV Installation**
- **Testing & Commissioning.**

SDC Industries employ highly knowledgeable and fully qualified electrical engineers to design bespoke energy saving solutions which meet all of our client's requirements. As a company, we are committed to both reducing our client's financial output whilst decreasing their carbon footprint.

Our main aim is to provide our customers with a first-class, professional and specialised service, which affords a comprehensive range of solutions to a wide range of operational problems.

In the industry sectors we serve, the health and safety of both our employees and our clients' employees is paramount, hence SDC Industries accreditation to **OHSAS 18001** standard.



SDC Industries also upholds a strict quality control system, which involves our engineers rigorously testing every piece of equipment prior to despatch. Each product is designed and manufactured to ISO9001 and ISO14001 quality and environmental standards. This ensures a high level of quality when the order reaches the client, reflecting the high levels of customer service we provide.

In order to determine our customers' requirements, SDC Industries first-class service includes:

- **POWER FACTOR CORRECTION SURVEY**
- **SITE ELECTRICAL SURVEY**
- **ENERGY EFFICIENCY SURVEY**
- **VOLTAGE OPTIMISATION SURVEY.**

This initial site survey (UK Mainland only) will be carried out at SDC Industries expense and is completely **FREE OF CHARGE** to potential clients. Further visits may be charged at additional cost, depending upon requirements, however, these costs can be offset in the event an order is placed with ourselves.

These surveys can be conducted anywhere within the UK mainland, enabling us to determine precise customer needs and suitability of specific equipment.

The company are able to provide on-site supervision and start-up assistance to each client in order to help guarantee that all purchased equipment is installed and commissioned correctly, resulting in complete customer satisfaction.



**FROM CONCEPTION TO COMPLETION**

Here at SDC Industries we pride ourselves that all of our products are manufactured in the UK. Each product is designed and manufactured at our 14,000sq.ft fabrication facility in East Kilbride, Scotland, enabling our products to be easily distributed from a central location.



# POWER FACTOR CORRECTION

Power Factor Correction is the term given to a technology to restore Power Factor to as close to unity as economically viable. This can be achieved by adding Power Factor Correction capacitors to the distribution system which provide or compensate for the Reactive Power demand of the inductive load, and thus reduce the burden on the supply.



A distribution system's operating power consists of 2 parts: Active (working) power and reactive (non-working) magnetising power. The ACTIVE power performs the useful work while the REACTIVE power does not, as its only function is to develop magnetic fields by inductive devices.

Capacitors work as reactive current generators providing needed reactive power (KVAR) into the power supply. By supplying their own source of reactive power, the industrial user frees the utility from having to supply it, and therefore, the total amount of apparent power supplied by the utility will be less.

Power Factor Correction Capacitors reduce the total current drawn from the distribution system and subsequently increase the system's capacity by raising the Power Factor level.

**The higher the power factor, the more effectively electrical power is being used and vice versa.**

Low Power Factor is expensive and inefficient, with many utility companies charging extra, (reactive power charge), for sites with a poor power factor. Low Power Factor can also reduce the capacity of your electrical distribution system by increasing current flow and causing voltage drops.

**Power Factor is the ratio of true power to apparent power**

$$\text{Power Factor} = \frac{\text{KW}}{\text{KVA}}$$

## Benefits of Utilising Power Factor Correction :

- **A reduction in electricity charges**
- **Elimination of utility power factor penalties, which can increase electrical bills by up to 20%**
- **Reduction in I<sup>2</sup>R losses of transformers and distribution equipment**
- **Prolonging the life of equipment from reduced heat in cables, switchgear, transformers and alternators**
- **Reduced voltage drop in cables, allowing the same cable to supply a larger motor and improving the starting of motors at the end of the long cable runs**
- **A return on investment is typically between 12 to 24 months.**

## PRODUCTS

**The self-healing, non-toxic capacitors contained within SDC Industries Power Factor Correction products are for use on a 415V, 3-Phase, 50Hz system. Each capacitor is designed and tested to international standards :**

- IEC60831-1&2
- EN60831-1&2
- VDE0560-46&47.

### VARCAP II

A range of power capacitors designed to meet the needs of smaller electrical loads.

### VARPAC

Power capacitors in metal enclosures, complete with a suitably rated circuit breaker, designed to meet the need of smaller electrical installations.

### VARMATIC CLASSIC

Power capacitors, contained in automatically-controlled banks designed to meet the need of electrical systems with fluctuating loads.

Switching stages from 10-65KVAR, and overall bank rating a maximum of 200KVAR at 415V, 3 phase 50 Hz.

### VARMATIC SENATOR

Power capacitors, contained in a prestige enclosure, featuring automatically controlled switching stages, designed to meet the need of the larger electrical system with a fluctuating load.

Switching stages from 10-50KVAR, and overall bank rating a maximum of 900KVAR at 415V, 3 phase, 50Hz.

Any additional circuit breakers included are manufactured to IEC157, BS4752. All assemblies are fitted with stage energised indication, and a multistage electronic microprocessor controller is usually fitted to 'sense' the system requirement for power factor correction capacitance.



# HARMONIC FILTRATION

SDC Industries offers a range of Harmonic Filters to suit industrial/commercial premises that have experienced interference on their electrical power system.

The company offers two types of Harmonic Filter :

**Passive Harmonic Filter Bank** detuned to a specific harmonic frequency

**Active Harmonic Filter Bank** programmed to provide harmonic filtration over a range of harmonic values

## PRODUCTS :

SDC Industries offer a comprehensive range of superlative quality power capacitors, designed for use in harmonic filter banks.

These automatically-controlled capacitor banks are utilised in industry/commerce to reduce or help eliminate harmonic levels.

## Problems Caused by Harmonics

There are a number of problems caused by harmonics on any electrical system :

### In a Network :

- Overheating of the neutral conductor leading to the risk of fire
- Increased power losses
- Strong electromagnetic fields
- Causes the network to produce interference
- Malfunctions in earth fault control
- Failure in remote control systems.

### In Capacitors :

- Capacitors are especially sensitive to harmonics. Batteries must be over-dimensioned in order to withstand them.
  - Increased power losses
  - The risk of resonance
  - Decreased operating life
  - Higher dielectric capacitors required.

## Harmonics also cause interference in electrical plants :

- In transformers
  - Increased power losses
  - The risk of resonance
  - Overload of delta windings due to rotating harmonic current
  - Decreased operating life
  - Noise
  - Temperature Rises.
- In computers
  - The risk of malfunction. Harmonics may cause mysterious interference effects.
- In cables and conductors
  - Increased power losses
  - Overload on neutral conductor (N- and PEN-conductors)
  - The risk of fire. The neutral conductor can burn out.
- Other Interference
  - Malfunctions of electrical equipment
  - Malfunctions of electronic relays
  - Malfunctions of earth fault alarms
  - Unrequested operation of appliances
  - Malfunctions of control devices
  - Strong electromagnetic fields
  - Potential differences in 4-conductor systems.

## Benefits of Utilising Harmonic Filtration Increased efficiency in low voltage network

- **Reduction in transmission losses**
- **Increased loadability of the existing network and switchboards**
- **Lower temperature of cables, switchboards and transformers**
- **Reduction in 95% of harmonic current in neutral and phase conductor.**

### Increased efficiency

- Less power or more load
- Less maintenance
- Longer lifespan of lamps and capacitors.

### More reliability

- Reduced temperature of network devices
- Increased maintenance intervals
- Longer lifetime of the network.

### Reduced Magnetic Fields

- The reduction of harmonic component of the current reduces the total magnetic field.

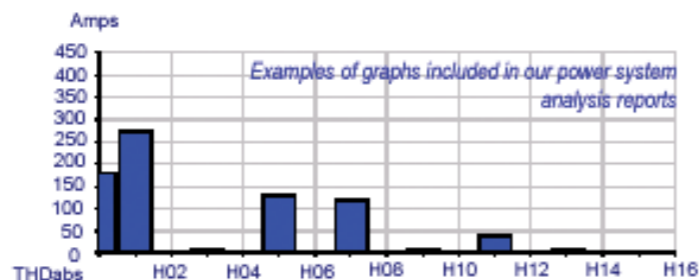
### Passive Harmonic Filter:

Each assembly comes complete with 3-phase iron-cored reactors, developed for this application.

All assemblies are fitted with stage-energised indication, and a multi-stage electronic microprocessor controller is usually fitted to 'sense' the system requirement for power factor correction capacitance.

### Active Harmonic Filter:

Each Active Filter features a versatile user interface, enabling the user to programme filtering characteristics, perfect multi-tuning to selected harmonics (including zero sequence). The system cannot be overloaded, and is also capable of being programmed for Power Factor Correction.



Total RMS: 327.16 Amps  
Total Harmonic Distortion: 178.71 Amps  
Even Contribution (H02-H50): 1.43 Amps  
Odd contribution: (H03-H49): 178.71 Amps  
Above graph shows 178 Amps of Harmonic Current on a 300 Amp system



# VOLTAGE OPTIMISATION - INTRODUCTION

Offering advanced technology in Voltage Optimisation, these products help you make savings of UP TO 20% on your electricity costs by reducing overall kilowatt-hour consumption - without compromise.



Fully engineered and manufactured at our facility in East Kilbride, Glasgow, our range of static and variable Varmatic Voltage Optimisers™ offer a practical and low-cost approach to your energy management programme.

Requiring little or no maintenance, they are the perfect addition to your electrical switchroom and, if required, can be custom-built to suit your particular requirements.

By installing an SDC Industries Varmatic Voltage Optimiser™, you are making an informed choice in improving your energy management systems.

Voltage optimisation equipment controls the incoming voltage at 220 volts, to maximise energy savings without compromising supply.

Optimisation directs itself toward clients who have a high amount of Voltage Dependent load. The higher the voltage dependent load, the higher the level of savings achieved.

In the UK, electricity suppliers have to provide a voltage between 207 and 253 volts. In practice, most suppliers generally use 253 volts as the base starting voltage to minimise transmission losses.

The average voltage throughout the UK is 242 volts. Most electrical equipment is designed to operate at 220 volts. The higher the voltage, the higher the energy consumption (and the higher the bills and carbon footprint).

To evaluate the potential of installing voltage optimisation equipment, clients are asked to divide their electrical consumption into two types of load:

## VOLTAGE DEPENDENT

**An electrical device whose power consumption varies with the voltage being supplied to it.**

A **Voltage Dependent** load could consist of Lighting, Motors, Manufacturing Machinery, Lifts.

## VOLTAGE INDEPENDENT

**An electrical device whose power demand within its designed operating range is independent of the supply voltage.**

A **Voltage Independent** load could consist of Electronic Equipment/PCs, Lighting (HF, LEDs), Motor Loads (controlled by VSDs), Electric Heating.

## The Benefits

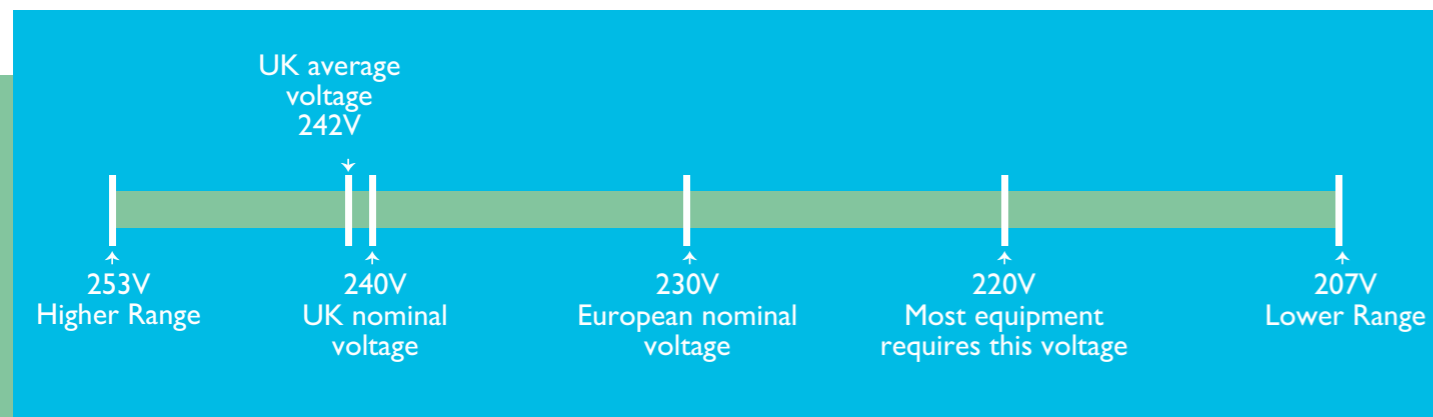
**Equipment such as lifts, manufacturing equipment, lighting and motors use more voltage than is required to operate, resulting in higher kilowatt-hour usage and, in turn, higher electricity bills.**

SDC Industries Varmatic Voltage Optimisers™ offer both static and variable voltage optimisation options which will:

- Reduce kilowatt-hour consumption by UP TO 20% (30% for LightMaster)
- Reduce carbon emissions by UP TO 20%
- Reduce the maximum demand
- Suppress harmonics, offering protection of vital electronic equipment
- Extend the lifespan of electrical and electronic equipment
- Improve Power Factor (for full PFC improvement, please utilise with SDC Industries range of Power Factor Correction equipment)
- Improve the voltage load.

## STANDARDS

Each SDC Industries Voltage Optimisation Unit is manufactured in accordance with ISO9001 and ISO14001 and adheres to the following standards: BS7806, BSEN60076, BS171, etc (please see our technical specification for further details).



## THE ENGINEERED SOLUTION

“SDC Industries were asked to supply and install Voltage Optimisation within Dumbarton Health Centre. We were extremely pleased with both the product provided and the installation service we received.”

**Gillian Brown – Energy Manager  
NHS Greater Glasgow & Clyde**

# VOLTAGE OPTIMISATION - PRODUCTS

The Varmatic Voltage Optimisers™ offered by SDC Industries are technologically advanced electromagnetic devices purposely designed for voltage optimisation.

Designed and manufactured in the UK, these products have been built using extremely lowloss silicon, grain oriented steel and very high purity copper.

Introduced in 2007, the Varmatic Voltage Optimiser™ is the result of over 35 years design and manufacturing experience in the industrial electrical power industry.

These units have no moving parts or components and are therefore extremely reliable and require little or no maintenance. Installing a Varmatic Voltage Optimiser™ does not in any way compromise or impair the normal and continued functionality of existing mechanical and electrical equipment.

The Varmatic Voltage Optimiser™ is installed after the electricity supply company meter but before the main distribution panel (or lighting distribution panel, in the case of the LightMaster). All units have very low impedance.

The tertiary winding has been designed to act as a harmonic trap to filter “triplen” harmonics, aiding in the reduction of total harmonic distortion (THD) through its delta configuration, which benefits overall power quality. This is achieved without the need to either alter or interfere with the sine wave of the ac supply. Therefore our system is harmonically neutral and no “chopping” of the waveform takes place.

All units can be equipped with a bypass facility (optional extra) to enable the safe isolation of the unit, if required.

## VARIO – STATIC VARMATIC VOLTAGE OPTIMISER™

At the heart of the Vario, is our specially designed optimiser system. It has been specially designed and built to meet the requirements of voltage optimisation.

The principles are simple: transformed to a reduced voltage of differing tap levels (i.e. 6%, 8% or 10% reduction), or others as dictated by site conditions.

The appropriate tap selection is chosen based upon site information and analysis including :

- load details
- usage patterns
- existing voltage levels (including max / mean /min levels).

## VARIO ULTRA – VARIABLE VARMATIC VOLTAGE OPTIMISER™

The Vario Ultra operates the same principles as the Vario, however, :

- is a fully-automated system
- has no moving parts
- offers a higher level of savings
- has a more stable output voltage
- offers longevity of component life
- can operate at high ambient temperatures
- is a low maintenance product.

Our engineer will assign the correct tapping level after the site analysis report is complete.

## LIGHTMASTER - VARMATIC VOLTAGE OPTIMISATION FOR LIGHTING

The LIGHTMASTER is an energy-saving Varmatic Voltage Optimiser™, designed to enable you to reduce your lighting bills by up to 30% without the need to upgrade your existing lighting system.

The equipment is designed to suit single phase and three phase supply, and is manufactured in standard sizes 5-150KVA (bespoke models can be designed to suit your requirements).

The Lightmaster is fitted directly onto the lighting distribution board, making savings on lighting only. The product can be used with various types of luminaires including Fluorescent, Ballast or High-Bay.

The Unit has two options :

Bypass : Unit is not engaged but shows normal consumption levels of lighting energy  
Supersave : Savings of up to 30% and switches between each mode using electronic switching.

## OPTIONAL CUSTOMISATION

The Vario or Vario Ultra can be customised to suit your particular requirements, as follows :

- Moulded Case Circuit Breaker
- Bypass Switch
- Metering

Optional additional features can be included to suit each client’s requirements, as follows :



“By installing the SDC Industries Varmatic Voltage Optimiser™ on our system, the leisure centre made savings of 19.2%. We see voltage optimisation as an effective method of achieving our carbon reduction targets.”

**Grace Connor –  
Energy Manager, Stirling Council**

**THE ENGINEERED SOLUTION**



# ELECTRICAL DISTRIBUTION

We understand that safety and performance are the ultimate priorities on any premises or site environment.

SDC Industries provides a line of high and low voltage electrical distribution products which can be installed internally or externally – whichever suits your particular needs.



## STANDARD LV SWITCHBOARD

SDC Industries designs and manufactures a wide range of standard modular switchboards, to suit your requirements.

With extensive experience in the electrical industry, SDC Industries provides each customer with a system built to reach the ultimate in safety standards, giving a reliable form of power distribution and control.

The cubicle pattern LV switchboard is available in four standard models - SW500, SW1000, SW1500 and SW2000, and caters for loads ranging from 700 Amp to 2800 Amp, however we offer bespoke units to suit each client's individual requirements.

The switchboards are constructed in modular format, allowing easy conversion, expansion and adjustment to changing demands.

Each standard model is manufactured and delivered ex-stock, or alternatively, on very short leadtime.

### General Characteristics

- Modular/Cubicle Format
- Free Standing
- Standards - IEC 60439-1
- Rating - Up to 690V
- Loads 700 Amp to 2800 Amp (or bespoke, as required)

- Degree of protection - IP43
- Separation - Form 4, Type 2
- Colour - RAL 7035 Light Grey
- Bottom cable inlet and outgoers
- Surge Suppression equipment on request
- Multi-function metering facility
- All outgoing MCCB's fitted with rotary handles with door locking facilities.
- All breakers are fixed triple pole and are accessible from front of switchboard.
- All ACB's are fitted with facilities to padlock in open position.
- Incoming breakers can be fitted with earth fault protection and neutral current CT tripping if required.

### Optional - by customer request :

- Top cable inlet and outgoers
- Sizes of MCCB's
- Colour
- Additional MCCB's in spaces
- Anti-condensation heaters
- Additional ventilation/cooling
- Control systems
- Installation at site
- Customised height/length measurements
- Surge and spike protection fitted to incoming supply.

## MOBILE SUBSTATION

SDC Industries **Mobile Substation** is a robust containerised power package which can be utilised by any industry requiring a re-usable, portable system for internal or external use.

Each unit can be manufactured to a standard specification or custom-built, using the ultimate in computerised technology, with voltages ranging from 415V-11kV, and Transformer Ratings 500kVA-2000kVA.

This product is particularly beneficial to industries involved in infrastructure or major land projects, for example,

- Construction
- Quarries
- Mining
- Roadworks.

### Features :

- Enclosure : Indoor / Outdoor
- Enclosure Size : 20ft / 40ft
- Coating : Painted Galvanised Steel (to colour of your choosing)
- Voltage Range : 415V-11000V
- Transformer Ratings : 500kVA-2000kVA
- Bespoke or General Specification
- Optional Metering/Telecontrol Facilities
- Rapid Installation and Commissioning.

### Benefits :

- Portable
- Re-usable
- Minimum Termination Costs
- No Planning Permission required
- Cost Saving versus Permanent Housing
- Security Safe
- Weatherproof
- Environmentally Friendly.

### Container designed to standard/customer specification, to include:

- Enclosure
- Heating/Lighting
- Fan Ventilation
- Thermal Lining (Optional)
- Air Conditioning (Optional)
- Internal Fence
- Pedestrian/Fire Doors.

### Content can comprise of :

- HV Switchgear
- LV Distribution Boards
- Motor Starters/Star-Delta/Soft Start
- Liquid or Air Cooled Transformers
- Power Factor Correction Equipment
- Harmonic Filtration Equipment
- Cabling.

## 11KV DISTRIBUTION EQUIPMENT

As of July 2015, the Ecodesign Directive (No. 548/2014 from the commission for implementing the Ecodesign Guideline 2009/125/EG) from the European Commission took effect for design of Distribution and Power Transformers (Tier 1). An additional stage, which will introduce tighter minimum standards (Tier 2) will come into effect in 2021.

The Ecodesign Guideline has been set to ensure energy consumption-relevant products are designed in such a way that the end product is environmentally-friendly. Objectives include improved energy efficiency and a general environmental compatibility, resulting in the overall reduction of CO2 emissions.



SDC Industries currently offer a new range of Tier 1 Transformers, which have been designed to suit the above guidelines, as follows :

- Liquid-filled Distributor Transformers (three-phase, up to 3,150KVA)
- Mast-Mounted Transformers (from 25-315KVA)
- Cast Resin Transformers (up to 3,150KVA).

The new Tier 2 objective to be introduced in 2021 should affect an increase in the degree of effectiveness by 20%.



# HIGH VOLTAGE PROJECTS

SDC Industries have the in-house capability to design, manufacture and install the equipment you need – safely, on-time and on budget.

## **VARCAP & VARMATIC HV**

The SDC Industries Varcap & Varmatic HV is a comprehensive range of low loss, environmentally friendly power capacitors with voltage ranges from 660V – 33KV.

Capacitors can be supplied as loose units or finished assemblies.

The individual capacitors can be utilised to replace existing capacitors. The complete assemblies can be supplied as fixed or automatic banks which incorporate Vacuum/SF6 contactors.

A design service is available for individual customer requirements/harmonic filter banks.

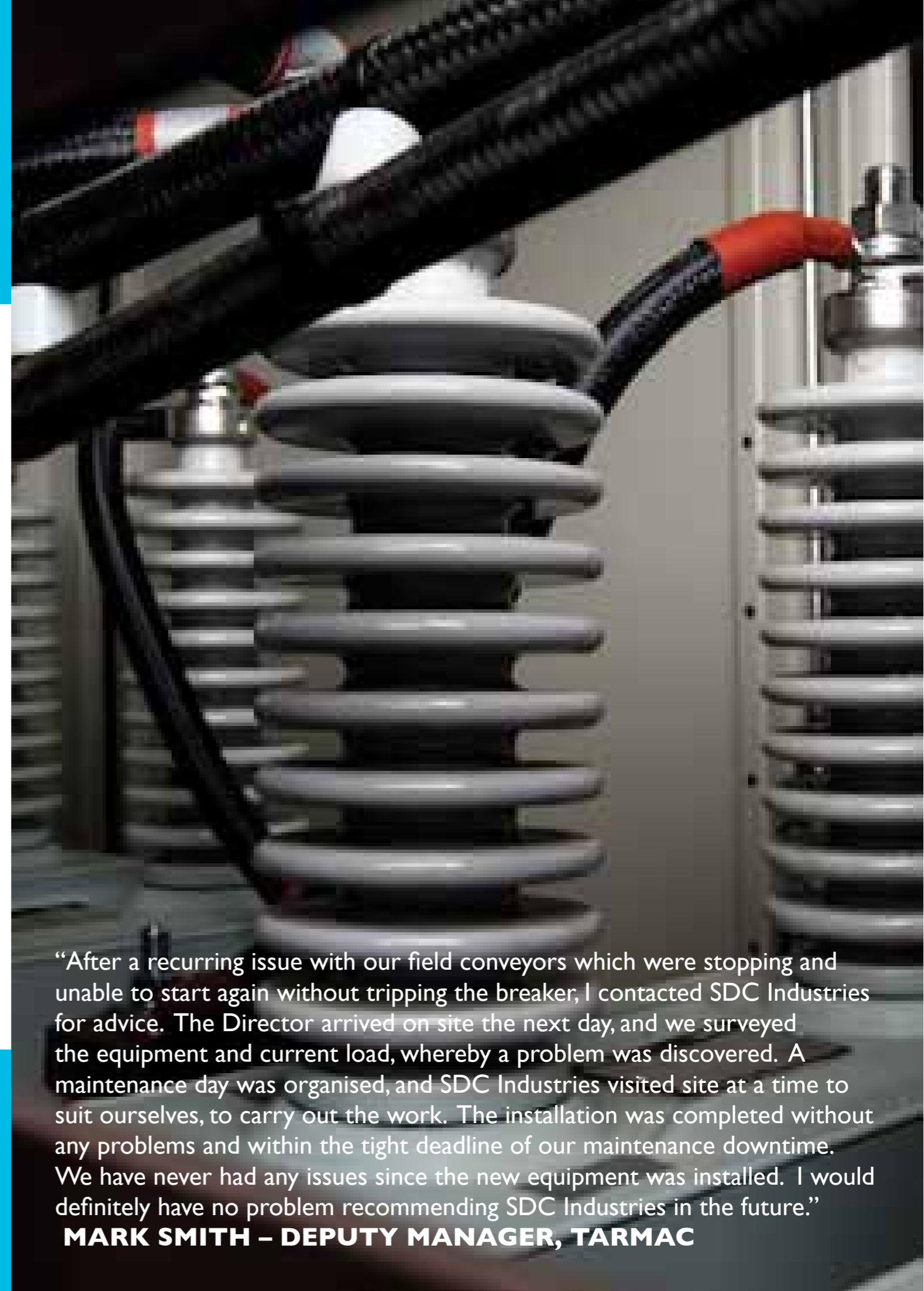
The Varmatic HV assembly offers the latest technology in the supply of automatic capacitive reactive power combining very high quality components with state of the art engineering expertise.

## **VARCAP HV**

- All film dielectric, no PCB presence.
- Losses less than 0.2W/KVAr.
- Ratings 25KVAr – 400KVAr, single and 3 phase.
- Stainless steel welded container.
- Porcelain bushings.

## **VARMATIC HV**

- Designed to specific site requirements.
- Individual automatic stage sizes 50KVAr – 1000KVAr.
- Assemblies in free standing sheet steel enclosure complete with all control power supplies, HRC fuse protection, etc.



“After a recurring issue with our field conveyors which were stopping and unable to start again without tripping the breaker, I contacted SDC Industries for advice. The Director arrived on site the next day, and we surveyed the equipment and current load, whereby a problem was discovered. A maintenance day was organised, and SDC Industries visited site at a time to suit ourselves, to carry out the work. The installation was completed without any problems and within the tight deadline of our maintenance downtime. We have never had any issues since the new equipment was installed. I would definitely have no problem recommending SDC Industries in the future.”

**MARK SMITH – DEPUTY MANAGER, TARMAC**

# POWER QUALITY FOR THE OIL INDUSTRY



**The SDC Industries VARMATIC RAPIDE (VR) is an industry-leading solution manufactured to improve power quality on oil and drilling rigs. This innovative, all-in-one unit's internal components and software package provide software intelligence to counteract the effects of :**

- **Power Factor**
- **Harmonics**
- **Voltage Sags**
- **Voltage Swells**
- **Voltage Flicker**
- **Transients.**

“Power Quality” is a term used to define any occurrence of voltage, current or frequency deviation on your low voltage power system that results in equipment failure, process interruptions and power system inefficiency.

Switching of reactive loads allows harmful transients, harmonics and other problems to make their way through the power system. By utilising the VR, these problems can be minimised or eliminated. In addition, the VR would be beneficial when reactive compensation is required to meet specific load demand.

The unit is capable of :

- Switching at intervals down to 1 cycle to counteract the effect of peak loads
- Removing all transients from switching
- Reducing drops in voltage and any resultant flicker
- Maintaining a long life-span, due to its robust nature.

Each system is manufactured to client specification, following on-site measurements taken using sophisticated power monitoring equipment. It can be installed on systems up to 690V; 50/60Hz; single or 3 phase. The system is protected by high speed fuses and contains built in harmonic filtration. Each unit comes with high power thyristors and a three phase analyser included. All capacitors and reactors used within the system are designed and manufactured to a high specification in our premises in East Kilbride.

**THE SDC INDUSTRIES VARMATIC RAPIDE IS CAPABLE OF SWITCHING LARGE AMOUNTS OF REACTIVE COMPENSATION IN AND OUT OF CIRCUIT IN TIMES DOWN TO 1 CYCLE**

## **Varmatic Rapide Benefits**

- Improves power quality
- Absorbs harmonic currents and therefore reduces Total Harmonic Distortion
- Alleviates stress on cables, switchboards, transformers and generators
- The micro-processor controlling the unit ensures transient-free switching
- Prevents voltage drops and flickers typically occurring in real-time applications
- More constant electrical load
- Reduced operational hours of generators, therefore reducing maintenance costs.

## **Power Systems Analysis**

The SDC Industries VR process begins with a POWER SYSTEMS ANALYSIS of your electrical system. From the outcome of this report, our highly trained in-house engineers can design a unit to suit each client's specific requirements.

The power monitor measures the following parameters :

- True volts RMS and amps RMS
- Watts, volt amps and volt amps reactive
- Power Factor
- Frequency
- Voltage Unbalance
- Voltage total harmonic distortion
- Current total harmonic distortion
- Current crest factor
- Nth harmonic, voltage/current
- K Factor
- Demand, energy, sags and swells
- Individual harmonics to 50/60Hz
- Voltage/current transients.





# REACTIVE COMPENSATION FOR WINDFARM APPLICATIONS

SDC Industries design, manufacture and install a full range of REACTIVE COMPENSATION equipment for windfarm applications.

Compliance with the Grid Code is paramount when involved in the electrical distribution of windfarms. The solutions manufactured by SDC Industries allow sites to comply with the relevant sections of the UK & Eire Grid Code.

**Our REACTIVE COMPENSATION product range is suitable for indoor/outdoor locations, and includes :**

- Statcoms
- Static Var Compensators
- Static Capacitor Banks
- Reactors
- REACTIVE COMPENSATION solutions manufactured by SDC Industries are typically 1Mvar-100Mvar, and can be designed for voltages of up to 33KV. Each unit has a lifespan in excess of 20 years.

**To compliment our Reactive Compensation product portfolio, we offer :**

- Engineering Consultancy
- Extensive technical experience
- Power Systems Analysis/System Modelling
- Physical layout drawings designed to client-specific planning considerations
- Power Factor Correction
- Harmonic Filtration
- Complete installation service.

**STATIC VAR COMPENSATOR (SVC) :**

- The SVC is a shunt-connected generator whose output can be adjusted to exchange capacitive or inductive current to maintain or control specific parameters of the electrical power system.

**The benefits of installing Static Var Compensation equipment on your system include :**

- Higher Power Factor
- Voltage Stabilisation
- Reactive Power Compensation
- Elimination of Harmonics.



# SURGE SUPPRESSION

SDC Industries has over 35 years' experience in the design and manufacture of power quality and energy efficiency products for commercial and industrial customers. We understand the increasing importance placed on both protecting information technology systems and power quality.

The SDC Industries Varmatic Viking is the ultimate in surge protection devices. Designed and developed by our team of highly experienced engineers, the Varmatic Viking protects your electrical and electronic equipment from everyday power surges and power spikes.

**Power spikes are responsible for the single largest percentage of lost revenue due to system downtime**

Power surges and spikes are one of the leading causes of equipment failure and system damage. Common causes of power surges can range from lightning strikes to switching of electrical loads. Whilst they often last a short time, the damage caused cannot be underestimated. From the manifestation of an ageing component, to the sudden and complete destruction of an entire system, the results of a power surge or spike can be catastrophic. However, with a properly designed and installed surge protection system, even the most sensitive of electrical equipment will be protected.

**The SDC Industries Varmatic Viking is a key step in improving your facility's reliability, reducing downtime and protecting your equipment**

The Varmatic Viking, featuring the latest in industry approvals and safety ratings, comes in a wall-mountable enclosure containing:

- An integral voltmeter
- Protection fuses
- Phase, neutral and earth terminals
- Surge diverters
- Smoothing capacitors
- Line indication lamps
- Control protection.

**Benefits**

- Comprehensive power conditioning and enhancement
- Surge and Spike Protection
- Reduction in voltage fluctuations
- Reduction of high frequency interference
- Improvement in the effectiveness and efficiency of electrical power usage
- Extends equipment life
- Improves equipment function
- Protects complete electrical supplies from the effects of spikes entering your premises.



# SERVICES

SDC Industries can maintain and service a wide range of electrical equipment including Power Factor Correction, Voltage Optimisation or HV/LV electrical distribution equipment



## ANNUAL MAINTENANCE

Did you know that most electrical equipment is only guaranteed for 12 months from purchase?

SDC Industries is a market leader in providing power quality solutions. It is this experience that has led our engineers to gain the expertise required to provide a superior quality of service for our clients.

To complement our product portfolio, SDC Industries offers potential and existing customers the opportunity to obtain an optional MAINTENANCE contract on their electrical switch room equipment. Our experienced engineers will perform a detailed check on items of electrical equipment specified by the client, to ensure they are in good working order.

### Benefits

- Less production downtime due to malfunctions in the electrical power system
- Equipment operating at its full potential will lower the cost of your electricity bills
- Checking your electrical equipment regularly will lower the risk of fire breaking out in the control room
- Less interference and damage to PC's and other networked equipment caused by non-operational harmonic filters
- If a fault is noticed quickly enough a repair may be possible rather than replacing the full unit.

Our highly skilled engineers can maintain any make or model of equipment contained in the list above - no matter who the original manufacturer may have been.

## MAINTENANCE CHECKLIST

- Step 1 • Visual Inspection
- Step 2 • Safety Test
- Step 3 • Functional test of components
- Step 4 • Rectify as practical any minor malfunction
- Step 5 • Recommend corrective action
- Step 6 • Undertake corrective action, as agreed within contract.

## THERMAL IMAGING

Thermal Imaging is a low cost, effective method of protecting your business assets and giving you piece of mind. It is an essential part of a successful Preventative and Predictive Maintenance plan allowing you to detect electrical faults before the component fails. And because it can be virtually non-intrusive, it's extremely fast and efficient.

### Benefits

- Immediate and accurate electrical fault finding
- Virtually non-intrusive
- A planned approach to equipment maintenance
- Provides a timely response to issues before they become critical
- Reduced downtime due to equipment failure
- Reduced repair costs
- Reduced risk of electrical fire
- Reduced insurance premiums.

## POWER SYSTEMS ANALYSIS

Power Systems Analysis is used to identify the source of power quality problems, such as, voltage unbalance, harmonic distortion, etc. It can be extremely useful as part of a Predictive or Preventative Maintenance Plan, allowing you to detect faults in the system before they become critical.

Once the monitoring is complete, SDC Industries can provide a detailed report which analyses the individual electrical parameters of the electrical system.

The Power Monitor measures the following parameters:

- True volts RMS and amps RMS
- Watts, volts amps and volts amps reactive
- Power Factor
- Frequency (30-450Hz fundamental)
- Voltage unbalance
- Voltage total harmonic distortion
- Current total harmonic distortion
- Current crest factor
- Nth harmonic, voltage/current
- K factor
- Demand, energy, sags and swells
- Individual harmonics to the 50Hz fundamental frequency
- Voltage/current transients
- Other more bespoke analysis can also be performed to meet the high standards of individual industries and commercial sectors.

## DISTRIBUTION SYSTEM MODELLING

SDC Industries can provide electrical distribution system modelling of a customers existing distribution system or proposed new system by use of a powerful computer program. The program can model three phase, single phase, AC, DC, AC/DC, loop and radial networks.

The computer program has a professional CAD Graphic System which allows the production of one-line electrical diagram from which the following studies simulations and analyses can be created:

- load flow studies
- motor starting load flow studies
- short circuit analyses
- protective device co-ordination
- harmonic analysis
- power factor correction.

### Benefits

- maximisation of existing electrical distribution system
- correct selection of protective components, e.g. circuit breaker, fuses
- correct loading of transformers, switchgear and cables
- reduction in costs of new equipment due to correct specification.



SDC Industries also offer an Oil Analysis Service which can determine both contamination and deterioration levels. We can also facilitate disposal of items containing PCB and batteries through SEPA or other EPAs.





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