



# Intelligent Motor Control

**powerboss**

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3M  
Cadbury Schweppes  
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Coca Cola  
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Jaguar Cars  
Dillons  
Volvo Penta  
H Goodwin  
Aston Martin  
Van Robb  
GKN  
Proton Cars  
Mattel  
Johnson Controls  
Boral Quarries  
Baxter Pharmaceuticals  
BAA  
Nestlé  
Curver  
Sertec  
United Axle  
Vattenfall  
Hashimoto  
Filtertek  
Denso  
Honda  
United Wheels  
Hussman Corporation  
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Procter & Gamble  
TRW  
Parker Pens  
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Hanson  
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Kodak  
Demag  
Renault  
Nissan  
Linpac  
Saujana  
Link Plastics

# powerboss

Any company that operates AC induction motor driven systems can benefit from Powerboss. In reality, many motors are working significantly below their design capacity resulting in high levels of inefficiency. It is clear, if you could intelligently monitor and reduce the power drawn by a motor

## Who is it for?

to match its actual need under variable load conditions, you would open up an enormous energy savings opportunity. Powerboss can do just that!

Successful Powerboss installations can be found within factories, offices, hospitals, airports, convenience stores and supermarkets – from the smallest corner shop – to the largest industrial complex. Substantial improvements can be made to air conditioning, refrigeration, escalators, presses, compressors, hydraulics, saws, injection moulding, pumps, conveyors and crushers...

to name but a few.

The UK Energy Efficiency Office has stated “in typical applications, levels of utilisation are approximately 50% with power losses estimated to be between 40% and 80% of the motor full load rating”. Unfortunately, motors have no way of intelligently adjusting the amount of electricity they draw to match the constant variations in demand.

Furthermore, when starting, an AC induction motor develops substantially more torque than is required at full speed. This stress is transferred to the mechanical transmission system, which increases wear and failure. Rapid acceleration also has a further impact on the electricity supply charges with high inrush currents between 6 and 10 times the normal run current.



Motors often require full power for only very limited periods, and at other times a huge amount of energy is being wasted.

*In 2003 a global pharmaceutical company with 67 manufacturing facilities across the world installed Powerboss on injection moulding machines and material grinders in one of their European production plants. The energy manager had identified that they did not have an energy management solution in place for their fixed speed applications. Substantial savings were demonstrated,*

*providing a payback in only 8 months. So successful was this project that the energy manager who implemented Powerboss has won an award for his energy management policy and was asked to present his findings at a global conference.*

# - Suddenly You're In Control

Utilising a powerful micro processor embedded with unique control software, Powerboss provides a simple and effective control solution to most fixed speed applications. By constantly monitoring the 'efficiency' of the motor Powerboss ensures that the input power to the motor is matched

## How does it work?

exactly to the load as it changes. Even the slightest variations in demand will be sensed and Powerboss will respond – supplying full power to the motor if required in 1/100th of a second. Motor speed and full torque potential are not adversely affected in any way.

Soft start and soft stop is incorporated on all 3 phase Powerboss units. The robust soft start, capable of over 250 starts per day, provides smooth, stepless acceleration which dramatically reduces stress on mechanical transmissions. By eliminating high inrush currents, maximum demand can be reduced. Power factor will also be improved.

Soft stop provides a gradual deceleration, particularly suitable for fluid pumping where abrupt stops create torque transients, which cause harmful water hammer effects.

Furthermore, Somar have also developed a revolutionary 'Dynamic Software Optimiser' which enables an engineer, on commissioning a unit, to choose from an extensive library of tried and tested application specific software solutions. These include Kick Start, Plug Braking, Timed Cutoff, Stored Energy, Signal Optimisation and Belt Breakage Protection to name but a few... These unique performance enhancing features have, in many cases, doubled the expected energy savings, and further increased equipment reliability, safety and efficacy.

In short - Powerboss will give the motor the exact amount of power it needs at any instant in time – no more, no less.



Leading edge technology providing practical solutions to meet some of the demands of this decade.

*A manufacturer of top of the range wood burning stoves has 102 Powerboss 3 phase units controlling motors in its foundry. With a very hot and dusty environment, and some motors starting up to 400 times per day, the company experienced a very high incidence of breakdown and consequent long periods of down-time on its production lines.*

*Although there has been an average saving of 22% in energy, they also claim that the greatest benefit is the dramatic improvement in equipment reliability, corresponding to an almost 80% reduction in maintenance costs due to improved motor control.*

**Powerboss is suitable for a wide variety of applications, which could include:**

Air conditioning  
Agitators  
Baggage handling  
Bottling lines  
Circular saws  
Compressors  
Conveyors  
Crushers  
Die-casting machines  
Drying plant  
Escalators  
Extruders  
Fans  
Feed rollers  
Granulators  
Grinders  
Injection-moulding  
Hydraulic systems  
Machine tools  
Mixers and blenders  
Oil Wells  
Paper refiners  
Pulpers  
Presses  
Printing machinery  
Pumps  
Refrigeration  
Sewing machines  
Vacuum-forming  
Weaving and knitting

From the very first moment of installation Powerboss will be paying for itself entirely out of the savings it generates – cutting costs – increasing profits! Furthermore, where a specific soft-start need has been identified, Powerboss will provide a comprehensive turn-key solution with the additional benefit that with its unique

**What does it cost?**

energy saving software it will ultimately cost you nothing!

When supplied on a lease/rental facility there is no capital outlay and a cashflow payback can be delivered in the first month of operation.

Many forward thinking companies are being helped to appreciate the financial benefits of Powerboss - often resulting in board decisions in favour of large installation programmes.

Powerboss is suitable for a wide variety of applications and in many instances savings have been exceptionally high. Naturally, results will vary depending on several factors, but even a smaller saving will still provide a 100% guaranteed return on investment.

Substantial reductions in kilowatt-hours and maximum demand charges, as well as reduced maintenance costs, have combined to guarantee customer satisfaction – with a speedy payback – often less than two years.



Powerboss will produce a more efficient, smoother and quieter motor with increased life and reduced maintenance costs.

*One of the world's leading suppliers of office automation, electronic devices and photographic equipment has worked with Powerboss with excellent results. Worldwide, the company employs in excess of 75,000*

*people; Powerboss is seen as an important tool in reducing both energy costs and CO<sub>2</sub> emissions. Powerboss units were fitted to plastic injection moulding machines producing components for photocopiers. It was identified that 24% kW savings translated into a return on investment in less than two years with significant and quantifiable CO<sub>2</sub> savings. The units have also given trouble free operation in continuous service over an 18 month period.*

**Powerboss can be custom designed and built for any application, including chassis mount units for installing as an integral component by Original Equipment Manufacturers.**

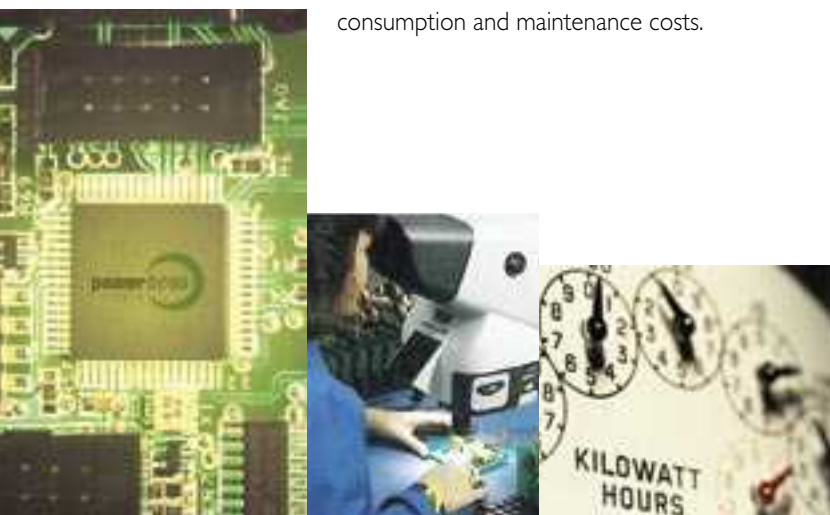
# - Intelligent Energy Savings

**Controlling the cost of energy** is without doubt one of the greatest challenges facing industry today as companies come under increasing pressure to remain competitive in the new global economy.

Motors are the world's largest consumer of electrical energy, accounting for 70% of all industrial electricity used. Not surprisingly they are found literally everywhere and are utilised in the manufacture and supply of almost every product we purchase. Incredibly however, motors are also the world's largest abuser of energy. Motors are unable to intelligently match the power they consume to the job of work they do.

In many applications much of the energy consumed is unnecessarily wasted in the form of excess heat, vibration and noise. These 'losses' then compound to create still further problems, which can be time consuming and expensive to rectify.

Now at last, by using Powerboss, you can dramatically improve overall efficiency providing a safer and more reliable operation with substantial reductions in both energy consumption and maintenance costs.



Powerboss provides total motor husbandry... and for many companies is the automatic choice for controlling all fixed speed applications.

- Less Downtime – Increased Production...
- Reduced Maintenance – Less Costs...
- Reduced Energy – Increased Profit!

Powerboss is the mature solution – Profit through intelligence

Powerboss is designed to the highest possible standards and the manufacturing process is stringently controlled for quality assurance



# Dynamic Motor Optimiser

## Can you benefit?

In order to help you assess the potential benefits that Powerboss can bring to your organisation, your regional Powerboss Distributor is fully equipped to:



- Conduct an inspection of your existing motors
- Provide a comprehensive survey report highlighting the existing levels of efficiency and any potential problems and solutions
- Identify all areas where improvements can be made including opportunities for energy savings, reduced maintenance costs and reduction of downtime
- Submit a proposal that will focus on practical solutions with detailed cost and benefit analyses demonstrating the project's economic viability

Our regional Distributors will implement agreed solutions using fully qualified and experienced installation technicians who are skilled, not only in working with Powerboss, but importantly in the interaction between Powerboss and your equipment and processes. For further information on this service and to learn more about the unique benefits that Powerboss can bring please contact your regional Distributor.



## PRODUCT OVERVIEW

Product range - 3 phase	220 - 1100 volts / 2.2 - 1450 kW
Frequency	50/60 Hz
Soft start ramp time	Variable from 0.5 to 225 secs
Soft stop ramp down time	Variable from 0.5 to 120 secs
Ambient temp range during operation °C	-10 to +40
Ambient temp range during storage °C	-40 to +70
Degree of protection	IP20
Integral relays	Top of ramp / fault and run
Cooling	Natural or fan assisted
Single phase	110 - 220 volts / 0.2 - 3 kW

## A proven product

All Powerboss units have been granted CE certification along with an EMC Declaration of Conformity prescribed by the EU. In addition, they have been tested to standard UL508C/2000 and carry the ETL mark for both the USA and Canadian Standards. Somar International Ltd is a BS EN ISO 9001 and ISO14001 accredited company. Somar International Ltd. has received the Queen's Award for Enterprise. This highly coveted honour is the most prestigious business accolade in the UK.



**S O M A R**

Somar International Ltd., Somar House, Heron Way,  
Newham, Truro, Cornwall, TR1 2XN. England  
Tel: +44 (0)1872 223000 Fax: +44 (0)1872 264325  
www.somar.co.uk

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**ENERCON**  
ENERGY CONTROL EQUIPMENT COMPANY

Distributed by:  
PT. ENERCON EQUIPMENT COMPANY  
GEDUNG ALDECO II - 4TH FLOOR  
JL. WARUNG JATI BARAT RAYA NO. 75  
JAKARTA 12740, INDONESIA  
TEL. 62-21 7941182 FAX. 62-21-794 1184