P O W E R V A R

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THE ROI STUDY OF UNBURDENING SERVICE COSTS FROM THE BOTTOM LINE



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The ROI study of unburdening service costs from the bottom line

Power quality technology can dramatically reduce service burden costs for critical equipment

Most companies recognize power quality as an issue when it comes to the detrimental effect of power disturbances such as; common mode voltage, normal mode voltage, electrical noise and voltage impulses on sensitive electronic systems. The problem is calculating accurate figures which demonstrate the financial liability of dealing with bad power – or in other words, how can you factually determine the return on investment (ROI) when selecting from various power protection solutions? So while the frequency of spikes, surges and other phenomena in a power distribution system are widely understood, little has been done to date to identify what these power disturbances are actually costing our businesses.

For most businesses power quality problems tend to be 'out of sight and out of mind'. Over the last 25 years POWERVAR has made power quality its business, in close co-operation with various industry leading customers, to identify a technique on how to quantify and educate the industry on calculating the ROI when selecting a power protection solution. The objective is to apply actual service costs and metrics in a straightforward formula to illustrate the ROI delivered by power quality equipment. That's money saved which can go straight to the bottom line.

POWERVAR is a manufacturer of premium power conditioning equipment and according to Chris Walsh, Director of Marketing, "power quality is an area that many pay lip service to but few actually have been able to nail down what the specific benefits are when implementing various power quality technologies, especially in terms of ROI."

"We have studied this topic in-depth over several years and worked with a plethora of prominent companies around the globe in collecting data which shows how businesses can save bottom line dollars."

A major focus has been understanding the service burden rate, which is the proportion of the price of a product which is allocated to cover ongoing maintenance and equipment repairs during the warranty period. In a series of co-operative customer projects, the range of the service burden rate by manufacturers has been found to be between 4 to 8 percent of the sale price of the equipment or solution.

The results were gathered from a sampling of more than a thousand pieces of equipment installed by POWERVAR customers. The statistics show a reduction of between 43 to 88 percent in warranty service costs when a POWERVAR transformer based solution was part of the installation. These figures take into account the cost of buying the power protection equipment; furthermore the return on investment in these applications varied between 154 percent to an astonishing 1148 percent when installed with the proper protection.

Studies have shown that our power protection can reduce help desk calls by 60 percent. Of course the benefits are not just financial; the reduction in service calls to the manufacturer improves customer satisfaction which in turn builds customer loyalty and generates repeat business for the manufacturer.

Power supply problems

Whether the power comes from a public utility or produced onsite by a generator the quality is a challenge for today's sensitive modern electronics. The power produced by today's utility companies, even in developed countries, still largely meets the standards set in the earliest days of electricity. This was satisfactory for many years until the advent of modern electronic systems. Equipment incorporating sensitive components, especially integrated circuits (ICs), feel the effect of power disturbances. However, when a service engineer is called to a site all too often the result is a 'no trouble found' service report indicating that the actual cause of the problem has not been identified. POWERVAR has shown that in many cases the installation of a low impendence transformer based power conditioner will cause these supposedly untraceable, intermittent problems to just disappear.

POWERVAR's education process involves an onsite demonstration at the customer's facility to show the surprising frequency of these power disturbances. All irregularities are not instantaneously fatal to the connected equipment, but many produce cumulative damage which will eventually cause sudden system failure or lock up without any immediate warnings. Apart from these hidden factors, the power supply in the US and other developed nations experiences an average of 8.8 hours of power outages per a year. Less visible is the annual average of 79 hours in which the quality of power is not satisfactory to the sensitive equipment. These incidents spread over the course of a year frequently cause costly damage or failures.

Problems in the power supply

Power problems affect systems in three ways – destruction, degradation, and disruption.

Destruction

Destruction can occur when a power disturbance is so large that its energy literally blows up or destroys a semiconductor device like a transistor or integrated circuit. These disturbances tend to be the easiest to identify because they leave visible evidence such as smoke, soot and charred components.

Degradation

Degradation happens when lower amplitude power disturbances enter an electronic system and affect semiconductors at a microscopic level. Solid state devices are designed to operate at low voltages while degrading power disturbances will often exceed the material's voltage tolerances causing its erosion (rather like the way that rust damages metal) weakening the semiconductor. This damage is cumulative and occurs over time and as the result of a number of disturbances during which the material grows weaker until it ultimately fails with no previous warning, making the cause hard to identify.

Disruption

Disruption is the result of power disturbances that cause the electronic system to make the wrong decisions. Disruption also occurs when neutral to ground (common mode) voltages become excessive. Another major cause is the presence of ground loops in the network; these cause data communication errors and slow system throughput. These disruptive events are difficult to identify and can be easily mistaken for software bugs or operator errors. They are the most common cause of 'no trouble found' service calls.

Solution

The only way to limit power disturbances to the level recommended by the semiconductor industry is by using a power conditioner with a built in impedance isolation transformer, a power line noise filter and a surge diverter.

Sensitive sectors

The following are a few key market sectors where bundling a power conditioner significantly increases the return on investment reflecting lower service costs and enhanced equipment performance:

- Medical and healthcare systems; this includes clinical and diagnostic equipment, patient monitoring, patient imaging and cardiac catherization, among others
- Analytical instrumentation; gas chromatography, liquid chromatography, mass spectroscopy and explosive detection
- Banking, gaming, and retail markets; including point of sale, ATMs and kiosks
- Electronics manufacturing – semiconductors, industrial automation, PCB manufacturing and automated test equipment
- Graphics and printing industries; page layout and makeup and digital feed presses

There are numerous market sectors where a focus on controlling the power variable and protecting the equipment's process will amplify the return on investing in a POWERVAR solution. Above is only the beginning of the list. The key element in all these industries is that an improved ROI is not just about the cost savings, instead the benefits of ensuring that the systems are always up and running; minimizing failures or drop outs, reducing the number of service calls and warranty costs, keeping the customer happy, improving customer satisfaction, competitive industry advantage and protecting the manufacturer's image are all aspects of the 'soft ROI'.

Unburdening the service rate

The key to delivering a higher return on investment for original equipment manufacturers (OEMs) is a direct and fast reduction in the service burden rate. The POWERVAR customers' spectrum for this "service burden rate" figure has ranged from 4 to 8 percent of the price of the product or solution sold.

POWERVAR concentrates on increasing equipment reliability and up-time on the one hand and reducing operational and service costs on the other. A frequent proportion of service problems result in 'no trouble found' service calls, most probably caused by a power quality problem. The ability to reduce these calls has a positive impact on warranty costs and customers satisfaction.

Service cost reductions of up to 88 percent were achieved by bundling of a POWERVAR power quality solution while the lowest reduction achieved was a remarkable 43 percent. For some POWERVAR customers this reduction is a savings of several million dollars to the bottom line. Furthermore, the average number of help desk calls dropped by 60 percent with one customer. These are savings every corporation or small business desires.

Harder to measure is the impact on customer satisfaction, industry brand image, and competitive advantage, although these aspects are very real benefits for any business.

These savings enable POWERVAR to demonstrate that their equipment, although representing an initial cost, can deliver regularly a return on investment of around 300 percent.

A further benefit of this solution is seen in the significant increase in profits obtained from service contracts which are more profitable. Another advantage to manufacturers is utilizing this benefit as a competitive advantage by extending their product warranties to gain marketshare.

Clearly power quality is not the only factor which impacts the service burden rate. There can be all sorts of software, training, hardware and personnel issues which play a role, but addressing and, effectively, eliminating the 'hidden' and, often, hard-to-trace problems caused by power fluctuations frees up time and resources to solve these other areas.

ROI Case Study

# of systems installed each year:	6,000
Cost of each system:	$22,500
Service burden rate:	8%
Reduction in service costs:	43%
Systems revenue (6,000 * $22,500)	$135,000,000
Burden rate cost ($135,000,000 * .08):	$10,800,000
Reduction in burden rate ($10,800,000 * .43)	$4,644,000
Cost of POWERVAR products ($200 * 6,000)	$1,200,000
ROI ($) ($4,644,000 - $1,200,000)	$3,444,000
ROI (%) ($3,444,000 / $1,200,000)	287%

Customer states support calls decreased by 60% (Soft errors)

POWERVAR solution is 0.8% cost of the total system cost

Some specific examples

One of POWERVAR's customers is a world leader in systems for businesses, retail and banking.

Its ATM business has achieved significant savings in its service burden costs while delivering an impressive return on investment from its purchase of POWERVAR power conditioning products.

In a full year, *this company's* sales of 6,000 ATM systems generated revenues of $135 million. Of this, the company made an allowance of 8 percent - $10.8 million - towards equipment servicing during the warranty period.

The investment in POWERVAR power conditioning equipment cost $1.2 million, representing just 0.8 percent of their total sales. This small addition in product costs has been offset by a reduction in the service burden expense of 43 percent - which totals over $4.64 million in savings, and produced a return in investment of a remarkable 287 percent.

An electronic safe manufacturer invested $156,000 in POWERVAR technology that has delivered them a saving of $396,000 on service costs, which is a ROI of 154 percent. This company budgets around 5 percent of the unit sales as a service expense; which is almost half a million dollars. The investment in POWERVAR's solution was only 1.7 percent of total system cost, and has produced a net addition to the bottom line of $240,000.

ROI Case Study

# of systems installed each year:	1,200
Cost of each system:	$165,000
Service burden rate:	6%
Reduction in service costs:	70%
Systems revenue (1,200 * $165,000)	$198,000,000
Burden rate cost ($198,000,000 * .06):	$11,880,000
Reduction in burden rate ($11,880,000 * .70)	$8,316,000
Cost of POWERVAR products ($555 * 1,200)	$666,000
ROI ($) ($8,316,000 - $666,000)	$7,650,000
ROI (%) ($7,650,000 / $666,000)	1148%

Customer states support calls decreased by 60% (Soft errors)

POWERVAR solution is 0.33% cost of the total system cost

A multi-national dental imaging company has achieved a dramatic return on investment of 1148 percent from the bundling of POWERVAR equipment with their x-ray systems.

This company manufactures state of the art dental x-ray systems. They have achieved a 70 percent drop in service costs for an investment in POWERVAR equipment which equals 0.33 percent of its total system costs.

On sales of almost $200 million, the service allowance was 6 percent or close to $12 million annually. The actual service cost has been reduced by 70 percent ($8.3 million) delivering a phenomenal return on investment of 1148 percent.

ROI Case Study

# of systems installed each year:	20,000
Cost of each system:	$20,000
Service burden rate:	4%
Reduction in service costs:	60%
Systems revenue (20,000 * $20,000)	$400,000,000
Burden rate cost ($400,000,000 * .04)	$16,000,000
Reduction in burden rate ($16,000,000 * .6)	$9,600,000
Cost of POWERVAR products ($187 * 22,000)	$4,114,000
2,000 units	
ROI ($) ($9,600,000- $4,114,000)	$5,486,000
ROI (%) ($5,486,000 / $4,114,000)	133%
At 6% burden rate – RIO ($) $10,286,000 RIO (%)	250%
At 8% burden rate – RIO ($) $15,086,000 RIO (%)	367%

POWERVAR solution is 1% cost of the total system cost

A casino gaming manufacturer chose POWERVAR to protect their equipment. Their sales are over $400 million annually. The power conditioning element represents just 1 percent ($4.1 million) of their system cost but produced a reduction in the service burden cost of more than double that at $9.6 million. The allowance for service during warranty amounts to 4 percent of sales but has been slashed by 60 percent in a full year.

The investment in POWERVAR has delivered a ROI of 367 percent.

Another company which builds diagnostic and laboratory equipment for the animal health market has realized a 72 percent reduction in service costs thanks to its investment in POWERVAR technology. Their $750,000 investment with POWERVAR has produced savings of over $5 million and a ROI of close to 700 percent.

In the UK, *James Hall & Co*, a Spar group wholesaler in England saw a reduction of 80 percent in hard disk failures and data corruption in its EPOS and back office systems. At its petrol retail forecourts, compared with its retail outlets that had no power quality equipment in place. This has resulted in an investment in power conditioning equipment rolling out across its entire retail base of 500 stores.

The company is now considering extending the lifecycle of its retail systems before replacement, from five to six years. It currently rents the equipment to its outlets for five years but is confident that an investment of around £130,000 in POWERVAR equipment would make it possible to extend the trouble-free life of front and back office systems by 20 percent and easily deliver additional rental income of more than £2 million.

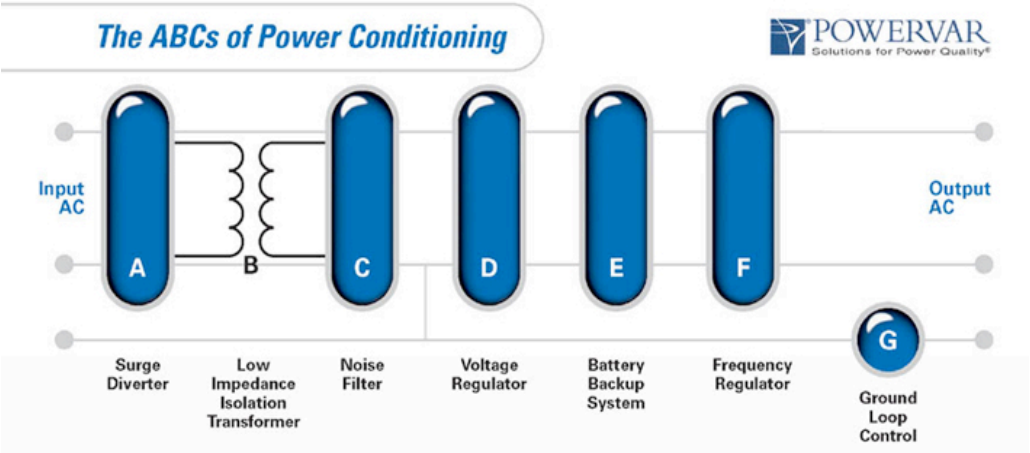
The POWERVAR approach

These examples demonstrate that a focus on power quality can deliver substantial costs savings and measurable ROI on the equipment purchased. Over the years the power quality market and associated UPS business has been highly competitive and driven by price.

POWERVAR believes that the market is now entering a new era where the investment is made on the grounds of return on investment and demonstrable savings from areas such as service and warranty costs. POWERVAR strongly believes that it can show businesses the kind of savings achievable by working in partnership and sharing information.

Chris Walsh of POWERVAR says, "We are constantly partnering with companies to explore ways to reduce the service burden rate. We know the potential for many businesses to boost their ROI is out there, just waiting to be exploited."

The ABCs of Power Conditioning



It seems like almost every power protection device that's sold today claims to be a power conditioner. But what really makes a power conditioner? The answer to that question depends largely on determining the power quality needs of the electronic load.

Modern electronic systems have switched mode power supplies (SMPS). This type of power supply technology is largely immune to changes in power line voltage but in the process of making the power supply smaller, more efficient, and cheaper, the isolation transformer has been eliminated from the design. Systems with a switched mode power supply will require, at a minimum, a surge diverter, a noise filter, and an isolation transformer.

Meanwhile, any system in which data is held, edited, or manipulated in some way in volatile memory may need the protection of a battery backup system or UPS to ensure that data can be saved and the system properly shutdown in the event of a power outage.

POWERVAR originated the concept of The ABCs of Power Conditioning to simplify the process of understanding power protection and to help customers determine which power conditioning elements are parts of the power protection products they are using or evaluating. All of POWERVAR's product model numbers start with the ABCs. For example, our model ABC201-11 tells you that the product is a power conditioner containing a surge diverter, an isolation transformer, and a noise filter. Our model ABCE600-11contains these same elements in addition to a battery backup - in other words, it's a fully power conditioned uninterruptible source of power. We've always used the ABCs so that customers may clearly see which protection elements are found in the solutions we manufacture.

A demonstration of power quality and potential solutions can be found at:
www.powervar.com/demo-room.cfm