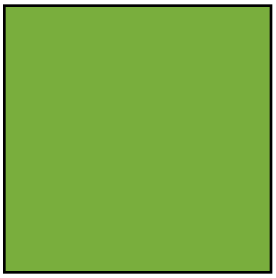
Bantam Clean Power

A System for Comprehensive Energy Savings

Bantam Technology Creates Energy Savings and Efficiencies Six Ways



Bantam Clean Power System Overview

The Bantam Clean Power power conditioning system captures unwanted current flow that exists in frequencies higher than the desired fundamental frequency. In AC applications in the U.S., any power other than 60 Hertz is undesirable on the power lines. Bantam Clean Power captures the energy flow in two places; first as the current flows to the intended equipment, and then afterwards as the current flows from the same load. The undesirable energy is captured in separate (incoming and outgoing) magnetic fields, normalized to 60 Hertz and allowed to flow back as fundamental-frequency energy. This process is approximately 93% efficient, resulting in very little lost energy as heat. The process itself has six distinct, quantifiable functions, which, when considered individually are very desirable, but when considered as a whole represent a far-reaching and innovative approach to reducing comprehensive energy waste.

First Function: Reduce the Harmonic Energy Content

The largest energy flow reduction is realized by reducing the eddy currents of electricity known as harmonics. Powered equipment such as computers and speed-varying motors create harmonics, which is wasted and unusable energy. Such energy results in large heat buildup in the load and all connected electrical components, including the distribution wiring itself. It is therefore important to capture these energies on the entire circuit that supplies electricity to the loads, closest to the place where the loads are located, so as to prevent the proliferation of the harmonics.

Savings or Efficiency Gains: A small amount of billable electricity is saved with this process.

Second Function: Convert High-Frequency Energy to Usable Energy

Bantam Clean Power's system captures approximately 40% (on average) of the worst harmonic content and converts it back to usable energy. This process is proven

with VA and Wattage measuring equipment that shows no increase in VA or VAR or temperature with the Bantam Clean Power system in place.

Savings or Efficiency Gains: Since more consistent energy is readily available, less in-rush current is needed, resulting in substantial power savings for loads that have variable draws, such as sound amplifiers and variable motors.

Third Function: Improve Power Factor

The harmonic conversion process efficiency is measured and accounted for with Power Factor measurements. The apparent power used versus the actual power needed is a ratio of efficiency. The Bantam Clean Power system is in effect a Power Factor Correction process that performs a 30% improvement.

Savings or Efficiency Gains: Improved Power Factor is a measurable benefit. Certain power utilities will bill users for the power factor that they use.

Fourth Function: Reduce Operating Temperature of Equipment

The Power Factor improvement results in reduced operating temperatures of all equipment that uses the power, including battery chargers and electronic power supplies. The temperature reduction is a solid 60 to 10 degree Fahrenheit reduction and has been verified in two independent temperature tests. In one test, a laptop and charger combination were run through all operating duty cycles including full discharge and recharge of a battery. Temperature probes monitored battery heat and charger heat. When the test cycle was run with a Bantam Clean Power product supplying the AC, two observations stood out; the battery and charger where 5 - 7 degrees F cooler and the battery recharged from full discharge 30 minutes faster. Another test which involved long-term temperature monitoring of a set of servers in a major commercial data center showed an average of 9 degrees F reduction in the rack's temperature.

Savings or Efficiency Gains: Reducing temperature from the load reduces the amount of energy needed to cool the load. This savings should be accounted for when computing total energy savings. Also, reducing heat in the equipment prolongs the life of the equipment, affecting maintenance, downtime, and support staff costs in a positive manner.

Fifth Function: Increase Battery Charger Efficiency/Lower Recharge Time

A cooler battery charge is a faster battery charger. Bantam Clean Power's system produces a very steady current flow that allows the charger to be more efficient.

Furthermore, a battery that is subjected to a more efficient charge process charges faster and has a longer chemical life.

Savings or Efficiency Gains: Realized costs savings include reduced battery replacement, lower heat output, and faster battery recharge recovery times.

Sixth Function: Use No Energy to Perform the Process

The Bantam Clean Power system is passive by design and function, and therefore does not use any power to perform its functions. Other conditioners such as isolation transformers and capacitor banks are not able to make this claim. Bantam Clean Power products require no maintenance and are designed to outlast the products they protect.

Savings or Efficiency Gains: Most power conditioners have an inherent cost of use that is usually not accounted for. Bantam Clean Power products do not have this cost.

Embedded Energy Accountability:

Certain technologies have a cost in the production and delivery of their solution that in the grand scheme is never recovered, resulting in a negative benefit. One example is an isolation-transformer conditioner. The ratio of the amount of raw material used-to-electrical conditioning benefit and wattage is unbalanced. Transportation of these items is also very expensive due to the relatively heavy weight. Lastly, these older products use substantial energy and convert a sizable amount of it to unnecessary heat.

Conversely, Bantam Clean Power's solutions, watt-for-watt, use less material, produce less waste, are simpler to create, lighter and smaller to ship, and produce little to no heat in typical use. The measure of these costs is substantial and should be recognized as part of the energy savings equation.

Conclusion

An approach to energy savings must consider all energies involved to provide a true measurement of the expense. Too often we hear about a new technology that has one immediate benefit such as being "lighter", or using "less" energy, or the like. Yet it is all too often only a part of the whole story. For example, the new compact fluorescent bulbs that are popular now do in fact use less wattage at the meter, thereby resulting in reduced electrical bills. However, we are not made aware of the fact that these bulbs have very inefficient power supplies that create substantial harmonics and introduce a new source of potential mercury contamination into our homes. Although the immediate

electrical bill is lower, there is more electrical noise and heat in the wiring and a looming disposal concern. A comprehensive audit of the true environmental savings of these bulbs would reveal that they may be a step *backwards* and are less efficient than the technology they are trying to replace. The same analysis important with power conditioners. We should always ask the questions “How do I benefit from using this product? What does it cost to use, reuse, recycle, and repair?”

Bantam Clean Power’s system accounts for all of the energy used for the desired output of the load, from the time the Bantam Clean Power product is manufactured all the way through the expected duty cycle of the very products it protects.