



State of Utah

UTAH NATIONAL GUARD

Olene S. Walker
Governor
Major General Brian L. Tarbet
The Adjutant General

12953 MINUTEMAN DRIVE
DRAPER, UTAH 84020-9286
(801) 532-4400

UT-CFMO -E

15 January 2004

MEMORANDUM FOR NGB-ARI-FM ATTN: LTC CARMEN ANDERSON, Energy Officer,
111 South George Mason Drive, Arlington, VA 22204

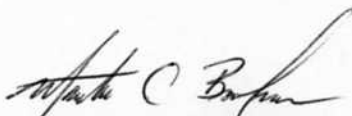
SUBJECT: Power Factor (PF) Issues and a Corrective Solution

1. As the Energy Manager for the Utah Army National Guard I am becoming aware of the power factor issues with various facilities in the state of Utah and a solution for the problem. The electrical utility bills for various facilities reflected a (PF) charge for which I was not aware, and neither did the Accounts Payable Department. One of the solutions that we have used to correct the power factor problem is a piece of equipment called a Power Conditioner.
2. The Power Conditioner corrects the (PF) problem that occurs when facilities with a lot of electrical equipment are in use for long hours. This long use causes a current lag which creates phase problems. When the electrical power being used by the customer shifts out of phase it creates a problem for the power company. These problems translated to the customer are a higher utility bill and secondary problems that continue with equipment overheating, supply voltages being out of phase and other issues.
3. The charges from the utility company are passed on to the customer because they have to supply more current to the user for a given amount of power used. In doing this, they incur more line losses which costs them more money to sustain a constant supply of power. Other pieces of equipment to mitigate these line losses have been around for years and not that effective, but this certain type we have, installed by Power Controls is far more efficient and effective.
4. The incredible advantages with this Power Conditioner are many. First and foremost it corrected the power factor to an average of 97% where the PF was usually around 75-85 % depending on the day for one of our transformers at the Utah National Guard Headquarters building. This automatically saved the National Guard money on our utility bills. The next advantage of this equipment was "ride through" and voltage stabilization. It also came to the aid for single phasing or when harmonic distortion occurred. Additionally, it works through not only active capacitors, but an array of other components namely a zig-zag transformer, tank circuits and software sampling to learn when the components need to turn on or turn off stages depending on the load. This is a true intelligent system.
3. I know as the Army National Guard continues to comply with Executive Order 13423 from the President of the United States to conserve energy, this product would fall in line with that

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mandate. In addition, the payback for this product is within the three to five year savings to investment ratio which is what the Department of Energy is looking for in a viable product.

3. If you have any questions or need more data please do not hesitate to contact the undersigned at 801-532-4400.



Matthew C Branham
CPT, UTARNG
Energy Manager