Power Factor Correction and Energy Savings with

ECO-EN-ERGY

A Division of AFI Group Inc.
Power Factor

Inductive Loads

- Compressors
- Pumps
- A/C units
- Chillers
- Dust collectors
- Conveyors
- Etc.

How Inductive Motors Work

AC motors require *reactive power* to develop magnetic fields in addition to *real power* which actually does the work.

Reactive Power (kVars) + Real Power (kW) = Apparent Power (kVA)
Calculating Power Factor (PF)

PF = kW / kVa

100/142 = 70% PF

Only 70% of the current provided by the electrical utility is being used to produce useful work.

Why Improve Poor Power Factor?

- Utilities typically charge a penalty fee to customers with PF less than 90%
- Uncorrected PF causes excessive loss in your distribution system
- Excessive voltage drop causes over heating and premature failure of motors and other inductive equipment
- Energy savings realized
- Reduce your carbon footprint

- The AC inductive motor typically operates at 80% efficiency when under full load, but the efficiency drops dramatically at lower loads.
- A typical inductive motor consumes over 80 times its purchase price in electricity over its life!
Power Factor Correction with KVAR® KEC (Kvar Energy Controller)

By implementing KEC technology at individual inductive loads, the KVARs required by the motor is provided by the KEC unit rather than the electrical system. Consequently, the power used from the electricity provider is mostly Kw.

How KVAR KEC Works

• The KEC stores and releases what the motors need to function more efficiently.
• This unique approach serves to reduce the heat generated on the lines, therefore reducing the strain placed on all the electrical components.
• Electricity, that would normally be pushed back through the power distribution lines, is reclaimed and recycled by the KEC.
• The KEC stores and supplies power to all inductive loads.
Our Methodology

Businesses can now dramatically reduce the cost of determining how much capacitance is required to optimize each inductive load at their facility. The patent KVAR® apparatus and methodology achieves this by eliminating the typical electrical engineering, design, and manufacturing costs. This precision technology fine-tunes each motor to unity for immediate savings with a quick return on investment. Installation is fast, simple and sized to the specific unit.
The ECO-EN-ERGY Audit

1. **FREE CONSULTATION** - Review the electricity bills and determine the number of inductive loads at the facility to determine if an audit is warranted. A nominal fee is required for an audit.

2. **THE AUDIT** - Our trained licensed electricians equipped with the patented KVAR® apparatus will test your circuits and motors to determine the optimal power factor correction of each load. In addition, determine the best locations to install the capacitors in your electrical system.

3. **THE PROPOSAL** - Trained personnel analyze the data and a comprehensive written proposal is prepared. It includes a precise analysis of your current power factor readings, guaranteed PF correction, estimated savings and estimated ROI.

4. **ANALYSING THE DATA** - The data is explained to you clearly by your agent. We will demonstrate the savings we can provide for you by installing our custom product.

5. **INSTALLATION** - The results of the audit will be sent to our manufacturer who will build the units specifically for your facility. You will decide with your sales agent the best time for one of our licensed electricians to install your units. A qualified electrician must perform all work.
Compressor Calculation Example

Real Power Calculation:

Volts x Amps x PF = Watts
460 x 56 x .55 = 14168 watts

After PF correction
460 x 23 x .98 = 10368 watts

Reduction of 3800 Watts = 27%

Line % Reduction:
(N2= new efficiency N1= old efficiency)

\[ N2 - N1 / N2 \]

\[ .98 - .55 / .98 = 44\% \text{ current line reduction} \]
# Case Study: Brick Manufacturer

## Audit Results

<table>
<thead>
<tr>
<th>Month</th>
<th>Consumption kWh</th>
<th>Bill Demand kW</th>
<th>Bill Demand kVA</th>
<th>Power Factor</th>
</tr>
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<tbody>
<tr>
<td>July</td>
<td>44,065</td>
<td>268.56</td>
<td>362.16</td>
<td>74%</td>
</tr>
<tr>
<td>August</td>
<td>49,510</td>
<td>264.96</td>
<td>354.24</td>
<td>75%</td>
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<tr>
<td>Sept.</td>
<td>61,880</td>
<td>276.96</td>
<td>365.52</td>
<td>76%</td>
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<tr>
<td>Oct.</td>
<td>57,856</td>
<td>284.64</td>
<td>379.92</td>
<td>75%</td>
</tr>
<tr>
<td>Average</td>
<td></td>
<td></td>
<td></td>
<td>75%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ITEMS</th>
<th>INITIAL AMPS</th>
<th>OPTOMIZED AMPS</th>
<th>INITIAL PF</th>
<th>OPTOMIZED PF</th>
<th>ESTIMATED KW SAVINGS</th>
<th>ESTIMATED SAVINGS PER MONTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIXER</td>
<td>58</td>
<td>46</td>
<td>75 %</td>
<td>94 %</td>
<td>1446.61</td>
<td>$165.06</td>
</tr>
<tr>
<td>BLOCK MACHINE</td>
<td>93</td>
<td>75</td>
<td>80 %</td>
<td>96 %</td>
<td>2474.2</td>
<td>$282.31</td>
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<tr>
<td>DUST COLLECTOR</td>
<td>32.5</td>
<td>25</td>
<td>76 %</td>
<td>99 %</td>
<td>1026.76</td>
<td>$17.61</td>
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<tr>
<td>COMPRESSOR</td>
<td>56</td>
<td>23</td>
<td>55 %</td>
<td>98 %</td>
<td>1280.33</td>
<td>$146.09</td>
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<tr>
<td>HOPPER #1</td>
<td>3.2</td>
<td>1.5</td>
<td>40 %</td>
<td>96 %</td>
<td>8.51</td>
<td>$0.97</td>
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<tr>
<td>HOPPER #2</td>
<td>3.2</td>
<td>1.5</td>
<td>40 %</td>
<td>96 %</td>
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<td>$0.97</td>
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<tr>
<td>HOPPER #3</td>
<td>3.2</td>
<td>1.5</td>
<td>40 %</td>
<td>96 %</td>
<td>8.51</td>
<td>$0.97</td>
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<tr>
<td>CONVEYOR</td>
<td>8.5</td>
<td>4.5</td>
<td>45 %</td>
<td>94 %</td>
<td>38.16</td>
<td>$4.35</td>
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<td>TOTAL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6291.6</td>
<td>$717.89</td>
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Projected Return on Investment/Savings

Cost of investment = $8,750.00
ROI = 12.2 months *
Installation = 1.25 days

<p>| | | | |</p>
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<th></th>
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<tr>
<td>5 years</td>
<td>=</td>
<td>$34,458.00</td>
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</tr>
<tr>
<td>10 years</td>
<td>=</td>
<td>$77,532.00</td>
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</tr>
<tr>
<td>20 years</td>
<td>=</td>
<td>$163,678.00</td>
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</table>

*The indicated savings does not reflect additional charges for facilities with less than a 90% PF imposed by the hydro company.

Client Testimonials

VeriForm High Precision Sheetmetal and Plate Manufacturing – Cambridge, Ontario
“Our projects have resulted in amazing savings. We never expected such quick paybacks and return on investments.”

<table>
<thead>
<tr>
<th>Cost to Implement</th>
<th>Annual Savings</th>
<th>10 year savings (at current rates)</th>
<th>Annual CO2 Emissions</th>
<th>Payback Period</th>
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<tbody>
<tr>
<td>$11,250</td>
<td>$24,118</td>
<td>$240,118</td>
<td>28.24 tonnes</td>
<td>5.6 months</td>
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Taylor Homestead Inc. - St Pauls Station, Ontario - Robert Taylor, Owner
"We have installed their controls in all of our chicken barns and have noticed a drop in the amount of money we pay Ontario Hydro....it was certainly worth installing these controls."

Hidden Acres Wholesale Nursery - Sebring, Florida – Wes Fisher, President
“I am writing this letter to express my sincere gratitude to KVAR Energy Savings Inc..... it saved me $253 in one month, I am so happy I can’t stand it…this product is one of the greatest values and most important technology of the century"
Honeywell
KV AR Test Executive Summary

Overview - The KVAR Power Optimization Capacitors were installed on the chiller and chilled water pump at Apollo Elementary School in Titusville, Florida. A data logger was used for brief periods prior and after the installation, in order to measure the effects of the installation on the electrical power system.

Conclusion - Actual savings for the retrofit were calculated as follows:

<table>
<thead>
<tr>
<th></th>
<th>Energy Savings *</th>
<th>Cost Savings *</th>
<th>Payback</th>
</tr>
</thead>
<tbody>
<tr>
<td>PUMP</td>
<td>17,600 kWh</td>
<td>$1,185</td>
<td>.5 years</td>
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<tr>
<td>CHILLER</td>
<td>20,800 kWh</td>
<td>$1,684</td>
<td>1.8 years</td>
</tr>
</tbody>
</table>

*Yearly

NASA Testing

Overview – The test was performed at the prototype shop on a 10 H.P. compressor motor. All values pertinent to motor efficiency have been recorded on the electric motor performance form.

Conclusion – The real power draw by this motor decreased from 5.63 kW to 5.14 kW after optimization. This corresponds to a power reduction of 8.7%

<table>
<thead>
<tr>
<th>VOLTAGE</th>
<th>AMPS</th>
<th>KW</th>
<th>KVAR</th>
<th>Power Factor</th>
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<tbody>
<tr>
<td>Initial Values</td>
<td></td>
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<tr>
<td>Phase A</td>
<td>277</td>
<td>8.09</td>
<td>1.91</td>
<td>1.13</td>
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<tr>
<td>Phase B</td>
<td>277</td>
<td>7.75</td>
<td>1.89</td>
<td>1.03</td>
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<td>Phase C</td>
<td>275</td>
<td>7.85</td>
<td>1.84</td>
<td>1.1</td>
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<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td>5.63</td>
<td>3.26</td>
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<td>Final Values</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Phase A</td>
<td>277</td>
<td>6.38</td>
<td>1.76</td>
<td>-0.199</td>
</tr>
<tr>
<td>Phase B</td>
<td>277</td>
<td>6.38</td>
<td>1.71</td>
<td>-0.308</td>
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<tr>
<td>Phase C</td>
<td>275</td>
<td>6.38</td>
<td>1.65</td>
<td>-0.215</td>
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<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td>5.14</td>
<td>-0.722</td>
</tr>
</tbody>
</table>
IESO – Profile (Independent Electricity System Operator)

TIMMINS AND DISTRICT HOSPITAL

Leading by Example

Under normal circumstances, Dan O’Mara would prefer to be a leader than a follower. When it comes to electricity pricing, however, he’s quite content to follow someone else’s lead.

That someone else is Tim Prokopetz, Manager of Purchasing at Timmins and District Hospital, a 159-bed full-service emergency, teaching and referral hospital serving the City of Timmins and Cochrane District as well as adjoining areas of the Temiskaming, Sudbury and Algoma Districts.

In his capacity as head of procurement, Prokopetz has been a dynamic and vocal supporter of hourly electricity prices since 2006, when he was able to move the hospital’s accounts off the Regulated Price Plan (RPP) and on to the Hourly Ontario Energy Price (HOEP) – a transition to which all Ontario municipalities, universities, schools and hospitals will be subject on May 1, 2009 (provided their consumption is over 250,000 kilowatt hours per year).

Moving pre-emptively to hourly pricing has already paid dividends. Since moving to hourly prices in April of 2006, Timmins and District Hospital has achieved $230,000 in electricity savings, which has been reinvested in projects to enhance patient care and comfort.

O’Mara is the Chief Executive Officer of three hospitals and one retirement home. His portfolio includes the 66-bed Lady Minto Hospital in Cochrane, the 36-bed Bingham Memorial Hospital in Matheson, the 36-bed Anson General Hospital in Iroquois Falls and the 69-bed South Centennial Manor in Iroquois Falls.

According to O’Mara, the savings resulting from the shift to hourly pricing have been invested in interval meters, another essential in the institutional electricity user’s energy management toolkit. These newly installed interval meters allow his staff to monitor and measure – with considerable precision – how electricity is consumed in each facility in 15-minute chunks.

Switching to hourly electricity pricing has been the most important move made by the Timmins and District Hospital, but it’s certainly not the only one. Over the next few months, Prokopetz plans to implement a number of energy-related initiatives, including a $17,000 power factor correction project, which will pay for itself in less than 18 months. The installation of a capacitor bank and other associated equipment has raised the hospital’s power factor from 83 to 90, which exempts the facility from an annual penalty of $12,000 commonly imposed by local utilities to recover added transmission and distribution costs to compensate for current and voltage irregularities.

Prokopetz considers power factor correction one of the easy wins. “When you’re dealing with hospital executives on energy efficiency projects, it’s important to show progress,” he said. “And while it’s good to be seen to be doing the right thing environmentally, the financial implications of a project are paramount.”

The hospital is also undergoing a $5.5-million energy retrofit expected to yield a 34-per-cent reduction in energy consumption. Improvements are being made in all corners of the facility’s operation. Enhancements include new building automation and direct digital controls; variable-speed pumps, drives and air handling units; glycol-based heat recovery systems; air and water optimization; lighting retrofits and redesigns; and laundry water and heat recovery. Hospital administrators are also considering other measures such as solar water and space heating; and co-generation to produce steam and electricity.

In the coming months, Prokopetz hopes to create a regional energy team to encourage further dialogue and information-sharing, a mechanism that would dovetail nicely with the Government of Ontario’s goal of encouraging better planning, collaboration, and coordination of services among regional hospitals.

“Up here, it’s better to work as a group,” O’Mara states. “We are always looking for ways to become more efficient. It makes sense to work together to evolve the industry so we can deliver better care to our respective patients”
MOLESWORTH FARM SUPPLY LTD.
Efficient electricity usage a contributing factor to success

Molesworth Farm Supply Limited is a livestock feed manufacturing facility, located in the heart of dairy and hog country at the border of Perth and Huron Counties in southwestern Ontario. Thirty years ago, Molesworth was a small and simple gristmill operation. Today, Molesworth uses researched and high-tech processes to blend and process grain for commercial livestock production.

As Molesworth grew, management knew that the company was not using electricity as effectively as it could. The 20 motors used to grind, mix and transfer equipment for feed had a sub-standard power factor of 74 per cent to 77 per cent, whereas 90 per cent is considered the acceptable industry target.

For years, management tried to resolve the problem on its own without success.

In 2002, Molesworth decided to tackle the problem head-on and hire a professional energy auditor. “Feed manufacturing is a very low margin business. We knew every month when we received our electricity bill that we were paying a power factor penalty. We realized that in order to compete with multi-nationals, we needed to better manage our electricity costs,” said Ron Coghlin, President of Molesworth.

The energy audit recommended installing a series of capacitors on the company’s major electric motors. The installation cost $27,000 and took one month to complete. The audit projected that Molesworth would recover the cost of the installation within 36 months.

Upon completion of the project, Molesworth’s power factor jumped immediately to between 93 per cent and 95 per cent. Molesworth was able to recover the costs of the capacitors within 15 months – less than half the amount of time projected by the audit.

“By taking control of our power factor, we have been able to pass on savings to farmers and put more money back into our company. Since 2002, Molesworth’s volume has doubled and more efficient electricity usage has been a contributing factor to our success,” said Coghlin.
**KVAR ® KEC Certifications**

- Canadian Standards Association
- Underwriters Laboratory
- NASA Tested
- Restriction of Hazardous Substances
- Cleaner and Greener Certified

- Manufactured in the U.S.A. with a 5 year warranty
- Quick return on investment (typically less than 2 years)
- Savings of 8-15% for industrial/commercial facilities
- Portable, expandable with your facility
- Quick installation with immediate results
- Increases the life of inductive motors through heat reduction
- Reduces amperage surges
- Can be implemented to fit your budget
- Maximum efficiency at each inductive load, reducing the load on the distribution system
- The most cost effective and efficient manner to address poor Power Factor and reduce energy consumption
- Reduces your carbon footprint
April 18, 2008

To Whom It May Concern:

I am writing this letter of reference for Enviro-Plus Inc. We have installed their controls in all of our chicken barns and have noticed a drop in the amount of money we pay Ontario Hydro. This has been a noticeable difference and it was certainly worth installing these controls. I would highly recommend these controls.

Yours truly,

[Signature]

Bob Taylor
Taylor Homestead Inc.
To: Steve Fish – C.E.O. of KVAR Energy Savings Inc.
    Greg Taylor – Inventor
    Jack Turbeville – C.E.O of Central Florida KVAR Inc.

From: Wes Fisher – President of Hidden Acres Nursery

To Whom it May Concern:

My name is Wes Fisher and I am the President of Hidden Acres Nursery. I am writing this letter to express my sincere gratitude to KVAR Energy Savings, Inc. and Central Florida KVAR, Inc. We have installed 3 units since April 4, 2008. The 1st unit was installed on our tissue culture lab. The unit was installed on April 4, 2008 and exactly 15 days into my billing cycle with Glades Electric. The 1st 15 days of my billing cycle we used 285 kilowatts. The next 15 days we used an average of 251 kilowatts per day. That was a 13.3% savings or approximately $130 estimated on the 1st month. On June 24, 2008 I installed the other 2 units on our offices. The power bill, which the meter was read on June 19, 2008 was $848 and was up 45% from the previous year. My lab bill was up 14% from the previous year, but could have been up 45% from the previous year. My July bill was $595 on my office which represents a 42.5% savings from my June bill. I have 4 other meters that from their June to July billing, with no other special equipment installed, had an 8% increase from June to July bill. Meaning that the office would have had a $848 bill without KVAR but had a $595 with a KVAR Energy Controller PU-1200. My estimate is that it saved me $253 in one month. I am so happy I can’t stand it. Please feel free to call me and I would be happy to share my KVAR experience with you, because this product is one of the greatest values and most important technology of the century.

Sincerely,
Wesley Fisher
President
Hidden Acres Nursery
Honeywell KVAR Test #1: Executive Summary

A. Overview: The KVAR Power Optimization Capacitors were installed on the chiller and chilled water pump at Apollo Elementary School in Titusville, Florida, on Friday, May 4th, at approximately 12 PM. A data logger was used for brief periods prior and after the installation, in order to measure the effects of the installation on the electrical power system. This report is to document the results of this test.

B. Installation: The chiller utilized for this test is a Carrier #30GT-210, air cooled, packaged unit, manufactured in 1996. It is powered by 480/277V, 3φ, wye electrical service. The chiller has seven (7) reciprocating compressors, which cycle on and off to maintain the leaving water temperature setpoint. Weather related load variations cause cycling of the different compressors. Therefore, weather had some effect on the chiller data collected, as electrical load changes likely occurred during trending.

The pump tested provides primary chilled water for the chiller. There are two 25 HP, base-mounted, end suction pump, operating at constant speed. They are powered by 480/277V, 3φ, wye electrical service. Only one pump is operated at a time, with the other use as a backup. Weather related load variations on the chiller will not affect the electrical usage of the pump.

The measurement tool used in the testing was a clamp-on, power data logger, manufactured by Extech, model #382060. It was installed on the three power feeders between the disconnect switch and load (chiller or pump). It measured real-power (kW) of the 3φ service to each load, as well as amps per phase, line-line voltage, kVA and power factor. As savings resulting from the power factor optimization will be realized at the utility meter in kW reduction, this report will focus mainly on those results.

C. Operation: This particular chiller is part of an ice-storage cooling system for the elementary school. It is automatically controlled to perform dual functions throughout the day and night. First, it is operated in the ‘ice-building’ mode after 10 PM at night, producing 20°F glycol solution to charge the ice storage tanks. After the ice tanks are completely filled, it shuts down, approximately 5 AM each weekday morning. It then operates as a regular chiller between about 6 AM and 12 PM. Finally, it remains off-line until ice-build time, later that night. The primary chilled water pump operates anytime the chiller is running, as well as during the ‘ice-burn’ mode each day.

D. Baseline data were collected during the morning mode of operation, at around 10 AM. The capacitors were disconnected from both the pump and chiller at this time. After several minutes of data logging, the capacitors were connected and post retrofit data were collected. This process was repeated for both the chiller and pump.
**Calculations:** The following standard formulas were used to determine the savings from this retrofit:

\[
\text{Demand Savings} = kW_{\text{base}} - kW_{\text{post}}
\]

\[
\text{Energy Savings} = \left(\left[kW_{\text{base}} - kW_{\text{post}}\right] \times \text{hrs per year}\right)
\]

\[
\text{Cost Savings} = \left(\text{Demand Savings} \times \text{Demand Rate} \times \text{Months}\right) + \left(\text{Energy Savings} \times \text{Energy Rate}\right)
\]

**Assumptions:**
1. Chiller operates 40 weeks, 5 days per week, 13 hrs per day, for a total of 2600 hrs per year.
2. Pump operates 40 weeks, 5 days per week, 22 hrs per day, for a total of 4400 hrs per year.
3. Chiller and pump operate over a total of 10 monthly demand periods.
4. Average electrical rates are $0.0477/kWh.
5. Pump capacitors and installation costs = $645
6. Chiller capacitors and installation costs = $3,085

**E. Results:** The results of the power factor correction can be seen in the charts on the following pages. Actual savings for the retrofit were calculated as follows:

**Pump:**

\[
\text{Demand Savings} = (12 - 8) \text{ kW} = 4 \text{ kW}
\]

\[
\text{Energy Savings} = \left(4 \text{ kW} \times \frac{4400 \text{ hrs}}{\text{yr}}\right) = 17,600 \text{ kWh}
\]

\[
\text{Cost Savings} = \left(4 \text{ kW} \times \frac{8.65}{\text{kW}} \times 10\right) + \left(17,600 \text{ kWh} \times \frac{0.0477}{\text{kWh}}\right) = $1,185
\]

\[
\text{Simple Payback} = \frac{645}{1,185} = 0.5 \text{ yrs}
\]

**Chiller:**

\[
\text{Demand Savings} = (53 - 45) \text{ kW} = 8 \text{ kW}
\]

\[
\text{Energy Savings} = \left(8 \text{ kW} \times \frac{2600 \text{ hrs}}{\text{yr}}\right) = 20,800 \text{ kWh}
\]

\[
\text{Cost Savings} = \left(8 \text{ kW} \times \frac{8.65}{\text{kW}} \times 10\right) + \left(20,800 \text{ kWh} \times \frac{0.0477}{\text{kWh}}\right) = $1,684
\]

\[
\text{Simple Payback} = \frac{3,085}{1,684} = 1.8 \text{ yrs}
\]
Note: Chart above shows an average chiller power reduction of 8 kW, or 15% of baseline. Weather had some effect on power trending shown.

Note: Chart above shows an average pump power reduction of 4 kW, or 33% of baseline. Weather had no effect on power trending shown.
To: DE-TPO/C. Griffin
From: IM-WEL/J. Weeks

Subject: Response to TTA-K517. (KVAR Electrical Optimization System)

Attached for your disposition are the results of our test on the KVAR Electrical Optimization System. Approval of test format was received by Gregory Taylor of KVAR energy Savings, Inc. on 11/19/96. The test was performed at the prototype shop (building M7-581) on a 10 H.P. compressor motor on 11/22/96. Both initial and final values were recorded from a Dranz Power Monitor PP1 (NASA Tag #1382136) while connected to the distribution panel DPA-C2 (see attached diagram). The KVAR switch settings were determined by a KVAR representative. All values pertinent to motor efficiency have been recorded on the attached electric motor performance evaluation form. As shown on this form, the real power draw by this motor decreased from 5.63 kw to 5.14 kw after optimization. This corresponds to a power reduction of 8.7%.

cc:
IM-WEL/J. Heuser
IM-WEL/R. Batman
IM-WEL/L. Jones
IM-WEL/J. O'Malley
<table>
<thead>
<tr>
<th>INITIAL VALUES</th>
<th>VOLTAGE (L-N)</th>
<th>CURRENT (A)</th>
<th>POWER (KW)</th>
<th>kvar</th>
<th>POWER FACTOR</th>
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</thead>
<tbody>
<tr>
<td>PHASE A</td>
<td>277</td>
<td>8.09</td>
<td>1.91</td>
<td>1.13</td>
<td>0.88 (LAGGING)</td>
</tr>
<tr>
<td>PHASE B</td>
<td>277</td>
<td>7.75</td>
<td>1.89</td>
<td>1.03</td>
<td>0.88 (LAGGING)</td>
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<tr>
<td>PHASE C</td>
<td>275</td>
<td>7.85</td>
<td>1.84</td>
<td>1.1</td>
<td>0.86 (LAGGING)</td>
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<td>TOTAL</td>
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<td>3.26</td>
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<tr>
<td>FINAL VALUES</td>
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<tr>
<td>PHASE A</td>
<td>277</td>
<td>6.38</td>
<td>1.76</td>
<td>-0.199</td>
<td>0.39 (LEADING)</td>
</tr>
<tr>
<td>PHASE B</td>
<td>277</td>
<td>6.38</td>
<td>1.71</td>
<td>-0.398</td>
<td>0.39 (LEADING)</td>
</tr>
<tr>
<td>PHASE C</td>
<td>275</td>
<td>6.38</td>
<td>1.65</td>
<td>-0.215</td>
<td>0.39 (LEADING)</td>
</tr>
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<td>TOTAL</td>
<td></td>
<td>5.14</td>
<td>-0.722</td>
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<th>SWITCH SETTINGS</th>
<th>1</th>
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<th>3</th>
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<td>OFF</td>
<td>ON</td>
<td>OFF</td>
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<td>OFF</td>
</tr>
</tbody>
</table>

% POWER REDUCTION = (INITIAL POWER - FINAL POWER) / INITIAL POWER) x 100% = 8.7%

1) INITIAL VALUES ARE RECORDED PRIOR TO CONNECTION OF KVAR UNIT.

2) FINAL VALUES ARE RECORDED AFTER CONNECTION AND OPTIMIZATION OF KVAR UNIT.

3) KVAR REPRESENTITIVE TO DETERMINE OPTIMUM SWITCH SETTINGS.

4) DRANTZ POWER MONITOR WILL BE USED FOR ALL MEASUREMENTS.

POWER MONITOR MODES, NUMBER: DRANTZ PP1 (NASA TAG 1362134)

KVAR MODES, NUMBER: US2
Subject: Re: File LR78409

Refer to LR 78409-1

Mr. G. Taylor

KVAR Energy Savings Inc.
610 Moonpenny Cir.
Port Orange, FL 32127

Subject: Metal Enclosed Capacitor Bank Assembly. Model PF-1. 30A Max. 600V ac Max. 60Hz. 1 or 3 Phase. Indoor or Outdoor Use

Gentlemen:

We have pleasure In Informing you that the subject equipment complies with the applicable CSA requirements. This equipment is therefore eligible to bear the CSA Mark in accordance with instructions contained in previous correspondence.

A copy of our Certification Record and accompanying Lead Card is enclosed for your files.

Yours truly,

Steven J. Jeffery, C.E.T.
Motors, Controls and Switchgear Group

Canadian Standards Association. 178 Rexdale Blvd. Rexdale (Toronto)
Ontario. Canada M9W_1R3 ..
Telephone: (416) 747.4382 Telefax: (416) 747.4178
FOLLOW-UP SERVICE PROCEDURE
(TYPE R)
CAPACITORS
(CYWT)

Manufacturer: Kvar Energy Savings Inc
(819459-001) 610 Moonpenny Cir
Port Orange FL 32127

Applicant: SAME AS MANUFACTURER

Listee: SAME AS MANUFACTURER

This Procedure authorizes the above Manufacturer to use the marking specified by Underwriters Laboratories, Inc. only on products covered by this Procedure, in accordance with the applicable Follow-Up Service Agreement.

The Prescribed Mark or Marking shall be used only at the above manufacturing location on such products which comply with this Procedure and any other applicable requirements.

The Procedure contains information for the use of the above named Manufacturer and the representatives of Underwriters Laboratories Inc. and is not to be used for any other purpose. It is lent to the Manufacturer with the understanding that it is not to be copied, either wholly or in part, and that it will be returned to Underwriters Laboratories Inc. upon request.

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UNDERWriters LABORATORIES INC.

Sr. Vice President and
Chief Operations Officer