



rigid plastic packaging systems

April 30, 2010

Jim Timmersman
Power Supply Industries
201 Southwest Sun Valley Circle
Fenton, MO 63026

Subject: Letter of Recommendation

Dear Jim:

The upgraded system is presently exceeding our expectations in saving electrical energy through installation of 7600 gallons of compressed air storage in conjunction with utilizing PSI's compressed air management control system. We are also experiencing some side benefits due to running the compressors at a more constant load which is evidenced by reduced compressor maintenance and upkeep.

Like wise our compressor room is much quieter since the compressors are not wildly swinging in RPM as they did previously. The work was done in a professional, high quality workmanship like manner. Schedule was consistent with plan and interruptions to our operations were held to a minimum.

Our local utility company (KCPL) has awarded us with the maximum rebate they offer which is \$42K deducted from our monthly bill. Additionally, our electrical utility bills have been impacted with savings of approximately \$40,000 annually.

We are very happy and would recommend PSI to anyone looking to save energy through improvements to their compressed air system.

Best Regards,

Lou O'Neal

Lou O'Neal, PMP
Facilities Manager
816-246-6100
loneal@polytainersinc.com

North American Lighting, Inc.



August 8, 2003

Power Supply Industries
201 Sun Valley Circle
Fenton, MI 63026

Attention: Jim Timmersman

Reference: Department of Energy Case Study Selection

Dear Mr. Timmersman,

North American Lighting would like to thank Power Supply Industries for the opportunity to tell others of the "managed" compressor air system. After Power Supply Industries changed NAL compressor system from a reactive one to a managed system, NAL has seen improvements in many areas.

A few of these areas are improved productivity, lower maintenance, and reduction in horsepower. With the managed system, a consistent pressure is used to optimize the airflow, this keeps productivity at optimal conditions. The instability of the reactive system caused frequent breakdowns. Now the compressors run at consistent speed and slowly increase or decrease horsepower, as it is required from the system. This saves a lot of wear on the equipment, allowing the compressors to last longer with fewer repairs. Below shows total horsepower used before managed system and the reduction in horsepower and kW after managed system.

Total Horsepower online prior to improvements	693 BHP
Horsepower reduction	108 BHP
KW savings from project	83

North American Lighting awaits further word on the case study review from Power Supply Industries and Department of Energy Liasion.

Sincerely,

A handwritten signature in black ink, appearing to read 'Gregory Dillard', is written over the typed name and title.

Gregory Dillard
Facilities Engineering Manager

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Mr. Jim Timmersman
Power Supply Industries
201 Sun Valley Circle
Fenton, MO 65202

August 7, 2003

In January 2003 we proposed to replace all of our existing air compressors which consisted of (2) 100 HP and (2) 60 HP Sullair rotary screw compressors. Our goal was to save energy by consolidating our compressors to one larger unit. PSI conducted an air systems survey and presented us with surprising results. Their recommendation was to utilize the existing equipment and to implement the following improvements:

- Add 4,600 gallon supply storage tank
- Install an Intermediate pressure and PID controller
- Install a compressor sequencer
- Improve pipe routing and supply lines through out the plant
- Zero loss drains

PSI and BOCO contractors completed the improvements in June 2003 and the following improvements were realized:

- Demand air pressure fluctuated from a reactive 90 to 110 psi now managed at a steady 83 psi.
- Reduction of 60 HP during peak production periods and 100 HP during contracted production periods.
- Savings of 477,504 KW and energy cost savings of \$33,425 annually.
- The sequencer enables us to power down a compressor at any given time to allow for preventive maintenance. This will reduce downtime and maintenance cost for emergency repairs.
- Reduction of artificial demand by locating and fixing leaks with an ultrasonic leak detector. This will allow us to implement a leak reduction program to our maintenance routine and reduce the horse power dependency even further.

We are pleased with our new "managed" air system and improved efficiency. We feel that every effort to reduce cost will enable us to stay competitive and remain robust to the growing foreign competition.

Sincerely,

Josh Schroeder
MRO Technician



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Power Supply Industries
201 Sun Valley Circle
Fenton, Missouri 63026-4664

January 7, 2003

Jim Timmersman,

I would like to thank you for your hard work on our compressed air system project. Although there were some roadblocks along the way (some imposed by me while others were unforeseen), the project has proven itself in Kilowatt savings.

Before we began the system modification, we ran all of our compressors at full tilt to compensate for peaks in the air demand. This generally meant running compressors around the clock to barely meet demands. However, the sequencers have allowed us to improve air availability within the plant while taking horsepower off-line.

We have reduced our overall horsepower needs by approximately 400hp (38%), and system pressure by nearly 15 pounds. Needless to say, this equates to immense Kw savings when talking about a facility of about a million square feet. Early estimates show a reduction in energy costs of at least \$150,000 per year.

Once again, thank you for your patience and determination during this project. I look forward to working with PSI and Gardner-Denver in the future.

Brian McCallister

Brian McCallister

Facilities and Maintenance Manager
Rubbermaid COP
Jackson, Missouri



Frito-Lay, Inc.

July 29, 2003

Mr. Jim Timmersman
Power Supply Industries
201 Sun Valley Circle
Fenton, MO 65202

Jim:

In July 2001, PSI completed a compressed air improvement project at the Columbia, MO Quaker Oats / Frito-Lay plant. The intent of this project was to improve the overall reliability of the compressed air system and provide cost savings due to improvements in the compressed air delivery system.

Through the course of this project, the following improvements were made:

- 12,000 gallon supply side receiver installed
- Gardner-Denver 200 HP variable displacement trim compressor installed
- Compressor sequencer installed
- Demand expander installed
- External air coolers installed

As a result of this project, the following qualitative and quantitative improvements were realised:

- Demand air pressure was improved from an unstable 100 – 115 psi delivery to the plant to a very steady 85 psi. Our goal is to reduce that to 80 psi in the next year.
- Supply side air pressure has been able to be reduced to 99 psi over the past two years. Originally this was set at 107 psi. Previous to the demand expander it was not possible to have a supply side air reserve.
- The 200 HP trim air compressor and sequencer have allowed the trim compressor to run the plant during low air use periods (weekends, etc.) more efficiently than having to use one of the 450 HP compressors. The sequencer has allowed for reduced HP usage at certain times due to the ability to automatically shut off one of the 450 HP machines and start the 200 HP unit in it's place.
- The overall reliability of all of the compressors has been improved. In previous summers the air compressors would fault on high air end temperature due to insufficient oil cooling. With the use of the external air coolers and some piping modifications, we have not had a high discharge temperature fault in two summers despite outside air temps of above 100 degrees F.

The result of the above stated improvements we estimate at approximately \$150,000 - \$175,000 annually in utility savings and repair costs.

Please feel free to contact me with any further questions. Frito-Lay, Columbia is looking forward to the opportunity to participate in the U.S. Department of Energy Compressed Air Challenge.

Sincerely,

Eric L. Jogun
Technical Manager

3M Worldwide®

December 12, 2002

Power Supply Industries
201 Sun Valley Circle
Fenton, Missouri 63026

Attention: Jim Timmersman

Dear Jim,

The system is presently exceeding our expectations by shutting off between 700 and 1100 HP (our cost projections were all based on taking 400 HP off-line)!

We have also started reducing the plant pressure set point based on the low variation (+/- 0.2 PSIG) in-house air delivered by your system. We are currently at 102.8 PSIG and hope to get down to 100 PSIG within the next couple of weeks. To say the least we are VERY happy customers.

I have also approved all invoices for final payment.

Have a great day!

Jason Jacobson
Facilities Engineering
Columbia, Missouri