CASE STUDY: AMMONIA COMPRESSOR VFD Electric Savings

Success Story

The plant manager had worked with many automation systems and had integrated many automation processes at the plant. This practice had the effect of allowing any problems that arose to be solved once rather than being solved repeatedly.

The compressor had to be taken out of service for a few days to have the VFD integrated, and with little spare capacity, timing on this outage was critical, requiring successful communication and execution by plant, contractor, and Solution Dynamics personnel. All team members worked well together to deliver the project successfully, overcoming all hurdles along the way, including integration issues, maintenance issues, and scheduling issues.

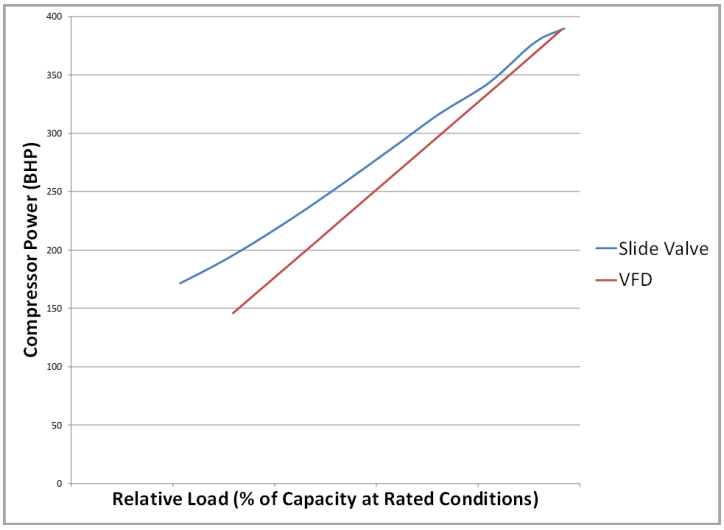
In the end, the project exceeded the projected savings targets by 19%, and provided an example by which other dairy facilities at the parent company will be measured.

Dairy Plant Improves Refrigeration System Efficiency Using VFD Trim Compressor

CHALLENGE— Achieving Maximum Compressor Trim Efficiency in Variable Load Environment

A dairy processing plant, focused on fluid milk pasteurization and bottling, was installing a comprehensive ammonia refrigeration control system and wanted to include maximum trim efficiency of the compressors. The system included three compressors, which had previously operated on pressure deadbands, often resulting in multiple compressors trimming at the same time. One compressor is a reciprocating compressor, and the other two are evenly-sized screw compressors.

After measuring system performance, including power logging and equipment reviews of the compressors, a comprehensive plan was proposed to reduce energy use of the system. Part of the plan included improving the compressors' trim efficiency by retrofitting one of the screw compressors with a variable frequency drive to take advantage of the improved part load performance.



SOLUTION— System Optimization Through Integrated Controls, VFD Utilization, and Dynamic Control Points

The control system was installed, including the compressor VFD, and a new PLC controller that preferentially unloads the VFD compressor to achieve maximum system efficiency.

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SOLUTION—Continued

The compressor retrofit required a new motor, rated for inverter duty, to be installed on the compressor. It also required a software update on the onboard microprocessor, and integration of communications between the microprocessor and the new PLC controller.

RESULTS— Significant System Energy and Cost Savings, Large Utility Incentive Payment to Help Support the Effort

Key Results

Annual Energy Use Reduced by 39% .
System Peak Demand Reduced by 32% .
Annual CO_2 Emissions Reduced by 743 Tonnes.
Annual Cost Savings of $ 96,900.
Awarded an electric utility incentive of over $290,000.
1.0 Year Simple Payback.
VFD Compressor accounts for ~19% of overall project savings

Key Benefits

Cost Savings	Annual savings of $ 18,400.
Energy Savings	Annual Energy Savings of 302 MWh,
Carbon Reductions	Annual Reduction of 141 Tonnes of CO_2
Fuel Type	Electricity
Payback	1.0 Year Simple Payback, after Incentive

Financial Data

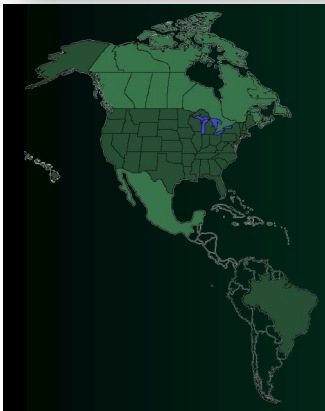
Investment	Development: $ 17,800 Component of Larger Capital Project
System	PLC Control System, Allen-Bradley VFD, Touch-Screen Interface, System Commissioning & Personnel Training, Long-Term Monitoring & Central Control System Tie-Ins.

Customer Profile

Headquarters	Springfield, Missouri
Locations	14 Production Locations in 7 States throughout the Midwest.
Number of Employees	Approximately 1,000
Estimated Sales	$1 Billion
Industry Type	Dairy – Fluid Milk, Juice, & Beverages

SOLUTION SD DYNAMICS

Achieve energy/sustainability goals & increase profit - *Guaranteed*



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We serve clients in commercial and industrial sectors who are seriously committed to reducing their energy consumption, cost, and environmental impact. Guaranteed results are delivered on a risk-free basis.

For additional information, or to schedule a consultation, please call us at **(888) 435-9226 or email: info@sol-dyn.com.**

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