



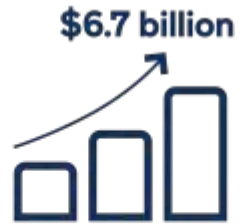
2019 BETTER PLANTS SUMMIT AGROPUR – AMMONIA SYSTEM UPGRADES

Mark Minter CEM

INTRODUCTION



3,161 dairy farmers



\$6.7 billion in sales



One of the world's
Top 20 dairy processors



6.2 billion litres of milk
processed annually



8,800 employees

“Better Dairy. Better World.”

www.agropur.com

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Background

- Historically ran at 20.4 PSI suction pressure in order to build ice in rooftop ice bank.
- Ice bank supplemented two undersized plate and frame heat exchangers that provided chilled water to the plant at 35F.
- To do this all three, 400 HP ammonia compressors ran year round.
- Using metered amp data it was shown that the ammonia compressors used 5,151,086 kWh a year or \$396k.

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The most
dangerous phrase
in the language is “we’ve
always done it this way.”

Rear admiral Grace Hopper

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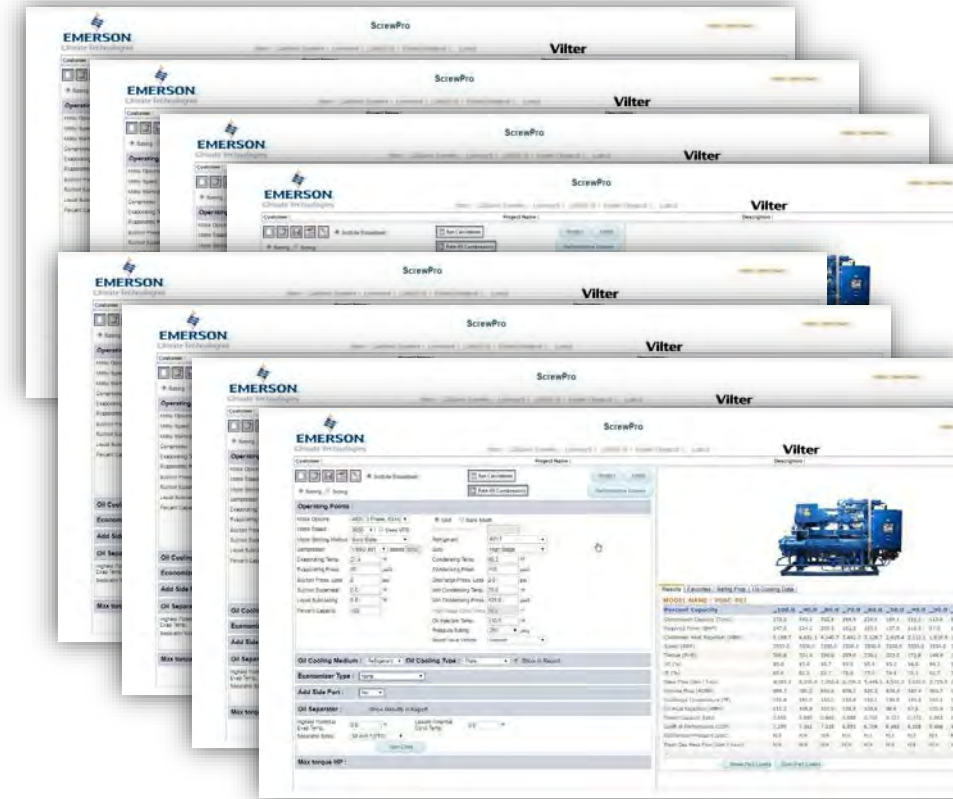
Project Details

- Contacted AC&R Specialists to conduct audit of system.
- Identified two ways to mitigate problem.
 1. Install new plate and frame heat exchanger similar in size to the existing two – 50% more capacity
 2. Remove existing plate and frame heat exchangers and install two new ones that combined would have 50% more capacity
- Both options allow the suction pressure to rise to 35.6 PSI.

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Obstacles

- Limited space.
- Removal of ice bank from rooftop.
- Increased pipe size to heat exchangers.
- Cost, savings, and payback analysis.
 - Used Vilter ScrewPro Software to estimate roughly 1,000,000 kWh saved
 - Contacted local utility to have project pre-approved for rebate



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Old Heat Exchangers



New Heat Exchangers



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Plant Location Le Sueur Cheese
Date 7/18/2018

kW Saved	NA	Cost Saved	\$157,376
kWh Saved	2,043,849	Project Cost	\$286,124
Dth Saved	NA	Rebate Potential	\$64,000
Gal Water Saved	NA	Payback	1.41

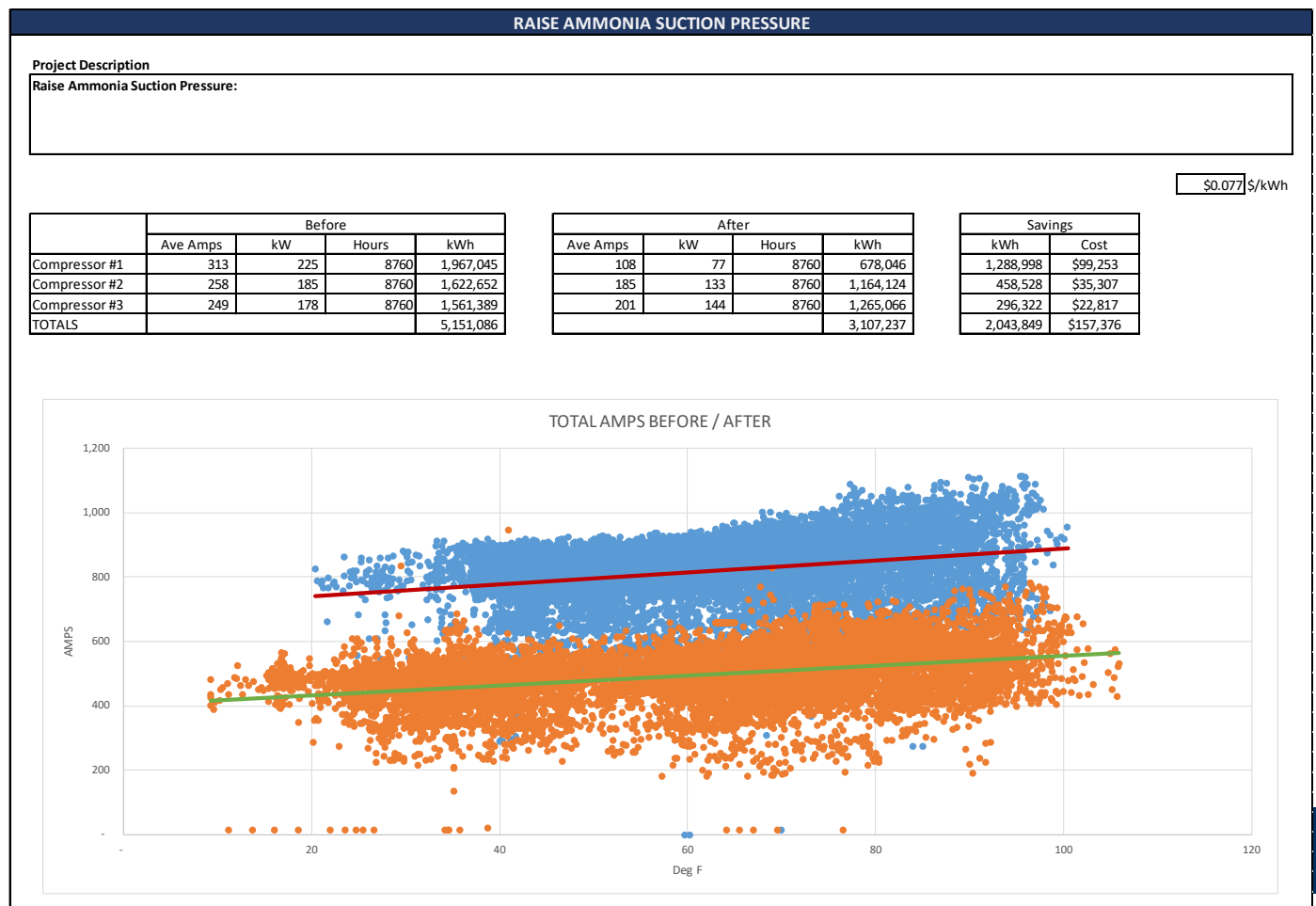


Data Gathering

Over 2,000,000 kWh Saved
Triggers Formal
Measurement & Verification
(M&V) From Utility

Approved by State of
Minnesota for \$64K Grant

Annual Savings of \$157,000



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Next Steps

- Gathering data at all other plants.
- Raised suction pressure by 10 psi at our Jerome, ID plant.
- Looking to lower discharge pressure at 2 other plants.



QUESTIONS?

