

FOCUS ON CASE STUDIES: VFDS ON POULTRY FARMS

The Background

S&R Egg Farm is a full-service egg-laying operation located in southeast Wisconsin. The company started out with 12,000 chickens and has now grown to an estimated four million birds spanning 1,000+ acres of farmland and distributing over 1.2 billion eggs across the country each year.

S&R Egg Farm purchased its Cold Spring operation in Palmyra, WI in 1994. After a series of extensive renovations and space additions, the site was able to accommodate 17 barns while increasing capacity to 4.2 million birds in 2017. S&R Egg Farm's commitment to growing a modern, sustainable, and environmentally-friendly facility allows the company to produce quality products its customers can enjoy, such as cage-free eggs from the Cold Spring facility.

The Approach

Focus on Energy first contacted S&R Egg Farm in the summer of 2017, where a facility walkthrough of the Cold Spring site was conducted. During this walkthrough, the Energy Advisor from Focus on Energy noticed a few of the company's conveyor belts had variable frequency drives (VFDs) already installed. The Energy Advisor suggested installing additional VFDs to control the motor speed of the conveyor systems in S&R Egg Farm's other barns.

Conveyor belts are a crucial component for egg farms of all sizes. Belt systems are responsible for a number of activities, including capturing and transporting the eggs, removing dirt and broken eggshells, feed conveying, manure removal and even assisting with packaging. The Cold Spring facility packages over 3.3 million eggs per day! Following this solution would:

- **Reduce gear and belt wear through smooth starting and stopping of conveyors**
- **Minimize system agitations**
- **Increase efficiency and control the speed of the belt**
- **Eliminate belt slippage**
- **Cut energy use by 30-40%**

The Solution

After installing VFDs on its conveyor system, S&R Egg Farm also decided to incorporate VFDs into its fan system. Using VFDS to regulate the amount of airflow and ventilation, S&R Egg Farm can manage the speed of its fans based on moisture levels and air temperature. S&R Egg Farm also utilizes its fans to dry the manure in its facility by recirculating the heat from the chickens directly onto the manure. Focus on Energy and S&R Egg Farm are currently researching additional energy saving opportunities using this method.

Project Breakdown:

- **Equipment Installed:**
 - 19 Constant Torque VFDs
 - 32 VFDs on High-Speed Ventilation/Circulation Fans
 - 4 VFDs on Process Fans
- **Estimated Project Cost:**
\$231,340
- **Annual Energy Cost Savings:**
\$218,474
- **Focus on Energy Incentive:**
\$22,335
- **Payback:** 1 Year

REDUCING ENERGY WASTE ACROSS WISCONSIN

Focus on Energy, Wisconsin utilities' statewide program for energy efficiency and renewable energy, helps eligible residents and businesses save energy and money while protecting the environment. Focus on Energy information, resources and financial incentives help to implement energy efficiency and renewable energy projects that otherwise would not be completed.

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