

ORION ENERGY SYSTEMS



Agricultural Division

Orion Energy Systems Inc.



**Reducing costs
and improving
productivity
with *GREEN*
technology**

Since 1996, Orion Energy Systems has been revolutionizing the agricultural, manufacturing, industrial, warehousing and commercial industries with proprietary technology guaranteed to reduce energy consumption and related energy costs while improving operations. By combining energy-efficient lighting systems, intelligent wireless controls and direct-renewable solar technology, Orion has quickly established itself as the leader in energy efficiency.

Mike Ontrop

National Sales Manager

Orion Agriculture Division



Mike Ontrop, national sales manager for Orion's agricultural division, has a deep knowledge and understanding of the farming industry and energy efficiency.

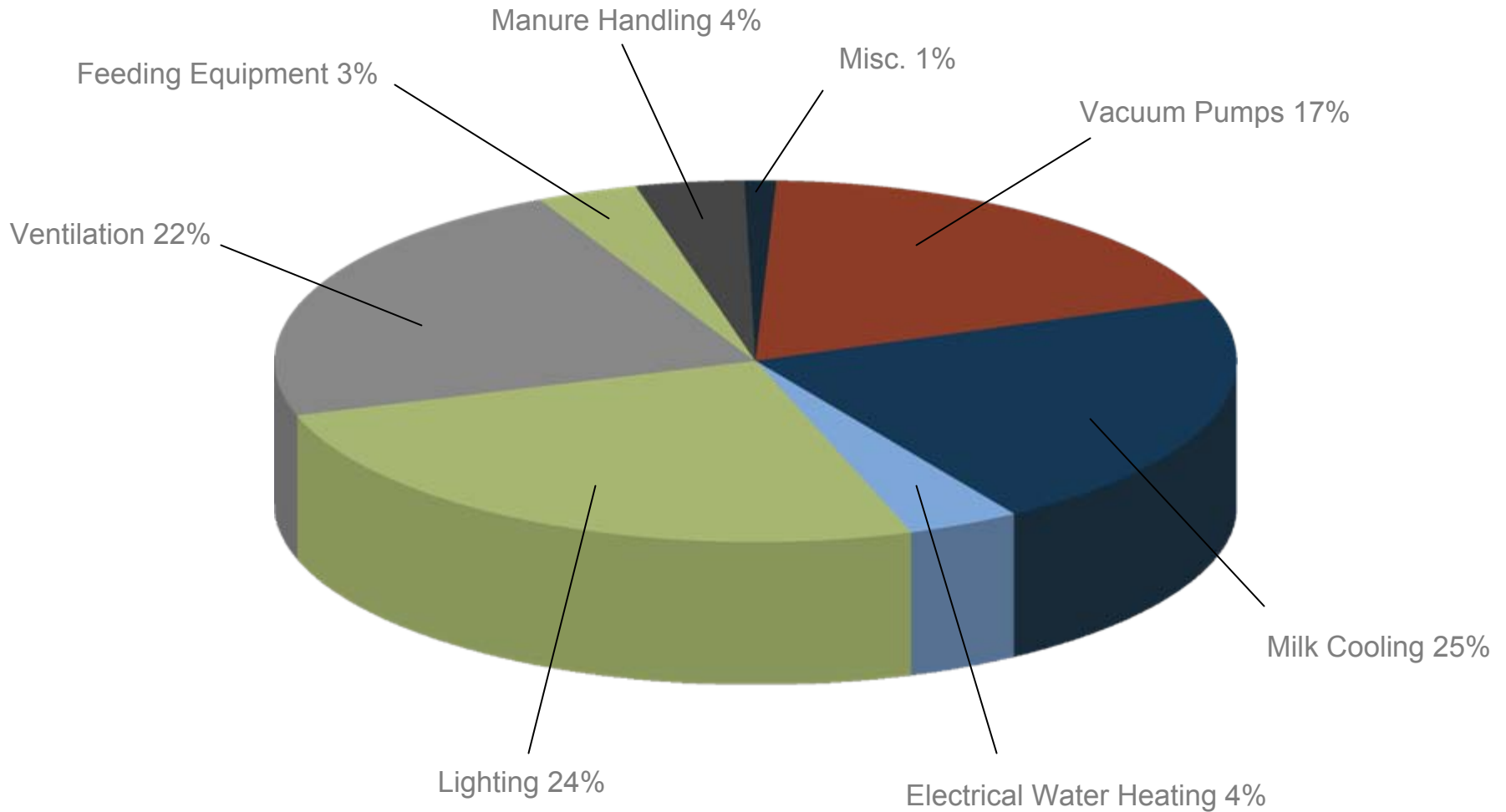
Having grown up on a hog farm that he later operated in west central Ohio, Ontrop understands the needs of farmers and knows, firsthand, the issues affecting agriculture operations nationwide — issues like cost control that play a major role in farm operations, regardless of economic conditions. Whether you're a dairy producer or a crop farmer, increasing energy costs can cut significantly into your operation's costs or profits.

As Orion's agricultural division national sales manager, Ontrop can offer you energy solutions that will help you not only reduce costs but improve your operations. If you're a dairy producer, Ontrop can help you increase milk production with the latest advancements in long-day lighting, adding profits to your bottom line.

Ontrop has worked for Orion since 2000 after his family collectively decided to cease operations at the farrow-to-finish hog operation.

Prior to operating the family farm, Ontrop received a full-ride scholarship from DEKALB® to attend Seward County Community College in Liberal, Kan. where Ontrop earned an associate's degree in swine management in 1997.

Energy Consumption – Dairy Farms



Energy

High-performance lighting is the lowest hanging fruit of energy efficiency. Orion's innovative and proprietary designs allow for replacement of legacy high-intensity discharge (HID) systems in virtually any application.



First Law of Thermodynamics

Energy can neither be created nor destroyed. It can only be converted to heat, vibration and work.

CONTROL

CONSERVE

CREATE

Incentives, Rebates & Grants

- ✓ States, utilities, and energy programs often offer incentives to help offset the cost of implementing energy-efficient equipment

- ✓ Energy efficiency has a wide array of benefits
 - reducing energy costs
 - preventing harmful greenhouse gases

- ✓ Will help fill out the paperwork needed to obtain the rebate

- ✓ Assistance with rebate programs

- ✓ For more information or to find out if rebates are available in your area, call your local energy provider today

Case Study: Energy Savings

Habeck Homestead Farms LLC, Maribel, Wisconsin



“The biggest factor that played in our decision to go with the Orion technology was the energy savings. To be able to save about 50% on our lighting costs without compromise created a great value. And the lighting makes it easy to see a cow’s number.”

Keith Habeck,
Farm Co-manager, Habeck Homestead Farms
LLC, Maribel, Wisconsin

Habeck Homestead Farms has been a part of the Habeck family for more than 120 years and is now collectively run by siblings Keith and Kim, and their mother, Yvonne. The farm currently milks more than 310 cows and has the capacity to milk up to 400.

Orion Energy Systems replaced metal halide lights in one barn with its proprietary technology and installed its lighting system in a newly constructed facility. The goal of the project was to reduce energy costs, while enhancing light levels to increase employee safety.

Long-Day Lighting

Long-day lighting (LDL) is a simple and well-proven technique to increase milk production and profitability. When investing in long-day lighting, the typical payback is one year or less, the net profit is \$100 or more per cow per year, and the return on investment is at least 100 percent. This translates to \$10,000 added net income annually for a 100-cow dairy, or \$100,000 per year for a 1,000-cow dairy.

Farmers who previously concluded they were unable to practice LDL because they milk three times a day - 3X - or almost 24/7, should give long-day lighting another look when planning to modernize their operation.

Numerous research studies in North America have clearly demonstrated that when dairy cows are provided summer-like, long days also in the winter, they respond by giving about 5 pounds more milk per day.

NiteLiter™ Fixture

Orion's NiteLiter™ fixture series overcomes the difficulty of dark periods on 3X dairies. The new fixture provides full spectrum lighting with a pleasant dim light when on low power at night.

“The lights have been great. Even at night, you can read an ear tag and write it down. We’ve got nice light throughout the barn.”

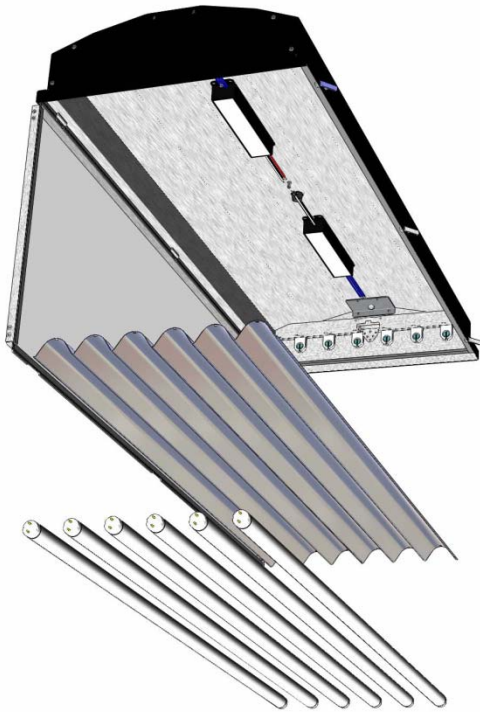
Paul Adams

Owner and Operator, Adam's Dairy
Eleva, Wisconsin

Practicing LDL



The 5 Rules of Long-Day Lighting



1. A total of 16 to 18 hours of light per day
2. Darkness 6 to 8 hours per day
3. Use a timer to turn barn lights on and off
4. Fifteen footcandles or more
5. Annual break from LDL schedule

Case Study: LDL

North Florida Holsteins, Bell, Florida



“It came down to energy use and Orion lighting uses less energy than anyone else we considered. The energy savings will pay for the lighting. When the lights are all on at night, it’s like daytime in the barn. When just the nighttime lights are on, it’s very easy to work in the barn. It’s just safer for the employees.”

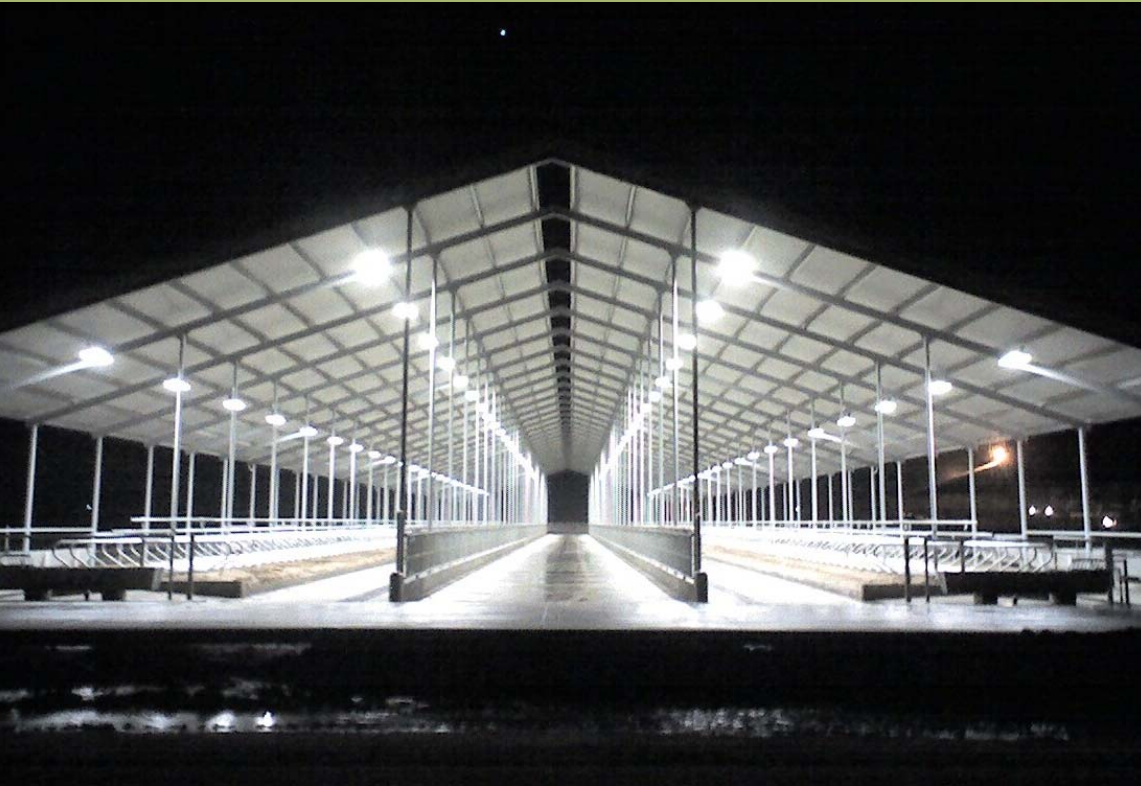
Dave Temple,
Farm Manager and Minority Partner, North
Florida Holsteins, Bell, Florida

North Florida Holsteins was founded in 1980 milking 120 cows on 480 acres. Now, the farm milks nearly 4,000 cows. North Florida Holsteins’ close proximity to the University of Florida offers a unique opportunity to the University and the farm. The University has access to cows for research and the dairy is able to observe research results from the University to better its operations.

North Florida Holsteins installed 203 of Orion’s NiteLiter™ series fixtures in a new 1,000-head barn. Farm manager and minority partner, Dave Temple, said moisture in humid Florida was a concern, and chose Orion’s lights because of their proven success in humid and damp locations.

Case Study: LDL

Ribeiro Dairy Farms, Tulare, California



“The dim lighting at night is very comfortable, there’s no glare and it creates a safe work environment. The breeder loves the new lighting — he can see the tail chalk very well.”

Michael Ribeiro,
Owner, Ribeiro Dairy Farms, Tulare,
California

Orion’s technology was installed in four barns at the Ribeiro Dairy, three of which were new construction. Ribeiro installed the lights to start a long-day lighting program, which has been proven through numerous studies to increase a cow’s milk production by an average of 5 pounds of milk per day, which means additional profit for the farmer.

Ribeiro Dairy Farms has a long history of family owners. Michael Ribeiro’s grandfather started the farm with his brothers in 1920, but split from them in 1945. Michael Ribeiro’s father, Lee Ribeiro Sr., eventually took over the farm with his brothers, and later split from his brothers, passing the farm on to his son, Michael.

Case Study: LDL

New Sweden Dairy, Nicollet, Minnesota



“We’re very happy with the way these lights work — bright during the day and dim at night. There is a sufficient level of lighting overnight to allow our employees to work in a safe environment.”

James Ailsby,
Manager, New Sweden Dairy, Nicollet,
Minnesota

New Sweden Dairy is one of two dairies owned by the Davis family, which owns Davisco Foods International Inc., a privately held international cheese and food ingredient company. The New Sweden Dairy was completed in December 2008. The other dairy, Northern Plains Dairy, was completed in 2003 and houses about 3,000 milking cows. More than 600 lights were installed at the New Sweden Dairy in a new barn that houses approximately 4,000 cows. New Sweden Dairy is practicing long-day lighting, a proven technique in which cows are subjected to long periods of lighting year round in order to increase milk production.

Milk Chiller System

Orion's state-of-the-art milk chilling technology provides a wealth of benefits like reducing energy costs by approximately 50 percent, taking up a fraction of the space used by traditional chillers and cooling milk more consistently.

The variable-speed drive chiller continuously cools milk at a steady pace, reducing the wear and tear often associated with the forceful stop-and-go process of other technology.

The chiller also comes with a control system that can easily be remotely monitored giving dairy producers the flexibility they need in a farm operation, while having the ability to observe the chiller.

Case Study: Milk Chiller System

The Plymouth Dairy has been in the Feuerhelm family since the early 1900s, when the family raised hogs and cattle, and focused its attention on crop farming. In the early 1990s, Alan Feuerhelm decided to expand operations and add a dairy operation. After constructing the necessary facilities, the farm began milking in 2000.

Orion Energy Systems installed the proprietary milk chilling system at the Plymouth Dairy in July 2009 after the farm determined it needed a more efficient chiller that could cool more milk to accommodate the farm that had grown from 1,800 cows in 2000 to approximately 2,700.

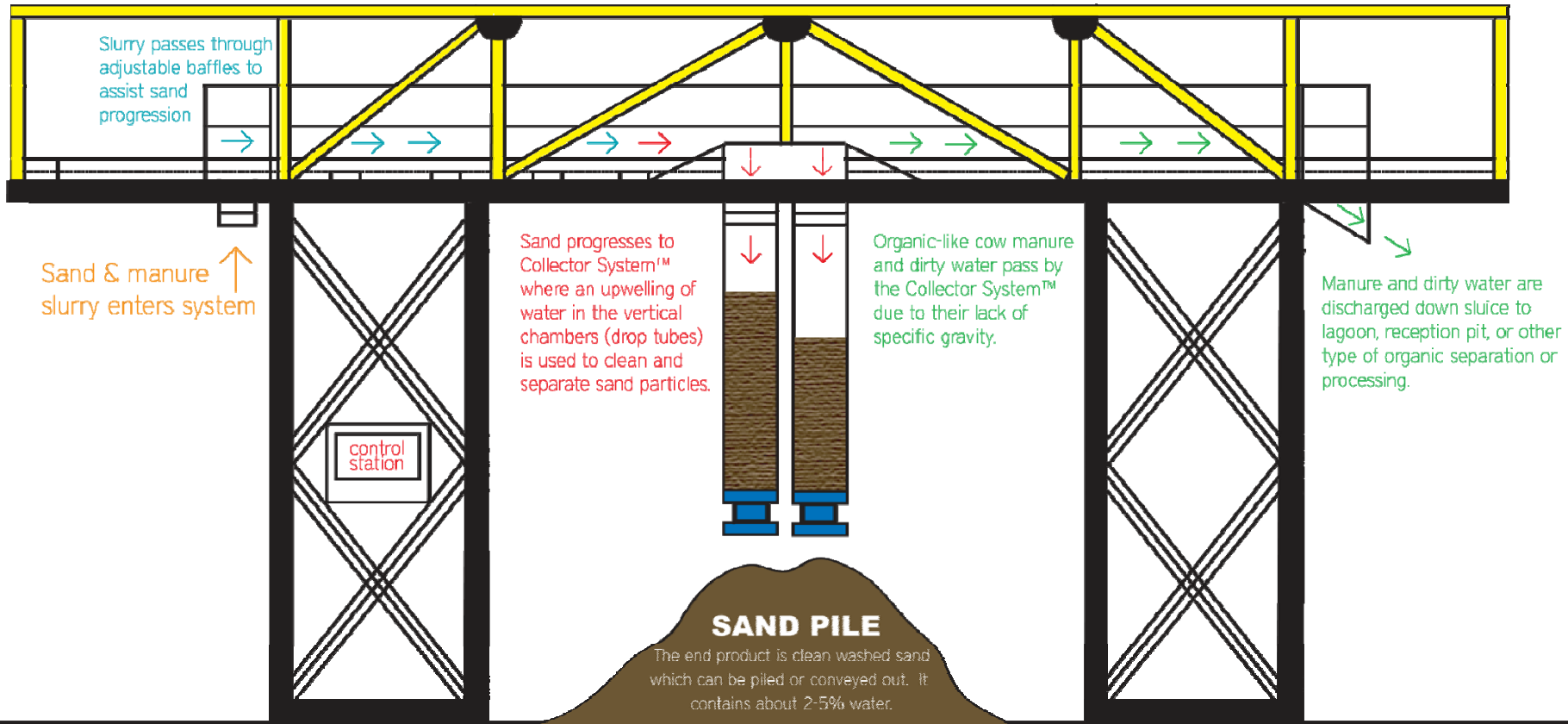


"It was more cost-effective for us to install this new system than to simply fix and expand our old milk chiller. This chiller offers a variety of benefits, from taking up significantly less space, to producing less heat, to being much more energy efficient, saving the farm money on operating costs."

Kurt Wierda, General Manager, Plymouth Dairy, Le Mars, Iowa



Conserve: Sand Separator



Apollo[®] Solar Light Pipe



Orion's patented Apollo[®] solar light pipe utilizes:

1. Lowest cost light available — the sun
2. Daylight is harvested through the revolutionary dome
3. Designed to be a one-for-one daytime replacement of a typical electrical lighting fixture
4. When combined with other Orion technologies, your facility can completely remove itself from the electrical grid
5. Three patents already assigned and more pending

Solyndra[®] Solar Panels

Using solar energy to generate electricity will maximize use of roof real estate to create a new revenue stream for your operation and further reduce the need for purchasing electrical power.



Cylindrical modules mount to your roofing system without the need for penetrations and have a distributed load less than 3.5 pounds per square foot.

The modularity of the system allows for roof maintenance to be performed without any hassle. Most importantly, the design maximizes energy production per square foot of your roof.

Wind Power

Each wind turbine produces up to 20 kilowatts

Can be mounted on your existing silos or independent towers

Wind turbines produce none of the greenhouse gases traditionally associated with fossil-fuel burning power plants. And, wind energy is safe and quiet, meaning your quality of life will not be adversely affected.





**Reducing costs and
improving productivity with
green technology.**

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