



What is Focus on Energy?



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Partnering with Wisconsin utilities

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Robotic milking systems



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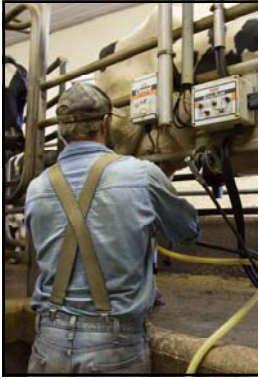
Technology overview



- Emerging in Europe, Canada, and U.S. markets
- 35,000 operational robotic milking systems installed throughout the world
- U.S. houses over 300 farms with robotic milking systems, and 200 of those systems are located in WI and MN
- First robotic milking system installed on a 130-cow dairy farm near Omro, Wisconsin
- Gaining popularity among farms in the 500-1,000 cow range

Photo: Progressive Dairy Canada

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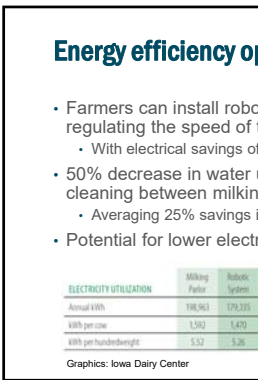
Labor force savings



- Challenging and costly to sustain human staff
- Reduced labor demands leads to greater time flexibility for producers
- Offset high capital cost of larger scale operation
- Each robot can milk approximately 60 cows and increase the frequency to as much as three times a day
- Average daily milk produced per cow in a robotic system is approximately 100 pounds

Photo: Travis Dewitz Photography





Energy efficiency opportunities



- Farmers can install robotic milking systems with a variable speed drive regulating the speed of the motor
 - With electrical savings of 5% this provides an annual savings over \$450/robot
- 50% decrease in water usage due to reduced need for sanitation and cleaning between milkings (ISU extension)
 - Averaging 25% savings in overall water heating costs
- Potential for lower electric demand (Iowa Dairy Center)

ELECTRICITY UTILIZATION	Milking Robot	Robotic System	Dairy Center
Annual kWh	198,963	179,233	179,238
kWh per cow	1,502	1,470	1,512
kWh per hundredweight	5.52	5.26	4.46

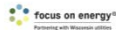


Graphics: Iowa Dairy Center






Return on Investment



- According to the University of Minnesota, useful life estimated in the 7-15 year range
- Prices have remained relatively stable even with technology improvements
- Technology collects valuable data and information:
 - Individual cow milk production
 - Electrical conductivity (quality indicator)
 - Cow activity
 - Cow rumination data

Photo: University of Connecticut Extension





Generational adaptation to technology

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- New technology appealing to the next generation
- Information integration makes it faster and easier to make management decisions
- Opportunities available for specialized labor related to the technology

Photo: IBO

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Extra considerations

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- Robotic milking has higher initial costs
 - Benefits of investing depends on the constructions costs
 - Expensive for smaller scale dairy farms
 - Larger dairies can operate cheaper with the standard milking parlor
- Increased complexity
 - Reliance on manufacturer maintenance services
 - Potential increase in operating costs
 - Parts are expensive to replace if warranties have expired
- Limited one-on-one contact with the cows

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Case study

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Converting to robots

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- Farmer in central Wisconsin was milking 378 cows only twice per day due to lack of help
- In 2018, they upgraded their 2x5 parlor with six robotic milking units
- After two months of using robotics, production increased from 81 pounds/day to 91 pounds/day while milking with 14 less cows
- Annual milk sales increased to \$160,070 per year

Photo: Travis Dewitz Photography

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Saving energy

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- Farm also worked with Focus on Energy to install variable speed drives on the milk transfer pump and vacuum pump
- Four months later, farm noticed the average kWh decreased by 260 kWh per month
- Farm received an incentive from Focus on Energy for \$5,600 for completing this project

Photo: Christian Science Monitor

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Resources and technical assistance

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USDA farm programs




- Farm Service Agency
- Natural Resources Conservation Services
- Risk Management Agency
- Farm Production and Conservation Business Center





Rural Energy for America Program (REAP)




- Focus on improving the economy and quality of life in rural America
- Offer loans, grants and loan guarantees to create jobs and support economic development and essential services
- Promote economic development by supporting loans to businesses through banks, credit unions and community-managed lending pools
- Offer technical assistance and information to help agricultural producers and cooperatives improve their operations



What does Focus on Energy do?



- Assists Wisconsin residents and businesses in identifying and implementing energy efficiency projects
- Offers unbiased information and technical assistance to participating utilities' electric and/or natural gas customers
- Provides financial incentives for energy saving projects that would not otherwise occur



2020 Energy Advisor Map

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2020 Special offerings

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New for 2020

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- Incentive for swine farrowing crate heater available at \$20 - \$40/heater
- Incentive for modulating dryer controls available at \$50/dryer

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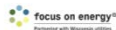
Changed for 2020



- Lighting Power Density incentives structure will be modified to \$0.04/kWh reduced
- Increased energy performance standards for ventilation fans along with modified incentive structure
- Incentives for irrigation variable frequency drives operating >500 hours will be consolidated
- 1,500 bushels/hour capacity limit removed from grain dryer incentive
- Grain dryer tune-ups are a standard offering



Discontinued for 2020



- Multiple equipment bonus incentives
- Electric water heater incentives



Agriculture Trade Ally bonus



- Enroll and receive a bonus on your customers' incentive applications.
- Visit focusonenergy.com/AgTA for more information.

Offering details:

Offering	Trade Ally Payment
Customer incentive <\$100	\$25
Customer incentive >\$100	25% of customer incentive
Maximum payment each year	\$7,500
Maximum payment per customer	\$250



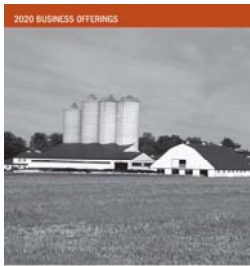
Agriculture Trade Ally bonus



- Steps to participate:
 1. Complete and submit the Focus on Energy Agribusiness Service Provider Application found at: focusonenergy.com/ASPApplication.
 2. Complete the payment request form on all customer projects. Form can be found at focusonenergy.com/AgTAForm or request a notepad containing tear-away forms.
 3. Receive financial payment and continue to grow your business by helping your customers save energy and money.



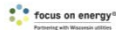
2020 Agribusiness catalog



AGRIBUSINESS




Prescriptive incentives




- Specific dollar amounts for completing a qualifying energy efficiency measure
- Direct one-for-one replacement for commonly installed equipment
- Technology qualifications and incentive amounts are found on the application forms
- Visit focusonenergy.com/catalogs to ensure you are using the most current incentive application




Custom incentives




- Custom Incentives
 - \$0.04 per kWh saved
 - \$100 per peak kW reduced
 - \$0.80 per Therm saved
 - Projects limited to a 1.5 - 10 year payback window based on energy savings
 - Incentive is limited to 50% of the project cost

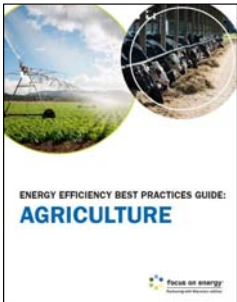


Custom incentives

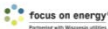


- Customers **must** receive **pre-approval** by working with an Energy Advisor from Focus on Energy
- Examples include:
 - Pre-Cooler Upgrades
 - Grain Dryers
 - Milk Pasteurizers






Agriculture Best Practices Guidebook



- Features sections for dairy and livestock operations, crop farmers, greenhouses and nurseries
- Available online at focusonenergy.com/guidebooks



Swine farrowing crate heater


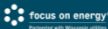


- \$28,000 project cost
- Energy savings:
 - 101,076 annual kWh
 - 54,352 annual Therms
- \$7,176 annual savings
- \$4,043 Focus on Energy Incentive
- 3 years payback

Photo credit: Farrpro



Questions



Contact us



Call: 888.623.2146
Visit: www.focusonenergy.com