Farm automation is becoming increasingly popular with the younger farming generation. Automation saves time, energy, and increases farming profitability (saving money). Automation is proven to be more effective and efficient than human capabilities of the past. The Klaus Dairy Farm is located outside of Chicago and is looking to automate as much of their operation as possible. This however, will take time and it is better to take and focus on one step at a time in the automation process.

The Klaus Farm has 80 dairy cows, 5 bulls, and hosts 25 acres of grassland for grazing. They also have aquaponics greenhouse and 20 acres of land that are used for the planting of corn, beans, pumpkins, and onions which are rotated out with one another. They also host poultry with 15 guinea fowl. They host a cell tower along the edge of the property to help supplement income. The Klaus farm also uses solar and wind power generation as well as having their own on-site milk processing plant for bottling, churning butter, as well as producing cheese and ice cream.

Seeing as the Klaus Farm has much of its focus on dairy and the milk that their cows supply that I believe it would be best suited for them to implement an automated milker into their system. After researching the different types of milking automation, I believe that the Lely Astronaut A5 and a Lely T4C(Time for Cows) management system would be a great first step and process to automate on their farm. Training is provided for by Lely before operations commence, support is offered all throughout implementation, and support and guidance are offered after implementation as well (Lely Astronaut A5, 2018).

The Lely Astronaut (A5) would provide great benefits to the Klaus Farm and their operations. The majority of their operations depend on the amount of milk that is being produced and collected, like their cheese, butter, and ice cream operations. The A5 allows the free flow of cow traffic (I-flow concept), which means that the cows decide when to be milked, this allows for a more relaxed milking experience for the cattle (Lely Astronaut A5, 2018). The Astronaut’s straight route, the I-flow, offers unhindered entrance, leading cows more easily to their milking turn. As a result, the number of times the cow is milked and the milk yield both increase (). Cows are also herd animals and can become distressed if they cannot see or be with their herd. The Astronaut with its open construction of the cow box allows all cows to remain in sight of one another with reduces their stress and allows them to release their milk with more ease which makes milking quicker thus increasing yield (Lely Astronaut A5, 2018). Lely’s research shows that the milking time per cow is reduced by 4% in the case of Astronaut robots with I-flow compared to previous models with no straight route (Lely Astronaut A5, 2018).

The hybrid arm is also a component to the cow’s comfort and increased milk yield. The arm will follow the movements of the cow as to not making them feel trapped. The hybrid arm combines the advantages of electrical driven movements with the softness of air. A huge pneumatic cylinder carries the weight of the arm using virtually no air while electrical components move the arm with great accuracy (Lely Astronaut A5, 2018). The air in the system balances the heavy load of the arm and buffers cow kicks, protecting the electrical system, and making the arm quieter (Lely Astronaut A5, 2018). This quietness allows for cattle to be less stressed and helps to increase milk yield (Lely Astronaut A5, 2018).

The Astronaut also has a three-layer laser system for the most accurate teat-position and detecting (Lely Astronaut A5, 2018). It also is capable to string information on each cow after each individual milking, which it then combines with a 3D camera for accurately locating the teats based on the cows positioning. The A5 has a wide reach and provides for the comfort of each individual cow and which increases yield (Lely Astronaut A5, 2018).

The Astronaut would also allow for time to be saved due to automated milking. Workers (Family members) would not have to go in twice a day (this is typical milking standards) to milk all of the cows individually. Instead they could simply monitor everything with a possible daily check up to see how everything is going. With the A5 the cows decide when they need to be milked, therefore hey can be milked more than twice in a day and no manual labor is required (Lely Astronaut A5, 2018). Thus, increasing milk yield and saving time. To many farmers time is crucial, the Klaus employees could focus on other areas such as field work, maintenance, and production with the milk processing. All saving time, energy, and money for the Klaus Farm.

The Lely company also produces many other cow related products and allows for expansion on top of their other systems. For example, their T4C system allows a farmer to view and interface with functions, settings, information, and important reports around the milking process (Lely Astronaut A5, 2018). It is all real-time and allows for preventive measures based on predictions within the data collected. The T4C system also interfaces with the other Lely products and systems like the Lely Vector automatic feeding system (Lely Astronaut A5, 2018). This is promising as the Klaus Farm wants to automate as many processes as possible.

As far as return on investment goes, I believe that the Lely Astronaut is profitable. Every dairy farmer should be looking for ways to lower the cost per pound of milk produced. The A5 hybrid arm used the power of air without any air consumption, but it gets as close to the udder as possible for easy and stress-free milking (Lely Astronaut A5, 2018). This unique arm also uses less detergent and water to in the cleaning step and thus reduces the amount of energy it uses by up to 20 percent (Lely Astronaut A5, 2018). Lely also prides themselves in using high quality parts to increase uptime and lifespan of the equipment. Thus, decreasing the service and maintenance costs, which in the end contributes to how much it costs to produce a pound of milk (Lely Astronaut A5, 2018). The robotic central units positioning in the A5 also allows for quicker and easier servicing by technicians if necessary, which is beneficial and more time efficient (Lely Astronaut A5, 2018).

The dairy farm of Craig Finke also implemented similar milking automation changes for his 120 herd of dairy cows (Dickrell, 2015). He implemented two AMS Galaxy robotic milker stalls (Dickrell, 2015). I believe that since the Klaus farm only has about 80 head (cows) it is unnecessary for them to implement two milking stalls, I believe it to be better to start with one. For the Finke Farm the automation allowed them to reduce labor as well as an increase in milk production per cow per day (Dickrell, 2015). It is also very time efficient and allows for focus on other areas such as field work. The only downside that Craig Finke mentioned was the start-up costs, however he implemented many things at one time whereas with the Klaus Farm, one step at a time will be taken.

The Borden Farm had similar experiences with their automated milking process and machinery. The milking machines let the cows choose their own hours and times to be milked and instead of the typical two milking times a day their cows are getting up to five or six in one day (McKinley, 2017). This gives them the desired benefits that the Klaus Farm desires. It also majorly cut labor costs and time spent milking for the Borden Farm and this is also desirable for the Klaus Farm and its automated milking machine and processes (McKinley, 2017).

Farm automation is becoming increasingly well known in the Farming and Agricultural Industry. The use of machinery to perform processes such as feeding, and milking are saving farmers time, energy, and money. I believe that the implementation of the Lely Astronaut A5 milking system at the Klaus Farm, located outside of Chicago would reap the benefits of increased efficiency and effectiveness within their milk production. Due to the fact that most of their business is based on milk production, automation of the milking process is seemingly the most beneficial to them and their farm/business. The machinery would provide and increase in saved labor costs, increase in milk production, and an increase in available time and energy. Implemented methodically, the automation of milking on the Klaus Farm is very profitable for them and their business.

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