Development of a 500-seat cow farm equipped with robotic technology in Bihartorda

Striking a balance between introducing robot technology and preserving jobs on a rural dairy farm in Bihartorda, Hungary.

EAFRD-funded projects

Location: Bihartorda, Hungary
Programming period: 2014-2020
Priority: P2 - Competitiveness
Focus Area: Farm performance, restructuring & modernisation
Measures: M04 - Investments in physical assets
Funding:

Total budget	~ 6 600 000 (EUR)
EAFRD	~ 2 520 000 (EUR)
National/Regional	~ 630 000 (EUR)
Private/own	~ 3 450 000 (EUR)

Timeframe: 07/2021 - 05/2024
Project promoter: Ezüstkalász 2000 Ltd
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Summary

The farm Ezüstkalász-2000 Ltd. implemented an ambitious transformation process by creating a fully modernised, high-tech, large-scale dairy farm in the village of Bihartorda, eastern Hungary, near the Romanian border.

The project supported the family farm in investing in milking robots and digitised management systems, which enabled the farm to raise 500 dairy cattle and produce milk in the most efficient and effective manner. At the same time, the farm provides excellent production and animal welfare conditions. The development included the procurement of state-of-the-art feeding, husbandry technology, reproductive biology and animal health solutions.

In addition to economic growth, Ezüstkalász-2000 Ltd considers its social and environmental responsibilities important factors for its success. As such, it was able to keep all of its original staff on-farm despite its significant efficiency gains in production. New tasks involved additional environmental maintenance and other technological improvements that enabled staff to stay employed.

Project results

- With the newly implemented technology, 10-15 people can perform all the required tasks on the cattle farm.
- The robotisation project allowed the farm owners to milk A1-beta-casein cows and A2-beta-casein cows separately. A1-beta-casein causes and aggravates many diseases, such as lactose intolerance, type 1 diabetes, intestinal inflammation, etc. In this context, the herd is currently undergoing transition and will soon receive organic certification. The plan is to produce 20 000 litres of organic milk containing A2 beta-casein per day.

Key lessons and recommendations

- Project implementation faced many challenges, including price changes. However, the farm owner managed the cooperation process well by persevering and solving problems jointly with his colleagues and partners.
- Around 10-15% of the animals don't use the milking robots. As it is important for every cow to give milk every eight hours, such cases require human intervention since the robot informs the worker which cows have not been milked.

Context

The farm of Ferenc Kiss and his family was initially founded as a cooperative in 1961. The farm is located in the village of Bihartorda, eastern Hungary, near the Romanian border. The village offers only a few job opportunities and suffers from high emigration and depopulation. Since 2018, Ferenc has been the new owner of the farm, now called Ezüstkalász-2000 Ltd. It is a livestock farm that provides jobs for 43 people and is one of the biggest employers in the area.

Before the purchase, Ferenc worked for 20 years in a senior position at one of Hungary's market-leading agricultural integrator firms. When his sons wanted to start farming after graduating from university, Ferenc decided to start his own business with them. The family currently works about 1 300 hectares of arable land, 200 hectares of pasture, and raises pigs and dairy cattle. When, in 2020, the farm lost all its pigs due to swine fever, the family decided to focus exclusively on cattle to be developed at a considerable scale.

At the outset, the farm housed around 430 cows and was still entirely based on the technology of the 1970s. To fulfil the family's vision of keeping up to 650 cattle under modern conditions (500 milk-producing and 150 dry cows), everything on site had to be completely demolished and rebuilt from scratch.

The family's ambition was to develop an economically viable farm while being a social and environmentally conscious employer.

Objectives

The main project objectives were to replace the out-of-date machinery with the highest technology available at the time. The aim was to increase the capacity and number of animals on the farm and reduce costs through improved precision and efficiency via modernisation.

At the same time, it was important that the farm's digitisation and robotisation maintain the welfare of the animals and allow the farm to produce milk of organic quality.

Regarding social responsibility, all existing farm jobs were to be maintained on the farm. At the time, labour shortage issues stemmed from the remote rural location and the reluctance of many people to work in physically demanding jobs on farms. These issues were to be addressed by making farm work easier through digitisation and robotisation, thereby creating a work environment that would attract men and women.

Activities

The main activities of the project commenced with the careful preparation and planning of the modernisation process, whereby the farm owners worked in close cooperation with Agrárközösség Ltd., a consulting company.

The main building activities involved the construction of four milking robot barns each with a capacity of 125 seats. The barns were equipped with the highest animal welfare equipment, ensuring natural living conditions for the cattle. This included, for example, a rest box, a waterbed and a rubber mat in the feeding area to protect the animals' feet. The milking robot technology installed represented the most modern technology available at the time. For example, the robot constantly monitors the cows (across a lot of parameters), recognises the individual animal and notifies the herd controller if a cow is in heat, has given little milk or is sick (and if required, does not allow the animal back into the group). The robot also ensures precision dosing of feed, as it identifies how much forage should be given to each individual cow to achieve the highest efficiency for each individual. In this process, the cows are taught to go to the milking robot when their udders are strained, often this is achieved by attracting the cows to the robot with concentrated feed used as bait.

Further building work involved the construction of modern calf houses, large-capacity crop storage, a social building and the development of site roads, infrastructure and bridge scales.

A number of important systems were installed. This included a comprehensive site management system and the installation of a modern ventilator system that is connected to water pipes. This system measures continuously the air temperature in the barn and sprays raindrops on the animals and blow-dries them immediately to cool them down when required. Furthermore, a fodder management system was installed taking care of the management and allocation of modern feed. Finally, a manure management system and relevant manure tools were introduced to help collect a significant part of the manure through a self-propelled manure vacuum cleaner and empty it into the right place.

In terms of environmental development, the project involved installing a solar panel system to ensure sustainable energy production. With 50kw power, it provides one-third of the energy needs of the entire farm, which is 40% of the livestock farm.

Main results

- The project successfully completed all construction and installation processes and is fully operational.
- With the newly implemented technology, 10-15 people can perform all the required tasks on the cattle farm.
- Despite the farm's high-technology and high-efficiency transformation, all 43 previous staff were still employed on the farm. Those who were no longer required to look after the cattle dealt with the environmental maintenance of the farm and also learned new technology in required fields.
- The robotisation project allowed the farm owners to milk A1-beta-casein cows and A2-beta-casein cows separately. A1-beta-casein causes and aggravates many diseases, such as lactose intolerance, type 1 diabetes, intestinal inflammation, etc. In this context, the herd was undergoing a transition to receive organic certification in due course. The plan was to produce 20 000 litres of organic milk containing A2 beta-casein per day.

Key lessons and recommendations

- During the nearly three-year implementation period, the expert team of the Ezüstkalász farm, its consultants, the construction firm and other cooperating partners faced many challenges, including price changes. However, the farm owner managed the cooperation process well by persevering and solving problems jointly with his colleagues and cooperating partners. The development became a pioneering example of modern animal husbandry.
- Around 10-15% of the animals do not use the milking robots. As each cow needs to give milk every eight hours, such cases require human intervention since the robot informs the worker which cows have not been milked. Cows will also learn from the experience, so the number of cases should decrease over time.

Additional information:

YouTube video:
www.youtube.com/watch?v=Uj9ogpq9ZXg

Web article:
https://agrarkozosseg.hu/projektatado-unnepseg-az-ezustkalasz-2000-kft-nel/

Ezüstkalász
Bihartorda

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