

RESULT 2: OPEN PLATFORM FOR SHARING KNOWLEDGE

WP 1: Learning Environment for SMEs

CASE STUDIES DEVELOPMENT

(3 cases per partner, length: 3-5 pages, deadline: 15.05.2023)

APPLICATION OF Robotic Milking System

Part 1: General information for the enterprise

1. Farma Diviš
2. Chrášťovice, Czech Republic
3. Subject of activity: Plant production, animal production, dairy
4. Legal status: Private enterprise
5. Management
 - a. Gender: Male / **Female** / Other
 - b. Age: up to 35 / 36-45 / **46-55** / 56-65 / over 65
 - c. Education: primary / **secondary** / higher
6. Farm size
 - a. Cultivated land 1100 ha, of which 600 ha arable land
 - b. species and numbers of animals: beef cattle 100 pcs Siemental, dairy cattle 180 pcs Brown Swiss and Holstein

Part 2: Smart technologies used on the farm

What smart technologies does the farm have? When and where are they applied? Is the accumulated data used and how?

Robotic milking system

Robotic feeding system for calves

Photovoltaic panels on the roofs

The Robotic Milking System (2 of them) are applied for milking 100-120 cows. One is for 60-65 cows. By increasing the frequency of milking, up to 4 times a day, an **increase in productivity** is achieved by some **5 litres per cow and day**.

The milking takes place automatically. Each cow is identified by a smart chip placed on the front leg. The cows are less stressed, they get freedom to decide when to be milked, they never have to stand for long in waiting rooms in front of the milking parlour.

The obtained data are used to check the productivity of dairy cows and their health status. The system also indicates malfunctions and unusual events. In the long term, the obtained data is used for the selection of suitable heifers and for improving the genetic characteristics of the herd.

The feeding automat for calves works on a similar principle:

Each calf has a collar with an identification chip around its neck. The machine identifies the calf and doses the feed accordingly.

Part of the milk is processed in own dairy. In total, they process 30,000 liters of milk per month. Cheese, yogurt and fresh farm milk in bottles are produced. Some products are delivered to Kaufland, others to specialized stores in Strakonice, Pilsen and Prague. Everywhere the farm arranges its own transport, and they are willing to deliver to individual customers as well.

Solar panels supply electricity to the entire farm. The largest consumer is the dairy for cooling milk.

Part 3: Owners' satisfaction with the use of smart technologies

1. Utility assessment

Is the farm manager satisfied with the smart technologies used? What benefits and advantages have they brought him?

According to the owner, the milking machine definitely worth it. It saves manpower, feeding costs (exactly measured doses according to the milk yield of each individual cow), water and electricity. Higher milk yield is decisive.

The milk is analysed immediately after milking, in case of problems it is not put into a common tank. At the same time, a health problem of the cow is indicated.

The milking device is able to disconnect from the individual teats separately, which is gentler.

2. Observed difficulties and problems

What difficulties have they encountered or are encountering in using the new technologies? How did they learn to work with them? Do they have maintenance and consumables issues?

"I was a little afraid of the new technology, but I learned everything in operation. I had nothing else left, because otherwise I wouldn't be able to do everything myself", says the owner. "Of course, there are cows that are not suitable for automatic milking. Technical breakdowns of the machine may also occur. For these cases, we have a classic milking parlor. I consider this combination to be optimal, as it prevents high cow bracken and milk losses when the automatic machine is shut down."

3. Potential risks

Are they worried about issues such as post-warranty service, integration with next-generation technology, and being tied to a specific supplier or brand?

The post-warranty service works reliably. They come in one day.

The milking machines are not connected to other systems, so there is no risk of their incompatibility.

Part 4: Financing the investment in smart technologies

How is the purchase of the new technologies financially secured - own funds, bank loan, financing under a particular program? Do they think that the prices of these technologies are beyond the means of most farmers? Do they feel that the decision to purchase their devices was astute and effective?



The farm received a subsidy of 50% from the state program “Rural development” for the first milking machine. When buying the second one, there were problems with the correct processing of the application and the building permit, and therefore only own finances could be used.

There were some investment subsidies for building and equipment of the dairy.

For solar panels, a subsidy has been promised and permission to connect to the national grid is awaited. In that case, it would be possible to sell the electricity, so far it can only be used in the farm.

Nevertheless, they consider the investment to be effective **saving energies, costs and manpower**.

The price of the machines itself is probably not unattainable, but its installation often requires the reconstruction or construction of part of the cowshed and other buildings. Great care must be taken when applying for grants.

Part 5: Future intentions towards smart technologies

Do they intend to continue using new technologies? Do they plan to purchase new types, and if so, what kinds? What are their intentions with the devices they own - do they plan to replace them with more recent generations as they become available?

The purchase of another machine is planned, but first it is necessary to invest in the reconstruction of the stable. Any expansion of the herd depends on the building permit and other mandatory measures.

A more modern type is not being considered yet, the existing one is suitable.

The newest investment has been the solar panels which are not completely finished, namely the administrative procedures and necessary permissions are in process.





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Part 6: Some photos

Picture 1: A smart bracelet on the front leg identifies the cow





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Picture 2: The cow should have her head in the feed container in the front during milking, but she was curious...



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Picture 3 : Milk is analyzed just after milking.

