

## Integrated smart development of Rábapordányi Agricultural Private Limited Company

Improved animal welfare and increased cost-efficiencies from integrated farm investments in Hungary.

### EAFRD-funded projects

**Location:** Rábapordány, Hungary

**Programming period:** 2014-2020

**Priorities:** P2 – Competitiveness

P5 – Resource efficiency and climate

**Focus Area:** Farm's performance, restructuring & modernisation / Energy use efficiency

**Measures:** M04 – Investments in physical assets

**Funding:** Total budget 1 180 000.00 (EUR)

EAFRD 462 000.00 (EUR)

National/Regional 116 000.00 (EUR)

Private 602 000.00 (EUR)

**Timeframe:** 2019 to 2023

**Project promoter:** Rábapordányi Agricultural Private Limited Company

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### Summary

Over recent years, Rábapordányi Agricultural Private Limited Company, a cooperative in the Northwest of Hungary, has implemented several technological developments with CAP support. The three integrated activities relate to renewable energy, calf rearing and precision agriculture.

The efficiency and conditions of calf rearing did not meet the farm's production standards. Therefore, an existing, unused building was converted into an innovative calf rearer, by using up-to-date technology to improve animal welfare and cost-efficiencies.

The continuous increase in energy prices and the need to reduce the environmental load led the company to implement a solar power system. The new plant now generates a significant part of the company's electricity demand from renewable energy.

The introduction of precision agriculture was a response to meet social expectations for a lower environmental impact and an increase

in biodiversity, the company thereby wanted to optimise its use of input materials (fertiliser and plant protection products).

### Project results

- Improvements in calf development, such as increased weight gain of the calves by approximately 5%.
- Better working conditions for calf keepers, with less manual work involved and more time available for observing the animals.
- Improved data availability supporting the early identification of emerging problems in calf rearing.
- Reduced costs by optimising fertiliser and plant protection products.
- Substitution of more than 50% of conventional electricity by renewable energy of the cattle farm and a significant reduction of CO2 emissions.

### Lessons & Recommendations

It proves advantageous to strive for the modernisation of the entire production process to ensure that no area of inefficiency is left untouched.

It is important to introduce smart solutions gradually so that new investments can be aligned with a company's financial capacity.



## Context

The Rábapordányi Agricultural Private Limited Company is a Hungarian share company founded in 2001. It is located in Győr-Ménfőcsanak County (north-west Hungary) near Rábapordány and Dör. The company has 85 owner-members and 87 employees. The estate consists of 160 ha of grassland, 1 000 ha of arable land, 550-600 dairy cattle (Holstein - Friesian), and 900 sows. Up to 26 000 fattening pigs and 6 000 piglets that are sold annually.

To obtain the required amount of fodder for the animals, an additional area of 2 000 ha was needed. To achieve this, the company created micro-regional integration schemes and contracts with local farmers, whereby different cooperative approaches are used covering aspects such as input of raw materials, services, and financing options.

Over the years, the company experienced labour shortages and seeks to address these issues through smart solutions.

## Objectives

The primary goal of Rábapordányi Agricultural Private Limited Company is to remain competitive, while improving the environment in an integrated manner.

With EAFRD support, three objectives were pursued:

- Designing an innovative calf rearer to serve the needs of the calves as best as possible and to increase animal welfare. The new design reduces stress of the calves, thereby optimises feeding and reduces the need for medication. Overall, better performance as an adult animal can be expected.
- Developing precision farming to optimise production costs and the use of input materials, thereby reducing the environmental burden. Further, to maintain profitability, to apply suitable management practices, and to effectively align animal husbandry with crop cultivation.
- Designing a solar power system to reduce energy costs, thereby improving efficiency and competitiveness. Additionally, the aim is to correspond to social expectation of reducing the ecological footprint of animal husbandry.

## Activities

The following three activities were supported:

### 1. Design of an innovative calf rearer involving the construction, mechanisation and purchase of new equipment:

An old, unused stable building was identified for housing the new calf rearer for 90 calves separated into six internal stables (6 x 16-places). The company aspired to be among the first in Hungary to introduce a system of artificial breastfeeding in small groups that imitates udder sucking. Therefore, care was taken to select the most suitable technology optimising animal welfare, health as well as economic aspects. The chosen technology provides each calf with a unique smart identifier for the system to dispense the appropriate amount of milk. The calf can drink when it wants and the smart system simultaneously monitors whether it is feeding properly. Watering is done through six outputs from two automatic machines.

### 2. Development of precision farming:

The entire farm area (1 000 ha of arable land, 160 ha of grassland) was brought under precision agriculture within two years (2021-2023). An external service provider was commissioned to prepare the territorial map, i.e. the zone designations, and undertake regular measurements (pH, soil cohesion, etc.). In addition, a meteorological station was installed in the settlement of Dör. The Hungarian-developed device measures precipitation, temperature, sunlight duration, soil and leaf moisture, makes pest forecasts, etc. It also archives the data. In addition, two sowing machines and a row cultivation cultivator were purchased with corresponding smart tools.

### 3. Designing a solar power system:

A small solar power plant with a nominal output of 386 kWh was put into operation supplying energy to three locations: the cattle farm, the feed mixing plant, and the drying plant.

The biggest consumer of energy is the cattle farm with its fan. It was a key aim to cover the power of this fan that had been installed to improve the temperature conditions of the barn. When all three locations are in need of energy, the new solar power production can partially replace the conventional electricity.

In future, the system can be expanded, as the network licensee has given consent for a power of 456 kWh.



## Main results

### The new, innovative calf rearer resulted in:

- > An increase in the weight of the calves by approximately 5%. The consumption of feed has also improved due to the traceability technology.
- > Reduced costs of raising calves, whereby the efficiency of the business has improved.
- > Improved working conditions of the calf keepers, with less manual work involved and more time available for observing the animals.
- > Increased efficiency for the work of farm managers and the veterinarian through improved data availability supporting the early identification of emerging problems.

### The new, innovative calf rearer resulted in:

- > Reduced costs through the optimisation of fertiliser and plant protection products. Thanks to zoning, plants' optimal nutrient needs can be met by halving the amount calculated for a given plot.
- > Reduced CO2 emissions, by a reduced use of input materials, i.e. the ecological footprint of the company's operations has decreased.

### The results of the new solar power system include:

- > The substitution of a significant share of conventional electricity by renewable energy (more than 50%) of the cattle farm.
- > A significant reduction of CO2 emissions.

Rábapordányi Agricultural Private Limited Company has won numerous awards in Hungary for its outstanding work performed in the recent years and aims to share its transferrable good practices.

## Key lessons

When modernising, it proves advantageous to strive for the modernisation of the entire production process to ensure that no area of inefficiency is left untouched. In this way, all technology used by a company corresponds well with each other.

It is important to introduce smart solutions gradually to align new investments with a company's financial capacity.

In Hungary, cooperation and legal forms of collaboration should be further encouraged. Farmers are willing to cooperate, but they are often unsure or under-informed about their financial security and the possibility of professional advancement within cooperative company structures

### Additional information:

[rabapordany.hu/telepules/cegek-vallalkozasok/96-rabapordanyi-mezogazdasagi-zrt](http://rabapordany.hu/telepules/cegek-vallalkozasok/96-rabapordanyi-mezogazdasagi-zrt)

[www.youtube.com/watch?v=UDy4HLFbVpw](https://www.youtube.com/watch?v=UDy4HLFbVpw)

[www.youtube.com/watch?v=3dDleKWymTU](https://www.youtube.com/watch?v=3dDleKWymTU)

[www.youtube.com/watch?v=mZPvKReroX4&t=306s](https://www.youtube.com/watch?v=mZPvKReroX4&t=306s)

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