FUTUREDAIRY

Labour Case Study

AUTOMATIC MILKING SYSTEMS

Key Point:

- Significant reduction in employed labour
- Reduced physical workload
- An option that allowed continuation in the industry
- Operating with batch milking

Batch milking with robots

Lindsay and Jacinta Anderson and their four children, Athlone, Gippsland

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WHEN LINDSAY ANDERSON faced a serious and long term health issue, an automatic milking system (AMS) enabled the family to continue to dairy.

Unlike most grazing AMS herds, the Anderson herd is milked in batches: the herd is split into two groups of up to 75 cows which are given access to the dairy at specific times of the day.

This is quite different from voluntary milking where milking occurs most of the day and night and cows move by themselves from the paddock to the dairy and around the farm.

Batch milking works for the dairy operation and suits the Anderson's situation.

Dairy labour efficiency

	Labour efficiency (cows/FTE*)
Anderson family (AMS)	100
Anderson family (before AMS)	100
Victorian average^	99
Gippsland average^	99

* 1 FTE is defined as 50 hours/week
^ Based on data from Dairy Farm Monitor Project - Victoria Annual Report 2012/2013

Before AMS

A seventh generation dairy farmer, Lindsay qualified and worked as a mechanical engineer before returning to full time dairying in 1989.

Since then Lindsay and Jacinta have progressively developed their Athlone farm and expanded the dairy operation. By 2008 they were running 400 cows with 120 ha and milking in a 20-aside herringbone with electronic ID.

The operation involved four full time equivalents (FTE): Lindsay and four employees (two part-time). Depending on the season, the herd was managed in up to three groups (based on production), which were milked once, twice or 2½ times a day (five times every two days).

The high production herd was milked every second night about 1am, usually by Lindsay. The session took less than an hour.

Minimal time was spent fetching cows as they were trained to walk to the dairy as soon as the gate opened.

The herd comprised mostly Jerseys registered under the King Vista prefix.

Why AMS?

The Anderson's main objective in installing an AMS was to reduce Lindsay's physical work load and improve his health, while reducing their employed workforce.

They decided that automatic milking had the potential to improve milk quality and increase production while helping to control costs. For example, they expected to get a better milk response from supplements as they would be able to allocate concentrates individually according to production and later on customise the mix for each cow.

Case Study

The path to AMS

In 2007 Lindsay's health deteriorated. He began to rely on more employed staff to reduce his physical workload. As well as increasing costs this brought the challenge of attracting and retaining good staff. After bad experiences with unreliable staff, Lindsay was also concerned about issues with animal health, infertility, milk quality and costs.

The Andersons considered a variety of options, including selling the herd. They loved dairy farming and decided that automatic milking could enable them to continue dairy farming with a reduced physical workload for Lindsay while Jacinta worked part time off farm as a teacher.

After considerable research, the Andersons decided to install a double box Insentec Astrea. Lindsay and the local dealer travelled to Europe for technical training. Their AMS was commissioned in January 2012.

From the outset, the Andersons decided to batch milk rather than rely on voluntary cow movement. They felt that batch milking would give them better control of milking frequency and ensure the robots operate steadily during the day. Because of this, no changes to the farm layout (laneways, gates and yard) were needed for the AMS.

The Anderson's AMS 2013

Herd	200 cows (152 milking cows and 48 dry cows), predominantly Jerseys
Farm	Milking area: 120 ha
Concentrates	About 1 t/cow/year
Robots	1 double box Insentec Galaxy Astrea 20.20 76 cows per box 152 cows per robotic arm
Production	About 5500 L/cow/year
Labour efficiency	1.52 full time equivalents or 100 cows/FTE

The Anderson family AMS

The herd calves year round and is managed in two or three groups. During the first year of AMS (2012), Lindsay milked up to 190 cows in three groups. In 2013, as they moved to year round calving, the herd size was reduced to just over 150, managed in two groups following a 2-day routine; Herd A is milked five times in two days and herd B is milked three times in two days.

With a batch milking system, cows are fetched to the dairy for defined milking sessions. Managing the herd in two or more groups reduces the amount of time the cows spend waiting at the dairy yard.

Although Lindsay supervises for more hours now, the batch milk AMS operation involves just him and a part-time employee who works about 22 hours a week. Lindsay is happy with the set up because the work is less physically demanding than conventional milking and the monitoring and computer work can be done remotely. And he knows his part time employee is reliable as they have worked together for 17 years!

FutureDairy calculated the farm operates with a little over 1½ full time equivalent staff (FTE) or 100 cows per FTE.

The Anderson's AMS units were close to full-utilisation 12 months ago but recent upgrades combined with an experienced herd mean that the utilisation level is now closer to 60%. This means that there is capacity to milk considerably more cows with the existing technology.

Fetching cows with batch milking

Lindsay's cows have always been trained to walk by themselves to the dairy as soon as the paddock gate is opened. This saves him a lot of time now that he is batch milking. He simply opens the gate and cows make their own way to the dairy yard. Once they are all in the holding yard, Lindsay sets up the exit gate to direct the cows to their next paddock. He can then leave the dairy if he needs to.

Daily routine

Lindsay visits the dairy four or five times a day – and spends up to an hour there each time.

The robots take up to five hours to milk each group of cows. Lindsay doesn't need to be at the dairy for this time. Once milked, the cows make their own way back to the paddock. As each group is milked Lindsay checks there are no cows left at the waiting yard or the holding yard.

Cows that are being trained or that require treatment/assistance are moved between the two herds (on a daily basis) to ensure that they are milked at times that are convenient allowing Lindsay to minimise the tasks that are conducted at less 'sociable' hours.

When a cow that requires treatment enters a robot, the system checks the time of day to see if the cow is scheduled for treatment. If the time is within the parameters that Lindsay has set, he is sent a phone alert allowing him to treat the cow immediately after milking if he is available. If he doesn't intervene before the milking is completed, the cow is directed back to the waiting yard rather than being released to the paddock. Lindsay then attends to treatment cows collectively at the end of the milking session before opening the gates for the next herd to come up for milking.

A typical 2 day routine: Anderson family 2013

DAY 1

1:00am Herd A Night milking

≈30/45 min
- Fetch herd A; open return gate
- Hose out and around robots, clean camera lenses
- Go back to bed

6:00am Herd B Morning milking

≈60 min
- Attend/treat cows (herd A) in drafting yard and release to paddock
- Hose main dairy yard
- Fetch herd B and open return gate
- Hose out and around robots, clean camera lenses
- Change milk filter
- Check reports on computer.
- Feed calves

11:00 am Herd A Morning milking

≈60 min
- Attend/treat cows (Herd B) in drafting yard and release to paddock.
- Fetch herd A and open return gate.
- Hose out and around robots, clean camera lenses.
- Check reports on computer

4:00pm Herd B Afternoon milking

≈60 min
- Attend/treat cows (Herd A) in drafting yard and release to paddock.
- Fetch herd B and open return gate.
- Hose out and around robots, clean camera lenses.
- Feed calves

8:00pm Herd A Evening milking

≈60 min
- Attend/treat cows (Herd B) in drafting yard and release to paddock.
- Fetch herd A and open return gate.
- Hose out and around robots, clean camera lenses.

DAY 2

6:00am Herd A Morning milking

≈60 min
- Change milk filter
- Hose out and around robots, clean camera lenses
- Fetch herd A and open return gate
- Feed calves
- Check reports on computer.

11:00 am Herd B Morning milking

≈60 min
- Attend/treat cows (Herd A) in drafting yard and release to paddock.
- Fetch herd B and open return gate.
- Hose out and around robots, clean camera lenses.
- Check reports on computer

4:00pm Herd A Afternoon milking

≈60 min
- Attend/treat cows (Herd B) in drafting yard and release to paddock.
- Fetch herd A and open return gate.
- Feed calves
- Hose out and around robots, clean camera lenses.

TYPICAL 2 DAY MILKING SCHEDULE FOR TWO HERDS

DAY 1	Night	1 am	**Herd A**
	Morning	6 am	Herd B
		11 am	**Herd A**
	Afternoon	4 pm	Herd B
	Evening	8 pm	**Herd A**
DAY 2	Morning	6 am	**Herd A**
		11 am	Herd B
	Afternoon	4 pm	**Herd A**

Lindsay usually checks the daily reports and enters information on the computer at the dairy but he can also log into the system via his laptop or mobile phone.

In addition to the daily cleaning routines, the robotic arm is washed with a water blaster and cleaned in more detail once a week.

Although Lindsay aims to maintain relatively consistent milking intervals and routines, he is quite flexible with his daily schedule. For example if he has other pressing tasks, he might do half the yard wash in the morning and the other half in the afternoon. There are times that he delays an entire milking session to allow him to accommodate other commitments/activities.

Lindsay focuses on the milking related tasks outlined in the table (left). The rest of the farming tasks are done in between visits to the dairy or by his part time employee.

The main seasonal tasks that affect workload are paddock work (sowing, mowing and making silage) and feeding the herd. In the dry periods silage is fed in every paddock every day. At very busy times he can cut the milking related tasks back to about 20 minutes per herd (or about 40 minutes a day) which is the time it takes to fetch the cows and open/shut paddock gates.

Alarms

If something goes wrong the system will generate an alarm.

Most alarms that require a response can be dealt with via the computer or phone. The Anderson's system has four different levels of alarm: level 1 or 2 alarms usually require a visit to the dairy to resolve an issue such as attending to a cow or checking a hose.

Lindsay is happy with the number of level 1 or 2 alarms which average one or two a week. Level 3 and 4 alarms are more minor issues. He says he received a lot of alarms in the first few months of automatic milking but this was mainly due the cows and people adapting to AMS.

Alarms are usually set to go to Linsday's phone. The Andersons' eldest daughter and her husband live in a nearby town and, together with their other children, look after the farm if Lindsay is away. They are experienced in looking after the robots and the herd and can usually contact Lindsay or the dealer if needed.

Having completed the technical training course before installing the robots, Lindsay doesn't need to call on the local technician very often, but he is based 30 minutes away if needed. Every three months the local technician visits to perform a major service on the milking equipment.

Case Study

Getting used to automatic milking

When the Andersons commissioned their AMS some cows milked in the old dairy for the first few months. Lindsay says it took about three months to train the whole herd, a period he describes as 'harder than expected' and a 'bit stressful for people and the cows.' During this period Lindsay and his employee both worked long days (5am to 10pm).

Cows were trained in groups of 70. In hindsight, Lindsay says it could have been easier to train cows in smaller groups of about 20 or 40.

Training heifers or new cows

After the first year, training heifers has been relatively straightforward. With a year round calving herd, there are small groups to train throughout the year.

Before heifers calve, Lindsay sends them through the robots, making sure they get some grain. After calving he manually attaches the cups for the first few milkings. Once an animal seems calm in the box, he stands next to her while the robot attaches the cups the first few times.

Once cows have had a lactation of robotic milking they usually need no further training. Fresh cows are sent to the robots on their own although Lindsay watches their first milking of each lactation to ensure the milking is complete and uneventful. After that he monitors them through the computer reports.

"I'd rather train an animal for a couple of weeks with patience to remove the risk of injury to her or damaging the robot while making sure it is not too stressful for the animal to enter."

Lindsay Anderson

Lindsay has not noticed any breed differences in automatic milking. He has found Jerseys, Holsteins and cross-breds are equally suited to his AMS operation.

Mating

Cows are fitted with pedometers for heat detection. Cows on heat are automatically drafted after their daytime milking. Those detected on heat during the night will be drafted at their next daytime milking. Lindsay does the inseminations and has recently started using the AMS sampling system to collect milk samples to send away for pregnancy testing.

The big gains

The Anderson's have achieved their main aims in going to automatic milking: reducing Lindsay's physical workload; reducing stress by relying less on employed labour and improving quality of life.

The main benefits for the Anderson family fall into three areas: labour, farm management and lifestyle. Many of these benefits are due to the flexibility that arises from automatic milking.

Labour

Although Lindsay works more hours now, he is happier and healthier than before automatic milking. He has help from a reliable and trusted part-time employee, and back up from his family which allows him to have time away from the farm. When needed, the farm can run with a single operator.

The Anderson's have reduced their labour costs and Lindsay also values the reduced stress by not having to recruit, supervise and retain staff.

- ☑ Reduced physical workload.
- ☑ Reduced labour costs.
- ☑ The operation doesn't rely solely on Lindsay.
- ☑ Single operator if needed.

Farm business

With a less physically demanding workload, Lindsay reports having more time to focus on managing the dairy farm and the business.

Lindsay says that the information provided by the AMS is a very useful management tool which has contributed to improved production and milk quality.

He says he is getting a better return on investment in concentrates because the system allows him to allocate supplements individually instead of 'flat rate' feeding.

> *"Now we have some cows being fed 0.5kg supplement and the top cows on 12.5kg. This helps us maximise the return from every kilogram of supplement we use, increasing efficiency."*
>
> Lindsay Anderson

He also reports better animal health and welfare. He says the cows are much calmer with a robotic milking system, mastitis has dropped dramatically and he rarely sees a lame cow.

- ☑ More time to focus on farm management and business.
- ☑ Better return on concentrate investment.
- ☑ Improved animal health and welfare.

Lifestyle

Lindsay reports a much improved lifestyle, despite working longer hours. He says his sleep quality has improved and he enjoys having more family time due to the flexibility of the daily routine. Little things such as having breakfast with the kids and seeing them off to school add up to a better lifestyle.

> *"I can plan my day to pick up the kids from town or go to a meeting."*
>
> Lindsay Anderson

He has also been able to find time and energy to be involved in off-farm activities. He has been able to take cattle to shows and participate in dairy industry groups, including Cows Create Careers. He has also done some engineering work and is a director of a co-operative that sells Jersey semen.

- ☑ More family time.
- ☑ Flexible routine.
- ☑ No need to be on call at night.
- ☑ Time and energy for off-farm activities.

Future plans

In the future the Andersons plan to increase the herd size up to 230 cows (milkers + dries) or more to increase their robot utilisation rate. The aim is to calve 15-20 cows every month.

Lindsay is continually working to refine his batch milking system and these refinements should enable more cows to be handled through the AMS.

For example Lindsay is investigating options to automate the task of getting cows from the paddock to the dairy, such as virtual fencing. This would further reduce the workload but also create better control over the milking interval by having more groups while further increasing the flexibility of his working day.

The Andersons have enough land and room in the dairy to fit another robot but this is not an immediate priority.

FOR MORE INFORMATION

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