

Key Points:

- Dramatic improvement in labour efficiency.
- Robotic milking attracts next generation back to dairying.
- Much improved lifestyle.
- Operates with family labour only.

Robots improve labour efficiency, lifestyle

John, Caroline and Arjan van Adrichem, Togari, Tasmania

By Juan Molfino, Kendra Kerrisk and Lee-Ann Monks

BEFORE INSTALLING an automatic milking system (AMS), the labour efficiency of the van Adrichem family's dairy farm was typical of Tasmanian dairy farms: they milked 106 cows per full time equivalent (FTE); the Tasmanian average is 137 cows/FTE.

But their automatic milking system has taken the operation to another level all together: they now milk 191 cows/FTE. This figure includes significant time spent developing a new block of land. The labour efficiency is estimated at 275 cows/FTE if the time spent developing the new block is excluded.

Since installing an AMS in 2009, the van Adrichem family works less hours, utilises only family labour, operates at a higher stocking rate and reports a much improved lifestyle.

Before AMS

Before installing an AMS, John and Caroline dairied for 12 years on their 150 ha property near Togari in north west Tasmania. The operation ran on 3½ full time equivalents. During the week John and Caroline each worked 8-10 hours a day but tried to limit their weekend hours to the essential tasks such as milking, setting up fences and calf feeding etc. They were assisted by a full time employee, a casual relief milker and regular help from their children.

The 370-cow, spring-calving herd was milked in a 50-unit rotary that was built in 2001. Milking tasks alone took 5½ hours a day, and most of the time two operators were involved.

The installation of automatic cup removers in 2008 meant the dairy could run with a single operator if needed. However the routine usually involved two people at the start of milking: one fetching the cows while another attached cups.

Why AMS?

Labour and lifestyle were the issues that led John and Caroline to investigate robotic milking. After their five children left home John and Caroline found it difficult to find and keep reliable staff. This was partly due to the distance between the farm and town.

John and Caroline also felt they were reaching an age where they would like an improved lifestyle. They decided to sell the farm and investigate options for automatic milking. Their aim was to be able to operate the farm with just family labour and to improve lifestyle.

The path to AMS

After extensive research in Australia and in Europe the van Adrichems decided to invest in automatic milking. They had a

Dairy labour efficiency

Labour efficiency
(cows/FTE*)

van Adrichem family (AMS)	191
van Adrichem family (before AMS)	106
Tasmanian average [^]	137

* 1 FTE is defined as 50 hours/week.

[^] data sourced from Tasmanian benchmarking (27 farms)

Case Study

run off block which could be converted to a dairy farm although half had to be developed. Initially two robots were installed, with milking beginning in October 2009. Nine months later they installed a third robot.

The lure of dairy farming (without the grind of milking twice a day) enticed their son, Arjan to return to work on the farm in late 2011. With the extra set of hands and a need to expand the business, the van Adrichems decided to increase herd size, purchase additional land and install a fourth robot in September 2013.

The van Adrichem's AMS

The 275 cow herd is run by John and Arjan with help from Caroline when needed. FutureDairy calculated the farm operates with 1.44 full time equivalent staff (FTE) or 191 cows per FTE.

The van Adrichem family AMS	
Herd	275 cows (at peak) Seasonal calving (Sept - Dec)
Farm	Milking area: 81 ha Run off block: 60 ha + 113 ha new block (under development)
Concentrates	0.7-1.0 t/cow/year
Robots	4 Lely Astronaut 69 cows per robot
Production	472 kg ms/cow/year
Labour efficiency	1.44 full time equivalents or 191 cows/FTE

Daily routine

The daily routine varies through the year. This is influenced by the herd's predominantly seasonal calving pattern and the fact that the van Adrichems do their own forage conservation and paddock work.

On average, John and Arjan work about six hours a day. If they are not calving, joining or conserving feed, the working day can be as short as 2½ hours. At busy times it can extend to 10 hours.

Milking related tasks usually take about 2½ hours a day. If pressed for time, it can be reduced to 1½ hours in the morning and 20 minutes in the afternoon (to set up an electric fence for the next paddock).



A typical day: van Adrichem 2013

7:00 - 8:30am Morning duties

- | | |
|----------------|--|
| Dairy | <ul style="list-style-type: none"> • Check AMS reports on computer and quick visual general check of the dairy and robots |
| Paddock | <ul style="list-style-type: none"> • Fetch cows that have not come up from yesterday's morning and afternoon paddocks • Shift fence for next grazing in both morning and afternoon paddocks |
| Dairy | <ul style="list-style-type: none"> • Hose dairy main yard • Hose out and around robots • Encourage fetched/extended interval cows into robots (usually during hosing down) • Clean camera lenses • Attend/treat cows in drafting yard (e.g. mastitis/lame/A.I.) • Change milk filter |

8:30am - 4:00pm General farm jobs

- | | |
|-----------------------|---|
| Routine tasks | <ul style="list-style-type: none"> • Feed the herd, fence repairs, spraying paddocks, etc. • Development of the new block |
| Seasonal tasks | <ul style="list-style-type: none"> • Feed calves • A.I. • Calving |

5:00 - 5:30pm Afternoon duties

- | | |
|----------------|--|
| Paddock | <ul style="list-style-type: none"> • Fetch cows, shift fence for next grazing in night paddock |
| Dairy | <ul style="list-style-type: none"> • Check AMS reports on PC; quick visual check of the dairy and robots • Attend/treat cows in drafting yard (mastitis/lame/A.I.) • Hose out and around robots • Clean camera lenses • Change milk filter • Check and wash milk vat if needed |

Alarms

One difference between labour requirements for a conventional milking system and an AMS is the need for someone to be on call with an AMS.

This is because an AMS runs almost 24 hours a day. If something goes wrong the system will generate an alarm. The van Adrichems have set their system up to send alarms to their mobile phone outlining the reason for the alarm.



The van Adrichem's system does not allow them to deal with any alarms remotely. While notifications do not necessarily require action, alarms require someone to physically attend the dairy.

At the start of the season when heifers are introduced to the AMS, the number of alarms tends to increase due to failed milkings, kicking and dirty cameras. This drops off when the heifers become comfortable with the system.

They have the option to request a reminder of the alarm in an hour, for example if they are away from the farm and deem the situation to be less urgent but want to ensure that it does not go unattended for more than a set period of time.

The most serious alarm is a stop alarm which means the milking system stops until the issue is resolved. The van Adrichem's system averages about one stop alarm a fortnight.

If the van Adrichem's cannot resolve a technical issue themselves, they phone the local technician based half an hour away at Smithton. This is a rare occurrence as John is a trained Lely AMS technician so has a high level of expertise about his system.

John believes maintenance is the key to preventing alarms. In his experience, many alarms can be prevented by keeping the robots and cameras clean and by following the manufacturer's recommended schedule for maintenance. He notes that a couple of minutes spent cleaning the cameras before finishing for the day can save him from getting out of bed to an alarm in the middle of the night.

Seasonal tasks

The main seasonal tasks that significantly affect workload are similar to all seasonal calving dairy farms:

- Calving (September – December).
- Mating (December – February).
- Calf rearing (September – January).
- Heifer husbandry (all year).
- Heifer training for AMS (September – December).
- Sowing (February-April).
- Fodder conservation (September-December).

Calving pattern

When FutureDairy visited the van Adrichems they were in the process of moving from seasonal to split calving. They aim to have 80% Spring calving and 20% Autumn. The van Adrichems believe a split calving system will improve robot utilisation during the winter and enable them to make better use of pasture during the cold months. With the milking task now automated and two people working on the farm, having a dry period (rest period for the workers) is less of a priority now.

Getting used to automatic milking

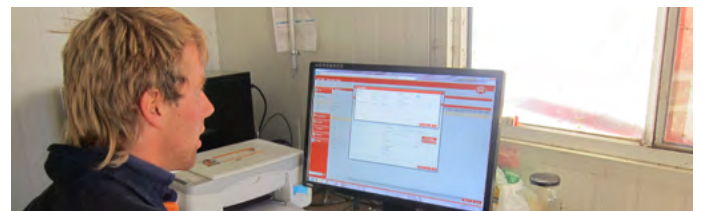
John describes the first year of automatic milking as 'quite frustrating', the second as magic and several years down the track says it is the best thing they ever did.

The commissioning period took about three months, which John managed without any hired labour. John thinks it may have been quicker if he had introduced the herd to the system all at once.

The first five weeks involved a steep learning curve for both the cows and the people. There were long days (14-15 hours) training the cows, learning and understanding how the system worked and adapting the farming system to encourage the cows to move by themselves from the paddock to dairy and around the farm.

The big gains

The benefits of AMS reported by the van Adrichem family fall into three areas: labour, farm management and lifestyle. Many of these benefits are due to the flexibility that arises when the system is no longer based around milking twice a day.



Labour

The van Adrichem's dairy farm operates on one less labour unit than it would with a conventional milking system.

Automatic milking has enabled their operation to run with just family labour, avoiding the challenges they had previously experienced with employees.

The work is less physically demanding because there is no need to spend several hours a day standing on a concrete dairy floor. Additionally there is much more flexibility about the timing of many of the tasks, so the routine can be adapted around family and lifestyle.

The van Adrichems particularly notice the flexibility when they are making silage as they no longer have to stop the tractor at milking time.

Arjan says the robots influenced his decision to return to dairy farming. He wouldn't have returned if he had to milk in a conventional dairy.

- ☑ Reduced labour input.
- ☑ Less physical work.
- ☑ Flexible timing of the routine and seasonal tasks
- ☑ Attractive to young people.

Case Study



Farm business

The AMS has had several effects on the farm business. The reduced need for labour obviously means lower labour costs.

John also reports having more time to spend on developing the new block, managing the dairy business and its strategic direction. The information recorded by the AMS (about production, reproduction, animal health) has been very useful for decision making.

He likes having the ability to allocate concentrates provided in the robots based on individual production.

John believes that financially the AMS has worked out to be competitive with installing a highly automated rotary or herringbone.

The van Adrichems have also discovered some spin off benefits for the herd including improved animal health, a reduction in cell count, fewer lame cows and improved body condition.

- ✓ Lower labour costs.
- ✓ Concentrate allocation based on production.
- ✓ More time to manage the business.
- ✓ Financially comparable to fully automated conventional dairy.
- ✓ Improved animal health.

Lifestyle

The van Adrichem's are very happy with the lifestyle they've achieved with an AMS. They enjoy having the option to sleep in, working more sociable hours and being able to get away from the farm for hobbies.

Caroline can run the farm on her own if John and Arjan both need to be away from the farm. John and Arjan each have every second weekend off.

"We used to go horse riding on the weekends with friends, and we were never able to stay for the BBQ afterwards because we had to get back for milking. Now we can stay as long as we like."

John van Adrichem

When John needed knee surgery in 2012, Arjan ran the farm on his own for a couple of weeks.

- ✓ Every second weekend off.
- ✓ More sociable working hours.
- ✓ Option to sleep in.
- ✓ More family time.
- ✓ More time to enjoy off-farm hobbies.

Keys to success

The van Adrichem's experience has highlighted the importance of the following practices for a successful AMS farm:

- ✓ Consistent routine.
- ✓ Reading cow behaviour.
- ✓ Machine maintenance.
- ✓ Accurate pasture allocation.

John has found that having a consistent routine and simple grazing plan makes it easy for everyone involved to understand what needs doing.

He says that observing and understanding animal behaviour is central to achieving good voluntary cow movement. He learnt quite quickly to watch for changes in animal behaviour as he adapted his management system, especially the impact of pasture allocation (see later).



Pasture allocation

A successful AMS relies on achieving milkings that are relatively evenly distributed across the 24 hours in a day, with cows moving by themselves to the dairy and around the farm (voluntary cow movement). Feed is the primary motivator used to encourage voluntary cow movement in an AMS, and this is why pasture allocation is critical.

The van Adrichems use a 3-way grazing system: the cows' daily pasture allocation is split into three fresh breaks a day, so each allocation is smaller than on a conventional farm where a fresh allocation is typically offered morning and evening.

John said one of the biggest challenges was learning to trust the system. He had to learn to trust that the cows got fully fed – just in three smaller portions throughout a 24 hour period.

Initially he was tempted to offer cows a slightly bigger allocation than they needed. This resulted in the cows not wanting to leave the paddock and that meant they were not turning up at the robots to be milked.

John said that one of the mistakes he made in the first year was to change too many things at once which meant he couldn't work out which changes helped. Once he started changing things one at a time he began to understand cow behaviour and why they reacted to changes in management.

With experience he found the best timing for the herd was to set the gates to allow cows to access a fresh allocation as follows:

- from 2:30am: 40% of daily pasture allocation.
- from 9:30am: 40% of daily pasture allocation.
- from 5:30pm: 20% of daily pasture allocation.

The smaller evening allocation encourages cows to leave the paddock in the early hours of the morning, a time when grazing cows on many other AMS farms are typically less active and less likely to go to the dairy to be milked.

John has reduced the original paddock size to better match the smaller allocations associated with 3-way grazing. Each paddock holds a maximum of three allocations. If paddocks are bigger than this, backgrazing becomes an issue.

Future plans

The van Adrichems are currently spending as much time as they can developing the block purchased in 2013: installing new laneways, permanent fences and sowing new pastures. The aim is to incorporate this land into the dairy system and to milk 300 cows from Spring 2014.

In the longer term they are adjusting their breeding program to breed cows they believe will be better suited to automatic milking. In particular they now place more emphasis on udder conformation, teat placement and improving feet and legs.

Further down the track they may consider expanding the herd up to 500 cows. To do this, they'd need to build a new shed in the centre of the farm and install more robots.

FOR MORE INFORMATION

Assoc. Prof. Kendra Kerrisk
FutureDairy project leader

P: 0428 101 372

E: kendra.kerrisk@sydney.edu.au

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