

TECHNOLOGY IN THE COWSHED

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Two years ago we purchased a 245ha property and decided that a new and more central cowshed could increase the value of the farm, and if managed correctly also its productivity and efficiency. Because the property is long and thin we toyed with having another herringbone shed at the other end and running two sheds, even leaving the existing 40 aside herringbone and me not milking, but the new shed made the most sense for the longer term goals.

Our farm system favours running two herds, so this needed to be factored into the design. There was not an open cheque book available for a new shed either so we looked at shed and plant systems around the country. Jenny and I have previously enjoyed milking in an internal rotary, and had in shed feeding in an external and a 48 aside herringbone, so we approached the shed design with an open mind.

Initially we saw the usual array of labour saving devices such as automatic cup removers (ACRs) ACRs and teat sprayers. A surprising number of the sheds we visited used these devices but employed a labour unit also in the shed to check cows, or if only ACRs were installed, to teat spray. It appeared that, to some, automation was available, paid for and not utilised. That was not for us.

We began to see that milking could be achieved by one person.

A second desire was for our shed to not incorporate features that gave potential for injury, for example having to climb inside the rotary to open and close valves. A friend of ours had been killed in a rotary shed the year before, so this also weighed heavily on our minds from the start.

Many manual functions can be easily and reliably automated.

At about this stage we met with WestfaliaSurge and importantly, had two of their team listen to what we wanted and tried to show us components that were available, or could be modified to do what we wanted. What I did find annoying was that much of the technology had been around for 10-15 years but either I was not aware of its potential or as New Zealanders we decried anything from overseas as not being applicable here. The advisors to our industry could well have misled us here also.

10 years ago we milked 120 cows and paid \$10,000 a year for a young labour unit. We now milk 700 cows and pay \$30-40,000 for that labour unit. At the last Invercargill SIDE I listened to Murray King present and a thought that stuck with me was that in the next 25 years in OECD countries 70 million people will retire and be replaced by 5 million in the work

place. Murray correctly suggested that: wage rates will rise as a result and immigrants and/or new technology would also be needed for us to run our businesses.

We must run our farms at high standards with fewer staff and/or less qualified staff.

At about this stage we started to see the potential of automation. Then we bought into a concept that you cannot partially automate. One milker—700 cows—two hours became our shed design brief. We did not want an automated shed which did not milk the cows properly, quickly and easily. How could we also make the shed appealing for staff to work in whether they are a 13 year old saving for a motor bike or a 70 year old wanting some quiet cash?

Fortunately we also had on board a very good electrician and a builder who both bought into the concept of the shed being run by one person. We have fewer lights on the cups off side, no platform control there either, which allowed further dollars to go into other areas.

Automating is fine, but milking must remain simple and easy for that one person in the shed.

Automation began our drive for increased efficiency.

Not only did we want to have fewer labour units to do the job, we wanted them to find the job easier.

A holistic approach to the cowshed and its future usage was very important. Every operation at the cowshed needed to be able to be undertaken by one person, easily, safely and quickly. We are every fortunate that cow flow into the yard, up the yard and on to the platform has been great, and from day one the cows have been very happy on the platform. This is the logic behind a rotary, but for us with electric-hydraulic drive and a magnificent concept in nylon rollers, these provide a smooth ride for the cows.

There is a 3-4 meter single file access land from the yard to the platform and a terrific gate control which enables the cows themselves to start and stop the platform which removes one more job for the operator; very rarely do we need to push a cow on to the platform.

With WestfaliaSurge the automation was simple. All their devices can communicate with each other and all information is centrally collated at the computer in the cowshed office.

So we began purchasing the bits we now use.

Electronic ID: This really is the most essential part of the system. We opted for collars rather than ear tags which, although more expensive, gave a higher level of accuracy; 99.9% over 98% is a lot when you are relying on it. The cow in the bail, on the weigh scales or at the sort gate is clearly identified.

Flow and Volume Meters: These values are calculated for the milk from each cow. One of the first things that occurs when a cow becomes ill is that her litres drop; we are trying to identify this.

Conductivity: During every milking for every cow this is looking for changes in milk indicating illness or mastitis.

Scales: The weight of each cow on departure from the shed.

Teat sprayer: Automatically teat sprays each cow as she leaves.

Drafting: The sort gate has 3 way drafting. Cows can be drafted at the push of a button at the bail, or by asking the computer to draft specific animals or those which meet a certain criteria (for example when milk 15% below average)

Heat Detection: The collars also contain a pedometer, as a heat detector these highlight cows that have walked more that day and are likely to be on heat.

Automated Vat Washing: This area highlighted the need for complete automation. Why have a one person shed if that person also has to get up 30-40 minutes early to wash the vat before milking in the morning?

We are trying to become proactive stock managers, rather than reactive.

The best examples of this are our lame cows this year. It is so simple to get the computer to draft an animal out after we see her lame on the way to the shed, she is being treated on day one or two of illness and subsequently recovering faster also.

Instead of finally getting a cow in the vet race that is chronically ill, we should be able to be presented with a visually fine animal who has something wrong with her that we cannot see too apparently, ie. her litres are down she has lost weight and her milk quality has dropped. Why?

Plant Operation: The plant wash and start is a one button push, automatic drain valves mean we close two clips under the milk filters and we are in action. If the vat is not open the plant will not start, conversely if the plant will not wash until the vat inlet is closed.

Easy Start Feature: At cups on time the pulsation and vacuum is activated by the cups being lifted, at the same time a back off arm falls behind the cow to ensure she does not get off until she is milked out. We believe that this feature alone saves 2 seconds per cow; 2 sec times 700 cows times 2 times per day saves 45 minutes per day (if we milk 250 days that's 187 hours per year or 3 1/2 weeks work for one labour unit).

Results

Overall we are very happy with our purchase.

The cow shed is a factory with some very sophisticated machinery, the weak link remains the manager (me) and how this machinery is utilised. The key for me is to understand and utilise the software which drives the hardware.

A different mindset may be required from some staff. While everyone acknowledges that the shed is great to milk in some observations are:

- In spring there seemed reluctance by some to accept that one operator was all that was required. We had several discussions around this. Our vision was one operator and that has been vigorously pursued
- Whilst we have less labour units, there remains a need for good operators. The plant milks quickly so capable operators show up as much more efficient in cows milked per hour. Why have a Lamborghini and drive it in first gear? Also, if the sort gate is turned off by an operator then it generally will not work as well as expected. The saving in labour units may not be directly proportional to the saving in labour costs. Two very good operators may prove more efficient than three operators slowing the process down to their level
- With electronic ID any incorrect human IDs are highlighted, it is clear that often humans are incorrectly identifying cows, whether this is for antibiotic treatment or calving

We utilise our labour resources more efficiently.

Our aim is to have the first staff member begin at say 4.30 am with cups on by 5.30, and they finish that herd by 6.45 am, a second person will bring the next herd in by 6.30 after a 5.30 start then milk that herd whilst the first has breakfast. At the end of milking two people are on hand for a period if required before the second starter goes for breakfast.

We like offering shorter milking duty length, but having one person always on deck has sped up the days work considerably.

As the season progressed, through March to May the savings in labour was further highlighted.

What next? We will continue to try and improve the efficiency/profitability of the operation.

With less staff on hand we are DNA testing progeny which will change our labour requirement in spring.

In theory we only need to bring the calving cows to the shed and let them walk over the scales while we enjoy our lunch, and the computer.

Will we automate the top gate in the yard so it brings cows forward in line with the platform rotation? And should we let the platform rotate at what the computer senses the optimal speed?

A wand could be used to ID cows, by pointing at the collar we accurately ID her.

Who knows, but we do not want to be limited by our own paradigms.