

# Mobile drafting system has cows on the moove

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Previously in Northern Horizons, the C4Milk DAF dairy team introduced the idea of a mobile drafting system that can draft off any class of cattle anywhere on your farm into specific groups. Since then, the team has developed a fully automated drafting gate which is about to begin an intense testing phase at the Gatton Research Dairy.

## What are some of the technical details?

**Power** - the gate is powered by a single 12 volt battery that is charged via a solar panel attached to the top of the gate. Our system can draft over 500 cattle per day and will remain operational even after several cloudy or rainy days.

**Programming** - currently the gate uses a USB to update the drafting direction for each tag. If the programming proves to be successful during testing we will add a function where you can remotely change the drafting settings via your smart phone!

**Operation** - an isolation switch is mounted above the drafting unit, once turned on, an orange light indicates the system is powering up, and then when a green light turns on the system is ready to operate. That's it!

**Mechanics** - The drafting gate uses a modified manual drafting module that uses two linear screw actuators to push each gate open. Cattle can go either left or right depending on which gate is pushed open, or if both side gates are closed cattle walk straight through a one-way gate at the end of the drafting module that ensures cows cannot turn around and walk back through the gate in the wrong direction.

**Sensors** - Sonic sensors, similar to those found in submarines, determine when each animal has passed through the gate. This ensures that each animal is drafted in the desired direction before the gates swing back to draft the next animal.

**Mobility** - "C" channel is fitted to the top of the drafting module to allow forks to pick the gate up without damaging any of the components. There is potential to add a draw bar and wheels to allow the unit to be towed into position anywhere on your farm.

**Safety** - The actuators have been programmed to operate at variable torque and speed and have a "smart" feedback mechanism that enables the gate to recognise if an animal has jammed or become stuck in the gate. The gate will then swing back to its open position to allow the animal to move through in the desired direction. If the animal does not move through after a certain amount of time the gate will shut down and send an alert to your phone. The gate also has two manual shut offs, the first disconnects the actuators and the second can be pulled from beside the gate to release all door mechanisms.

## How do we plan on testing?

Initial testing will take place in a paddock of dry cows or heifers where the animals will have to walk through the gate to access feed and water that has been fenced off. The animals will wear digital tags attached to either their collar, tail or ankle to allow us to determine the best place to attach the tags. The gate can draft the cows into three groups, and we will monitor the accuracy of the drafting system by recording the cows walking through the gate.

This process will help us find and fix any problems with either the mechanical components or the programming of the drafting gate. If we can successfully smooth out the bugs during the initial phase of testing we will invest further in the gates to test out on your farms. Watch this space or if you want to see the gate in action first hand, come along to the R&D open day at the Gatton Research Dairy on Friday the 15th March. ■



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