



Computer technology: robotic milking and interactive mirrors

Tempting the cows into the machine

Narrator

But how does the system actually work? Information gathered on each cow, is analysed by the computer, which instructs various parts of the system accordingly. Milking, feeding, even foot disinfection. But first the cows need to be encouraged to come back to base, to have the data in their collars downloaded.

Neil Rowes:

Cows need to have a number of reasons for coming to this part of the building. We have the automatic cow brush. Which the cows switch on and off themselves. We have salt licks. We have hot and cold water by choice. And these drivers will all tend to bring cows to this part of the system on a regular basis.

Once you've got a cow within ten or fifteen metres of the robot, her attention will automatically turn to milking, and the very high quality food which is in the robot.

When she gets on to the robot, the robot then makes a decision if she's got more than 6 and a half litres of milk in her udder, or if she's been more than four and a half hours since she was last milked, it will then start the milking process. Otherwise the front door opens and the cow will exit, and to come back at a later point.

As the cow comes on, once it's decided to milk the cow, it needs to calculate exactly how much protein and energy she requires to replace the milk she is about to give. It stores protein and energy in separate compartments, and blends an individual ration for each cow. And then it will triple feed her through the whole milking.

It will then come round; it disinfects the cow's udder with hydrogen peroxide. Cleans the teats and then stimulates for oxytocin. Having done that, the attachment software starts up, and it then uses two lasers and a ultra sound sensor to measure the angles and the distance to find the teats. Once it's done that the arm then attaches the four teats, and the milking process begins.

The milk from each individual quarter comes up through the pipes, through the quality sensor, and it's checked to make sure that it's fit for human consumption. This is looking for passed blood, water, any abnormality which would make the milk unfit. If it detects any, the milk is automatically diverted into a bucket and it never gets into the system.

All four teats are disinfected to prevent any bacteria getting into the cows udder, and the cow is then leaves the robot and the next one comes on. The whole cycle time is about seven minutes.

Narrator:

Because cows are milked at an appropriate and individual frequency, only one robot is needed for the whole herd. And they don't suffer from unnecessary milkings.

Neil Rowes:

We have much lower cell counts. Much less teat damage. And the cows are generally more content. We're not trying to fix every cow being milked three times a day.