

# ForFarmers' new automation

*The load-out of pellets is the final stage of the process at the feed manufacturing plant. Logistically this is a crucial point in the feed-to-farm progression. Fast load-out and accurate planning prevents stock build-up. Cooperative feedmiller ForFarmers in the Netherlands invested €8 million in a new load-out and logistics system and the electrical and automation system of their mill in Lochem, the Netherlands.*

By Dick Ziggers

**A** 20-year old automation system working on an outdated platform. Bulk trucks that needed 40 to 50 minutes to fully load their tanks. When you are trying to be competitive in a saturated market, these issues can contribute to the final cost of the feed. "But what would be the return on investment if we would modernise the logistics to state-of-the-art standards?" questioned Leo Slütter, head of engineering at ForFarmers, one of the largest feed manufacturers in the Netherlands (see box).

Logistics would be the key to the whole operation, which aimed to improve efficiency and therefore increase profits. Improving future customer delivery while remodelling of the load-out itself would be a



**Leo Slütter, head of engineering at ForFarmers, successfully completed the load-out automation project.**



**With the new automation annually over 25,000 bulk trucks can be loaded at ForFarmers. (Photos: Dick Ziggers)**

gigantic logistic operation, because feed deliveries had to continue at all costs.

In the spring of 2002 it was concluded that the automation in the feed plant needed replacing. The hardware was not supported anymore and new software programmes for the aged systems were limited. The mechanical part of the load-out also needed refurbishing.

Management concluded that upgrading the automation of a technically out-of-date process was not going to be useful. On top of that, the load-out system was a part of the feed manufacturing process where savings could be made. Loading of bulk trucks took too much time and flexibility was limited. The increased product portfolio demanded greater flexibility and efficiency.

Following these conclusions the project began with a list of requirements. The feed plant in Lochem has five load-out lanes, of which three were built in the seventies and two in the nineties. The three eldest needed refurbishing. Load-out time per day is limited, so an effective minimum loading capacity per lane of 60 tonnes per hour was required. "With this requirement in mind, we maximised the load-out time to ten minutes per truck," explains Slütter. "Those ten minutes are measured from the moment the driver enters the premises until his truck is filled."

# speeds up feed deliveries

## Proven technology

ForFarmers is a modern company that likes to be at the forefront of feed manufacturing, but with a risky logistical operation like this it wanted to rely on proven technology. "We have chosen proven systems from reliable partners. We use standard software for batch production, scheduling and logistics planning," Slütter says. The logistics planning software calculates when the production of a feed that is not in storage needs to begin, so that it will be ready when the bulk truck returns from its ride. The trucks are equipped with a board computer that sends a signal to the feedmill when it is about to leave the last customer.

The changes in the mill had to comply with standard regulations and programmes, such as plant and worker safety regulation ATEX (dust explosion prevention), and feed safety programmes such as GMP+, HACCP and ISO. Sampling of every delivery was also a prerequisite to comply with ForFarmers' quality standards. The cooperative is one of the six initiators of TrusQ, an auditing, tracking and tracing system that guarantees feed safety from origin of raw materials to the final product.

## Change-over of power and software

In the plant there was a changeover from 220V to 24V, which contributes to plant safety. Only the cables of the motors were left unchanged. Three new load-out lanes had to be built to replace the old ones. Every lane took four weeks to rebuild, and each was out of operation for that period. Clever planning of the

other lanes ensured continued delivery to farmers. Changes in grinding, mixing and pelleting, as well as testing, were carried out during weekends to avoid any hiccups during the weekly production schedules.

For planning of feed production, ForFarmers decided to use OMPScheduler from OMPartners with implementation of the software by Radar Automation. This package was already successfully implemented in a plant in Switzerland, where a delegation of ForFarmers paid a visit to see it in operation.

For the batch system of feed manufacturing Inbatch of Wonderware was chosen. This system had already proven itself in some of the larger feedmills in the Netherlands. For the PLC and SCADA-systems, ForFarmers picked the systems that were also in use in its plant in Delden, based on Siemens PLC systems and the PCE-lite concept of ICT Automation.

## Load-out renovation

Before the loading docks were renovated, several alternatives were considered, such as belt loaders, moveable bunkers with hoppers, or moveable belt loaders with fixed screen and weighing hoppers, but most of these were too slow or inaccurate. Finally the system of choice was a two-way movable bunker in



Before loading the driver reports his truck at this post.



One of the five load-out lanes with the contrasets on top that march the compartments in the bulk truck.

# Processing



Top view of the contrasets for immediate loading of a bulk truck.



The contrasets are filled by a moveable weighing systems that can move forward, backward and sideways to reach every opening.

every load-out lane. Every lane would be equipped with four of these systems, resulting in a load-out capacity of 60 tph. These systems received a high score for hygiene and product quality. All lanes are also equipped with a turnover transport system, which limits detouring of bulk trucks and better use of the contrasets (a group of small silos that mirror the compartments in a bulk truck).

ForFarmers encourages its clients to order the feed on time. Truck routes need to be planned at least one hour before departure. To optimise the loading all contrasets should be full at all times, so an empty

contraset has to be filled immediately. At ForFarmers some 40-50 percent of all rides are known the night before the day of delivery. All bulk trucks and the contrasets are loaded at night. By increasing the number of contrasets and a better distribution of trucks between the load-out lanes peaks in truck loading have been levelled off.

## Planning is crucial

The project is special in its use of an advanced planning programme that is seldom seen in the feed industry. It is quite easy to load one truck with one contraset within ten minutes, but to achieve this on average over a longer period of time the truck has to be loaded in the same lane as regularly as possible and the ordered products have to be available there on time. This can be optimised through the filling of the load cells, the option to transport products from one load-out lane to the other and to transport not-stored products to the correct load-out unit.

Also production needs special attention to achieve optimal loading, because not all pelleting lines can reach all silos for final products. Besides that, losses due to readjustments have to be minimised and not all products can be produced successively due to the risk of cross contamination. Furthermore, the fact that planning and execution can differ in a complex factory is taken into account by creating a feedback function.

## 10 minutes

One of the advantages of the new automation is that there is no longer any manual handling of papers. This applies to the products supplied to the customers, and for the raw materials brought in by exter-

## The cooperative

ForFarmers is a cooperative feed manufacturer with around 6,000 members, and was founded by farmers. Its core business is animal feeds and agriculture trade. In 2005 more than 1.25 million tonnes of feed were manufactured and sold. This was 5.4 percent higher than in 2004. Total profit amounted to €21.7 million of which €9.4 million was returned to the members as a price reduction on their purchased feeds. The rest of the profit was added to the coop's assets.

ForFarmers has the ambition to continue growth, which is not easy in a saturated market. With net assets of almost €127 million, the cooperative has a solid base for further growth. The growth strategy has already paid off in the first ten weeks of 2006, which showed a rise in feed sales of more than 5 percent.

The cooperative has its working area in the north, east and south of the Netherlands, Belgium, Germany and Denmark. ForFarmers employs 390 people. Turnover in 2005 was €268 million.

The cooperative operates 5 feed manufacturing plants in the Netherlands.

## Processing



**Production, supply and delivery is controlled from this room, where two people manage the whole mill.**

nal trucks. In the latter case, the driver calls in at the gate, has or receives a pass, and his truck load is connected to the ordered product. Then the truck is weighed and unloaded at a dedicated chute. The driver steers his truck over the weigh bridge again to get

his tare weight and to calculate the delivery weight. All of this is automatically administered.

The same goes for ForFarmers own bulk delivery trucks. They also have a pass and call in at a specific gate, where they are directed to the correct loading lane, where the feed order is already pre-loaded in the contraset. The truck drives in, loads and leaves – all within ten minutes. “We have tested this system now for more than half a year and on average we get results that are below ten minutes, so we definitely have reached our goal,” says Slütter.

On average, one bulk truck can do 3-4 rides per day in a extended day shift. The drivers complete a working week in 4 days. “All in all we manage to load 100 trucks per day, 5 days a week. Eventually we will be able to lower the number of trucks that we have because everything works more efficiently now,” Slütter concludes.

If you think about it: 100 trucks a day, 5 days a week. On an annual basis that is more than 25,000 truck loads of feed! ●