

IO-Link reduces the carbon footprint

State-of-the-art technologies for 3 million bags of corn per year



Our customer:
Bayer Crop Science

The amount of corn that leaves the corn processing plant in Buenos Aires each year is difficult to grasp: 3 million bags of corn seeds make their way from Argentina to the world in twelve months. For 30 years, the company in Maria Eugenia, Buenos Aires, Argentina has operated the largest corn processing plant in the world on an area of 23 hectares. A total of 2,900 employees take care of ensuring the production of seeds.

A plant of such dimensions consumes a large amount of water, raw materials and packaging materials, which is also reflected in the company's carbon footprint. This is why market-leading companies in the industry worldwide are pushing to digitalise their plants in order to make their processes more sustainable.



The challenge:

Historically grown, the production facilities on site have become interwoven into a non-transparent network of different machines and manual processes. In the past, these manual processes alone accounted for 60 per cent of all operations, which sometimes led to cost-intensive failures. At the same time, the process details could not be traced, and the fault detection and repair times were very high. The company identified the existing infrastructure on site as being the biggest problem: All field connections were point-to-point and linked to decentralised control points. The process data were transmitted via hard wiring to a conventional PLC. So as early as 2017, the company set out to find a solution that would not only enable transparent processes but also meet the high safety requirements for the employees.

In cooperation with ifm, the wiring system AS-Interface Safety at Work, the use of IO-Link and a wide range of ifm sensors were chosen.

The solution – why ifm?

With the AS-Interface Safety at Work, the customer achieves several objectives with a single action. Compared to the previously used system, this solution is more flexible and has a significantly reduced wiring complexity. Via interface, improved fault diagnostics is possible which increases operational safety. After installation,

many processes in the corn processing plant were gradually automated and digitalised. In this way, the company created both, higher efficiency and greater transparency regarding the utilisation of the facilities.



Using the AS-i bus is particularly suitable in agricultural technology where many on-off signals are still used in the processes. During the project, the AS-i bus was finally switched to IO-Link in all drying areas of the plant. Now the LDH292 sensor from ifm measures humidity and temperature, the air flow is detected via the SL5101 monitor. Information on the differential pressure and the level is now also available at all times, so that the concept of IO-Link has fully convinced the company.

Finally, the RFID technology has been integrated for access control and identification so that the RFID read/write head DTI600 now carries out the entry and exit control of trucks. The success of the project has led to plans of the two companies to continue working together in the future.

A solution for controlling and monitoring the irrigation has already been implemented. In future, vibration sensors on motors and fans will monitor the machine status in interaction with the VSE150 and the IIoT platform moneo. Completed with the O3D302 camera, which is designed to detect the fill levels of the corn silos.



Results:

- Automation of the production processes in the plant
- Increasing plant transparency
- Increased efficiency and sustainability
- Avoidance of unplanned machine downtimes



Transparency



Process automation & optimisation



Increased machine availability



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