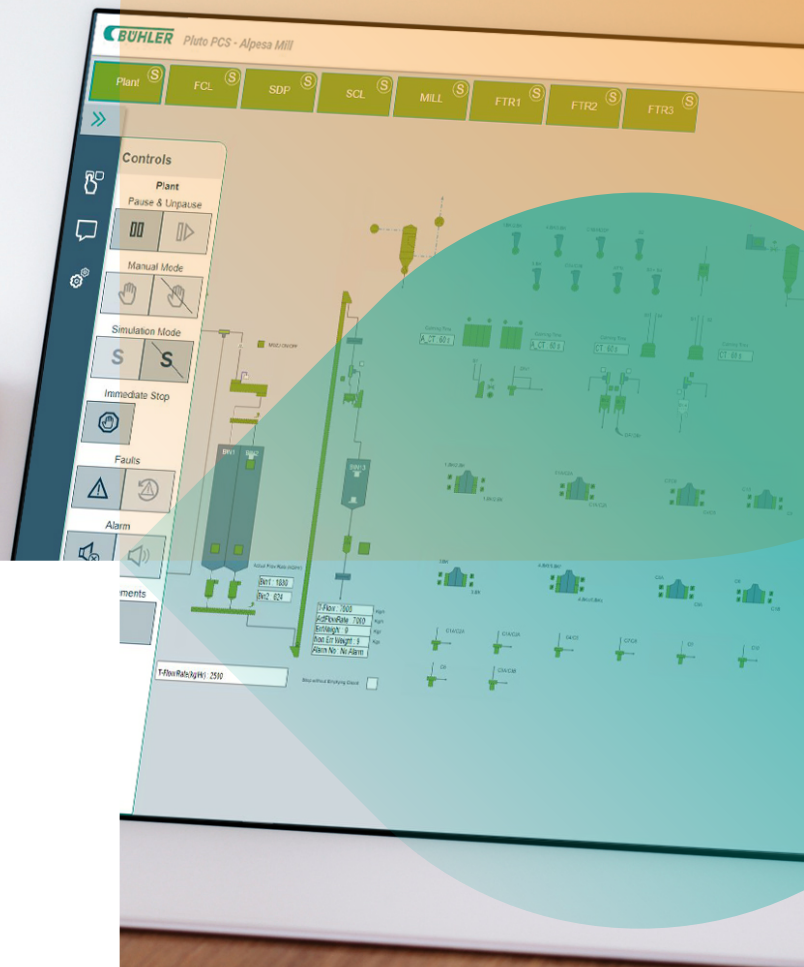


Whitepaper

# Pluto PCS: Toward the Smart Mill.



# Pluto PCS. Toward the Smart Mill.

**From the earliest automation through to full-scale digitalization and connection to the cloud, milling is evolving fast. Bühler offers the technology and support to manage the transition. Pluto PCS is one basic but important step on that journey.**

Today's young people are the first true digital natives. They have never known life without smart phones and total connectivity and their choices and expectations reflect this. As they enter the job market, the consequences are being felt - nowhere more so than in industries like milling that have relied in the past on traditional craft and expertise. As a result, businesses that demand manual craft and skill are experiencing difficulties attracting younger people.

Even if the effects of these changing expectations among young people are not yet felt, mills should be prepared. This is vital because the milling industry is as important today as it ever was, may be even more so. With the world's population growing, the industry needs to ensure it is equipped to meet the increasing demand for quality milled products – and that means embracing digital technologies.

## **Technology moves on, so does milling**

In fact, the milling industry has always developed with the world around it. From wind and water powered mills, through mechanization, to electrically powered mass production and basic automation – milling technology has evolved at an increasing pace.

For an industry rooted in tradition, craft and skill, today's digital revolution is occasionally met with some reservation. "This is understandable, the pace of change has been incredible. Some people fear losing control," says Alexis, Program Manager Smart Mill.

"However, the benefits of digitization are clear and proven: improved safety and security, more efficient processes, cost savings, enhanced asset utilization and increased productivity."

In today's high-tech mills, user-friendly controls and steering systems guide staff through processes ensuring the smooth operation of the plant. As the technology continues to evolve, Internet of Things (IoT) – the infrastructure that connects physical entities with virtual items – is transforming the business of milling yet further.

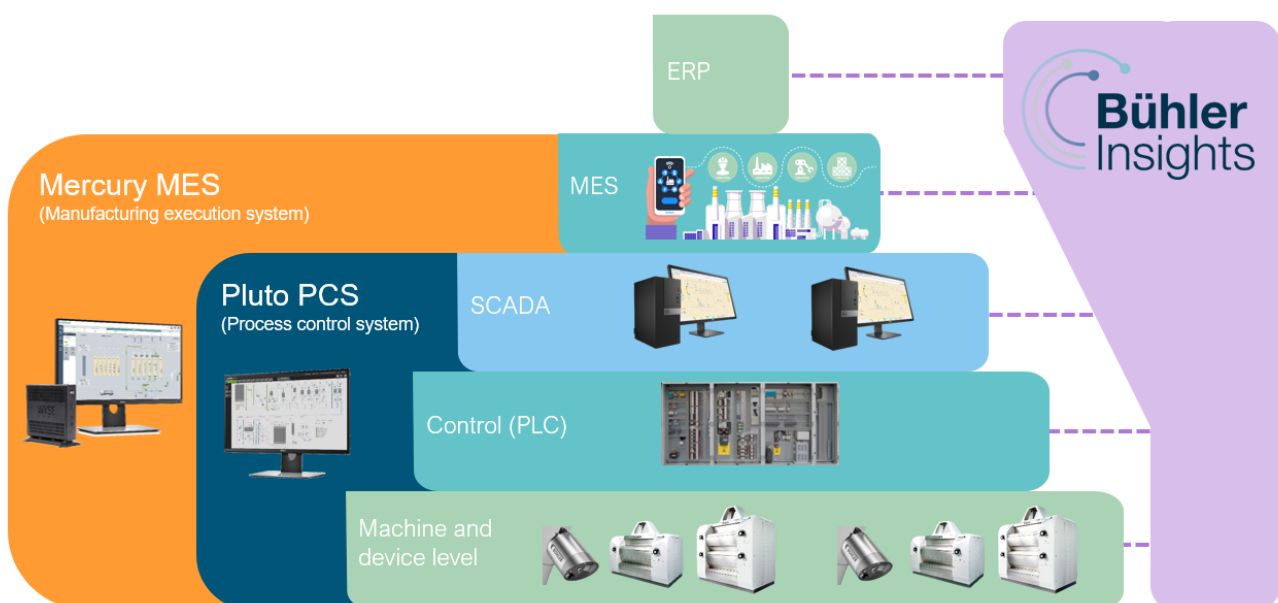
## **The vision**

Bühler has created the Smart Mill Program to explore all the opportunities these new technologies offer to milling. The goal is to provide more and better guidance for millers and their teams, and a concise overview of processes for management. "Our goal is to develop the fully autonomous mill. That is our vision. This can be achieved in steps starting with simple assistance and later in the process with more sophisticated systems that enable operations to fully benefit from digitization and IoT technology," says Silvan Trunz, Business Development Manager - Automation & Digital.

Pluto PCS is one of the latest additions and complements the automation portfolio. As the name suggests it is a Process Control System (PCS) designed with small and medium sized operations in mind. Easy to use and with all the necessary functionality, it is the natural replacement for old relay-based systems and is an upgrade on the LiteCoS automation system. For millers running simple processes that do not require sophisticated functionalities, Pluto PCS is the perfect fit.

Its sister system Mercury MES, the successor of WinCos, represents the next step. It is a Manufacturing Execution System developed for more complex operations with many different functionalities and add-on's.

Bühler is raising its entire suite of systems to today's state-of-the-art digital technology and best practices. As a result, like other Bühler web-based systems, Pluto PCS and Mercury MES are accessible via browser on any device, including PCs, laptops, tablets and smart phones.



**Image 1**

Two solutions for different requirements.

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## Functionality and features

- Process visualization: Pluto PCS visualizes the entire production process, from the grain input to the milled output. Operators can control, start, stop, and suspend the process via a user-friendly interface.
- Orderly control: For mills that are upgrading from older relay systems the benefits are significant. Pluto PCS not only automatically steers the process and switches machines on and off in the correct order, it also visualizes the status and online values of every machine and scale.
- User-friendly web-based interface: The web-based technology means that Pluto PCS can be flexibly accessed via multiple devices, from PCs, to tablets and smart phones. This is a huge advantage in comparison to old setups where operators had to move between control room and shop floor losing valuable time rectifying problems.
- Intuitive usability: The intuitive interface follows best usability practices by displaying the entire process in an easy to understand flow. The principle is to represent the process from left to right and top to bottom. This provides ideal guidance even for less trained staff.
- Dependable and reliable: The system's hardware is built for the typical conditions found in a mill with robust components that can withstand the challenging environment.

## Switching to Pluto PCS

When is the optimal time to upgrade? "A simple but important call to action is outdated hardware," says Trunz. "The benefits of up to date hardware and software justify the investment. At the same time outdated technology always poses a risk. And in terms of recruiting young people into the industry, offering web-based applications makes the profession more attractive. The technology is also easier to use, which provides for gains in efficiency."

The most basic upgrade builds on existing machinery. With the high-end MES solution Mercury MES customers can connect to any machinery independent of manufacturer. It is completely configurable even to an entirely "non Bühler" plant. In contrast the PCS system Pluto PCS is designed to connect mainly to Bühler machinery. The entire Bühler product portfolio is set up to connect with Pluto PCS quickly and easily. If required, some adaptations can be made. However, the focus is on swift implementation with minimal downtime.

## At the miller's side throughout

The transition from a legacy to a new system requires close management. Bühler provides the guidance and expertise to successfully deploy new systems, from overall project management to technology consulting, built on a deep understanding of the specific requirements in the milling context. This ensures reliable implementation within the shortest timeframes.

"It depends on the customer's setup and other factors how long a transition will take. But this is really one of our core skills. We deliver more than machinery and software. Our customers have access to our accumulated experience and expertise within the industry," says Alexis. "If you take the retrofit for Grand Mill in Abu Dhabi as an example – here we managed the entire retrofit from grain silos to mill and finished products with a minimum of downtime in just 48 hours. I don't think anyone can do it quicker."

## The future

Since the launch, Pluto PCS has been successfully installed and operated at pilot plants in different parts of the world. Feedback from customers underlines the main success factors of the system: it is reliable and easy to operate. “This is important because for many customers this is the first step towards digitalization,” says Trunz.

With the control room at their fingertips wherever they are in the mill, the way staff work together can change. “I occasionally ask customers if they still need the control room at all,” says Trunz. “In a modern mill it no longer plays such a key role. It could be used instead as a meeting room for staff. Even with automation, personal contact at work is still very important.”

Pluto PCS is one of the basic elements of a smart mill. It is a journey that has only just begun. In the future IoT will connect every mechanical and electronic device in the mill to the Bühler Insight platform. The platform allows storage and analysis of valuable information and data from the mill's operations. “There is still a long way to go to the fully developed smart mill concept, but we have made great progress already,” says Alexis.

As digitization and automation drive change in the milling industry, the role of the people that work in it will also evolve. Key to attracting young digital natives is showing them that the industry not only offers the opportunity to work with these technologies, but also that they have a decisive role to play in the future. After all, technology is there to serve humans, but in the end, it is still the people that make a mill successful.



**Picture 2**

The Pluto PCS interface is intuitive and user-friendly

## References

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