



Ortlinghaus

Pa.*go*



Ortlinghaus

Founded in:	1898
Employees:	> 500
Subsidiaries:	Ortlinghaus (U.K.) Ltd. / England Ortlinghaus France / France Ortlinghaus AG / Switzerland Ortlinghaus Drive Technology (Shanghai) Co., Ltd / China Ortlinghaus Drive Technology India Pvt.Ltd. / India OOO „Ortlinghaus RUS“ / Russia
Manufacturing:	Wermelskirchen / Germany Gams / Switzerland Shanghai / China
Sales:	Worldwide via agencies

Ortlinghaus Group.

Otto Ortlinghaus established the Ortlinghaus Group in 1898. It originally manufactured machine knives and tools. Since 1923 Ortlinghaus has been producing plates, which form the technological core of most of our products.

Today, we are a fourth-generation family-run company with more than 550 employees and manufacturing sites in Germany, Switzerland, and China. We are proud of our long history and have structures and processes in place to ensure the long-term stability of the Group. Our values and long-term targets, which comprise stability, innovation, and growth, are aligned in this respect, too.

One of the most distinctive features of the Group is its collaborative culture. Shareholders, management and employees alike all have a firm commitment to this. In addition, we promise our customers to always and unwaveringly protect the Ortlinghaus brand, which is embodied in the quality of our products. Since the foundation of our company, we have repeatedly left our mark on technology history: As early as 1932, Ortlinghaus produced multi-plate clutches as a complete machine element.

However, we achieved worldwide renown with the Sinus® plate, which had a substantial impact on press technology. The last decade has seen many breakthrough developments in the field of mechatronic systems, especially in the press technology and marine technology sectors. One recent example of this is the Pa.go mechatronic closed-loop control system for clutch-brake units in large automotive presses.

Next to the press technology sector, Ortlinghaus is active in the following industries:

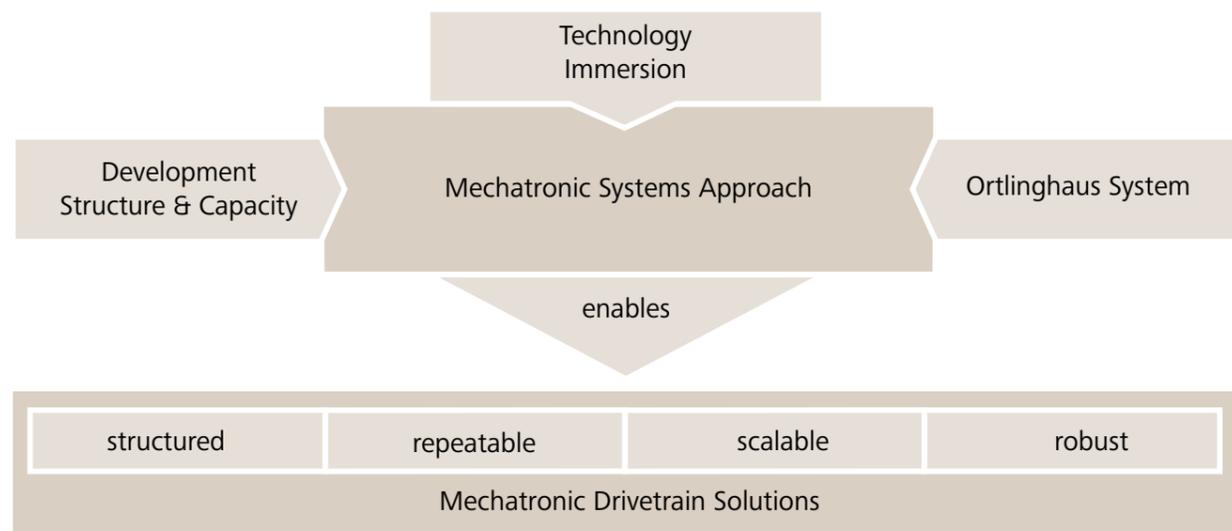
- Marine technology
- Agriculture & Forestry technology
- Construction technology
- Oil & Gas technology
- Materials handling technology
- Mining technology



Mechatronics.

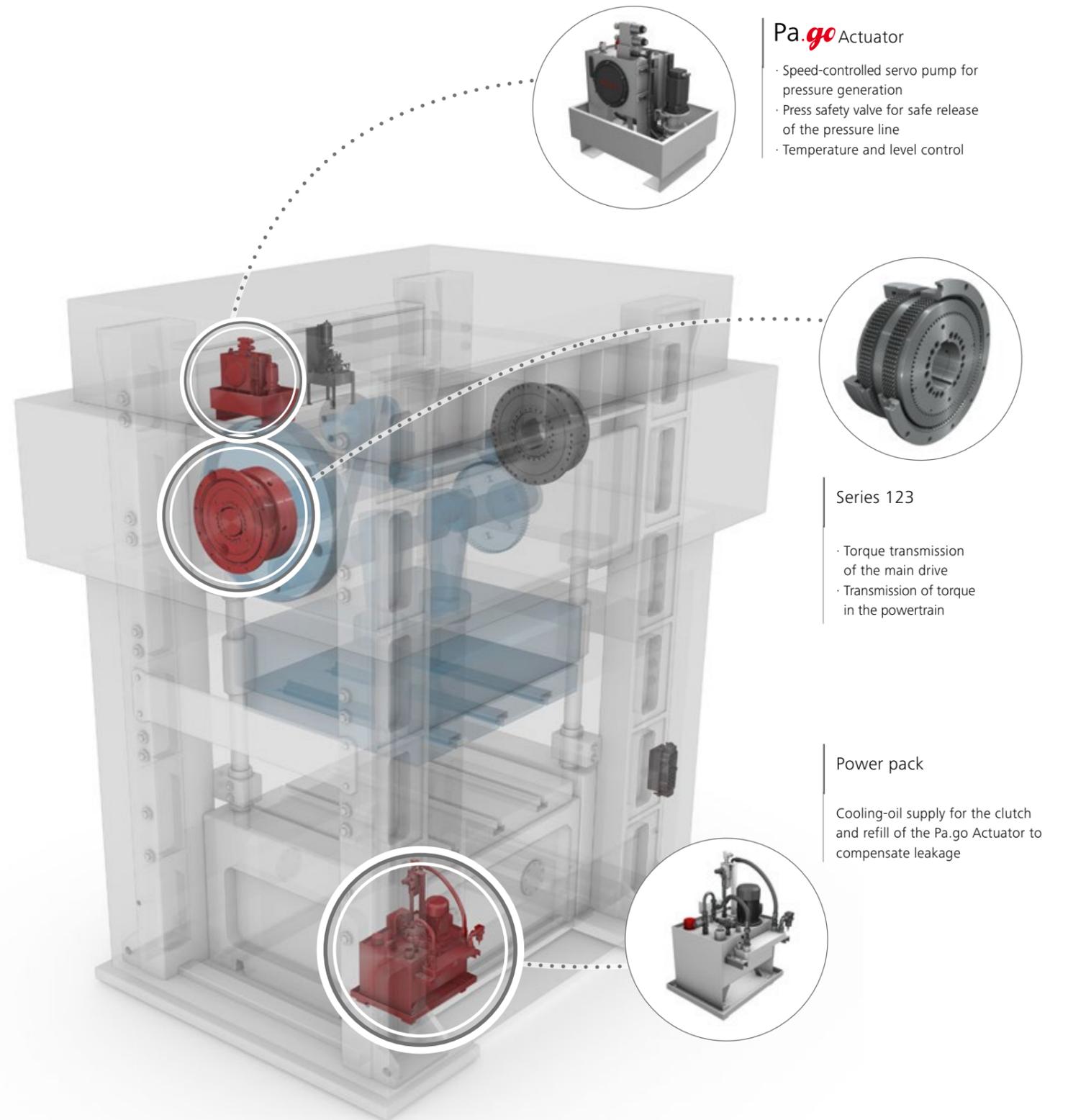
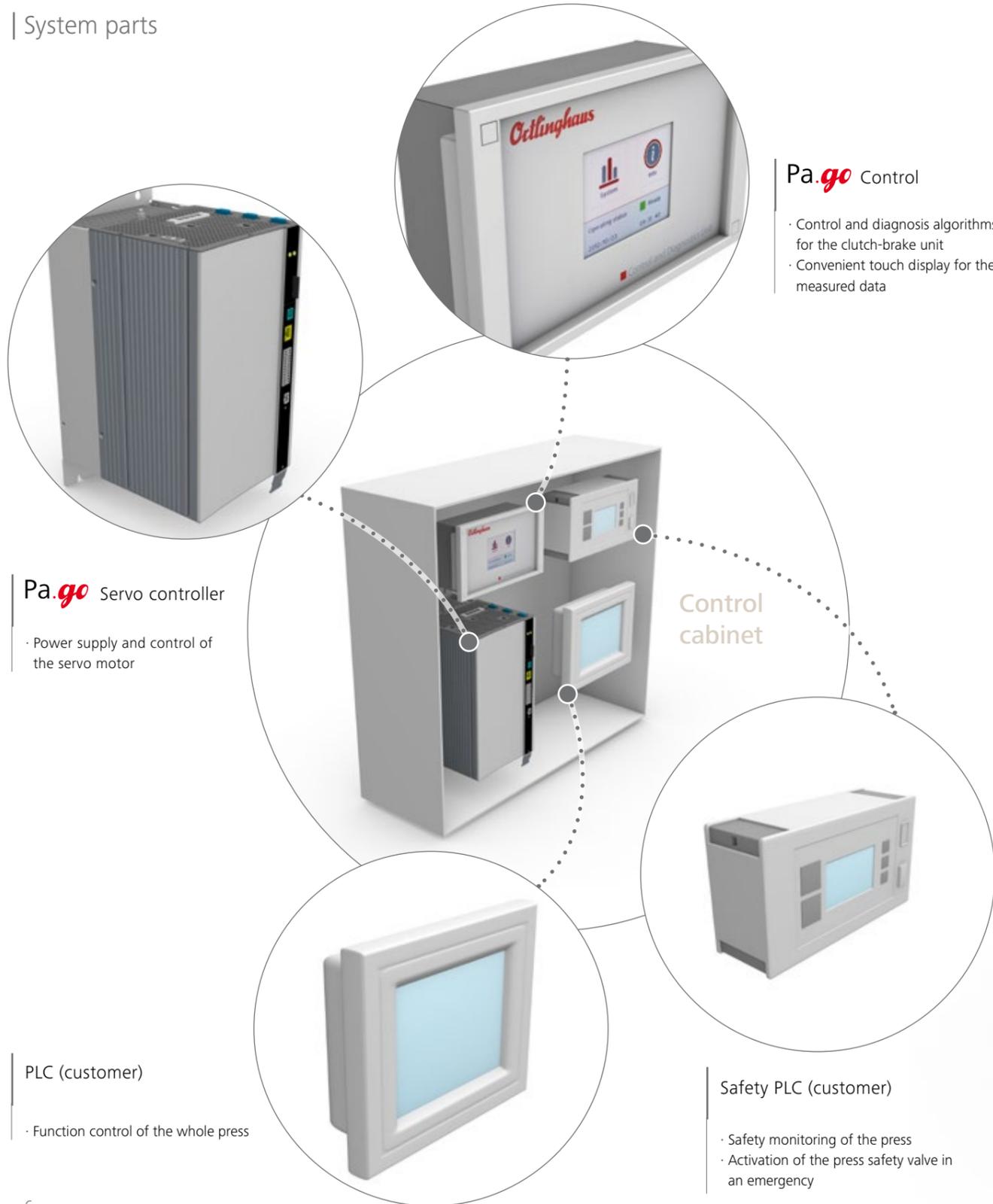
Ortlinghaus's mechatronic systems approach is made possible by an in-depth understanding of the technical foundations and principles of clutches and brakes. We have been working in tribology for 115 years, and with brakes and clutches for more than 75 years. We believe this to be a fundamental requirement for successfully developing mechatronic solutions for drivetrain systems. We have created structures and the capacity needed to do

this. These have been working for almost a decade to depict and combine different technical disciplines in our company, and to develop innovations. The Ortlinghaus System plays a decisive role here with its focus on communication, inclusion, and continuous improvement. The result is mechatronic solutions such as Pa.go, which are structured, scalable, robust, and repeatable.

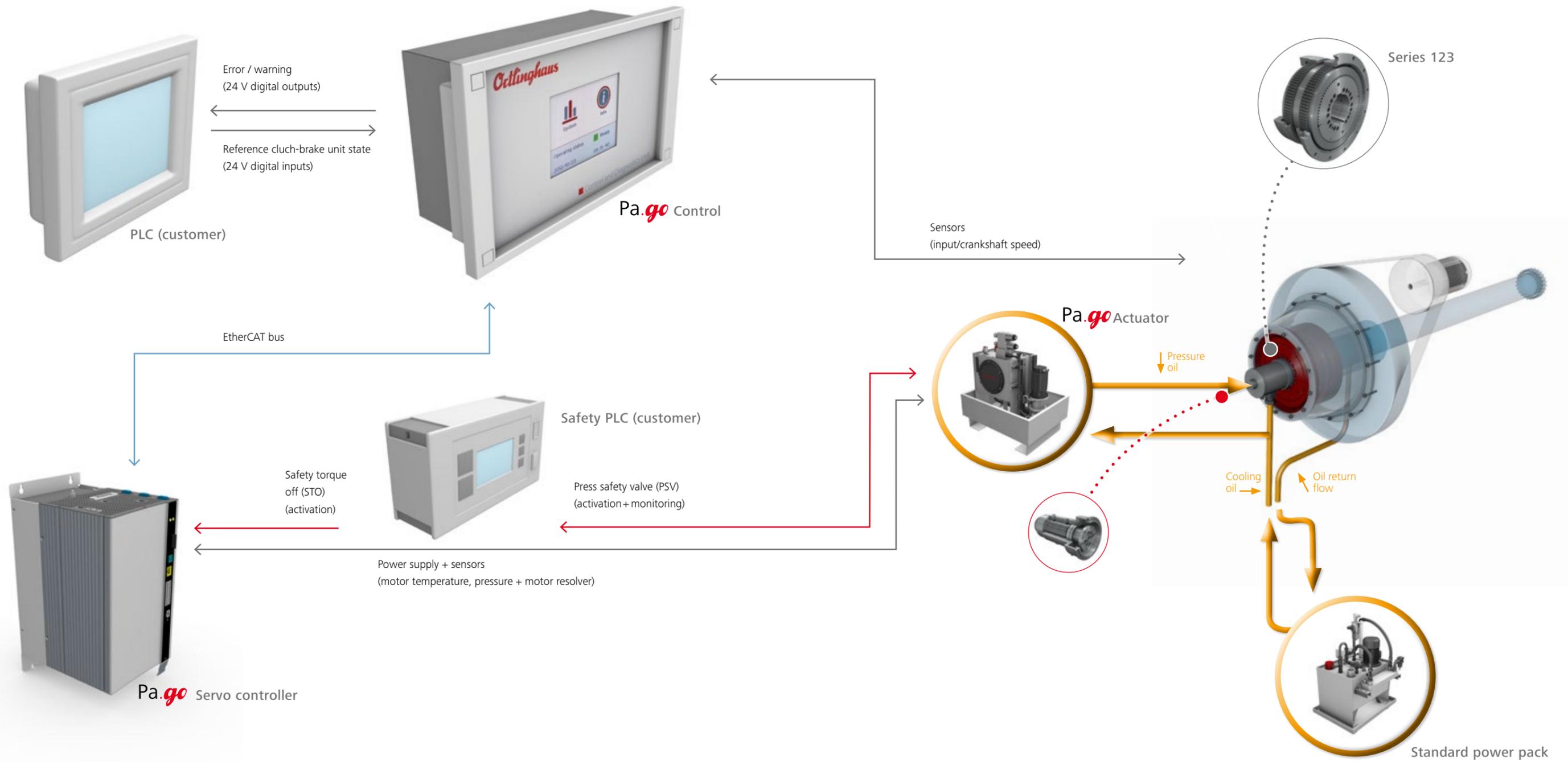


Systems Overview.

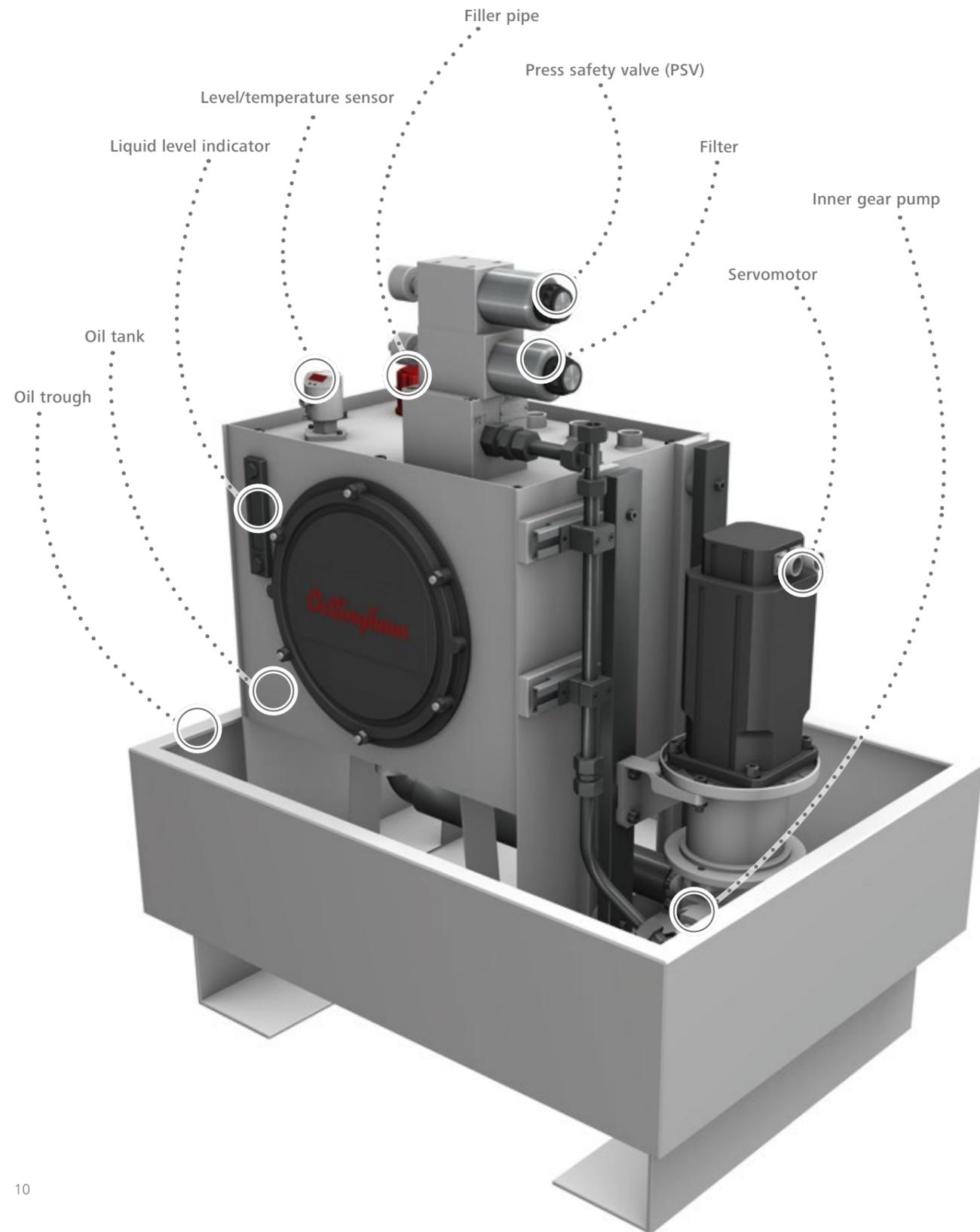
System parts

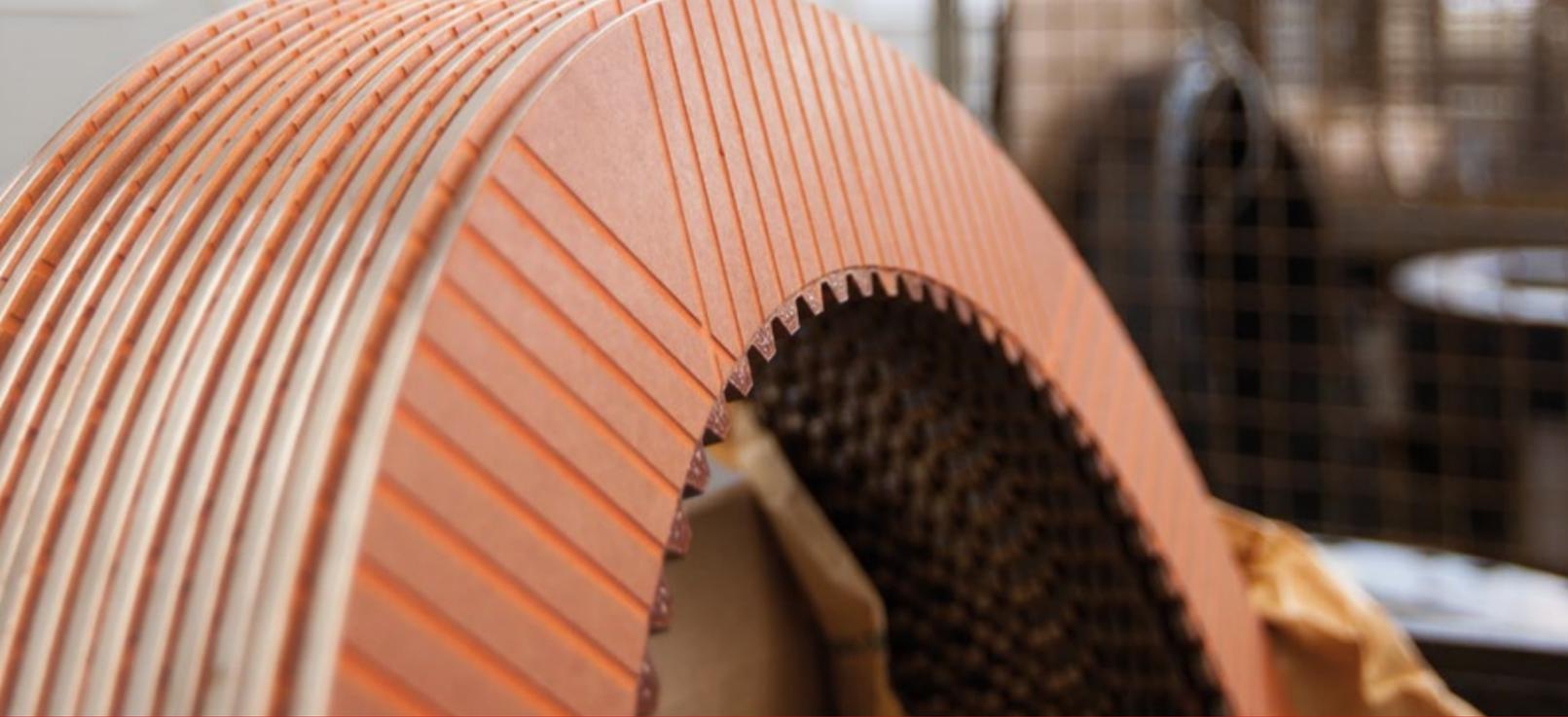


Connection Diagram.



Features.





Essential advantages.

Application

The speed-regulated servo pump produces the required operating pressure dynamically, allowing it to control acceleration and braking of the clutch-brake unit in a precise manner.

Safety

The press safety valve is monitored and actuated by the press's safety controls.

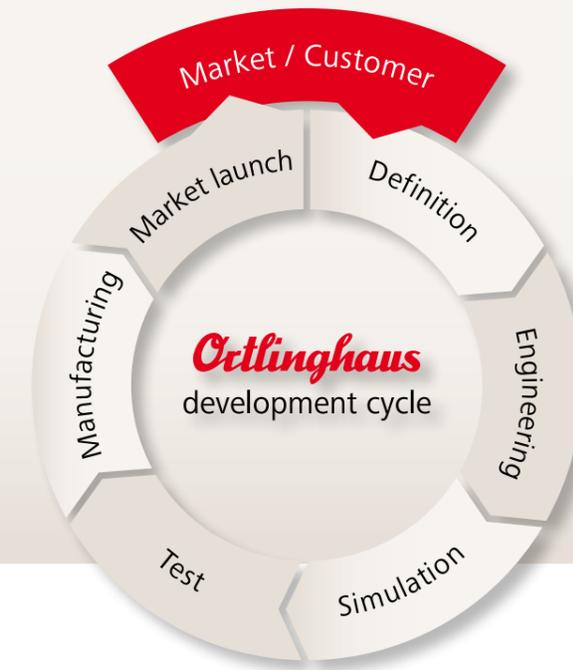
Closed-loop control

The entire clutch and braking process is controlled by Pa.go Control, which matches the requested operating status with the current system pressure and Pa.go's speed, then generates a

target torque for the motor. The relevant parameters are transmitted to the servo controller via EtherCAT, which provides the electricity needed for the motor.

Diagnosis

The status variables of the regulation can be used to calculate plate wear, among other things. The wear variables can be called up on the display and are used for preventative maintenance. In addition, Pa.go Control records key data such as maximum pressure, acceleration time, braking time, reaction time, and clutch-brake unit switch time for each press stroke. The pressure and torque is recorded every set number of strokes in an oscilloscope graph so that the switches can be analyzed retrospectively.



Process reliability

A log file records any interruptions that occur as well as the total number of switches, allowing for preventive measures to increase the uptime of the press.

Productivity increase and equipment preservation

The innovative pressure regulation makes it possible to use the clutch and brakes quickly and smoothly. Thus, productivity is increased and the machinery is better preserved.

Increasing machine readiness

Preventative maintenance enabled by qualitative wear recognition increases machine readiness on a long-term basis. The availability of the machine is thereby ensured, along with the overload safeguard, by means of calculations on the basis of the current heat load.

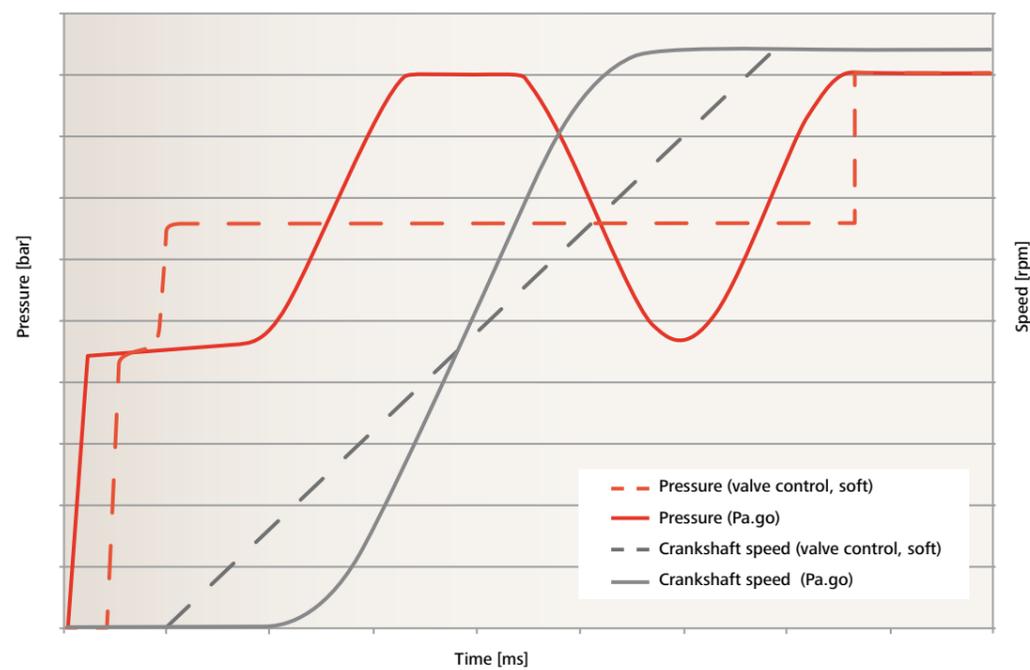
Conserving resources

The speed-controlled servo pump works efficiently and conserves resources.

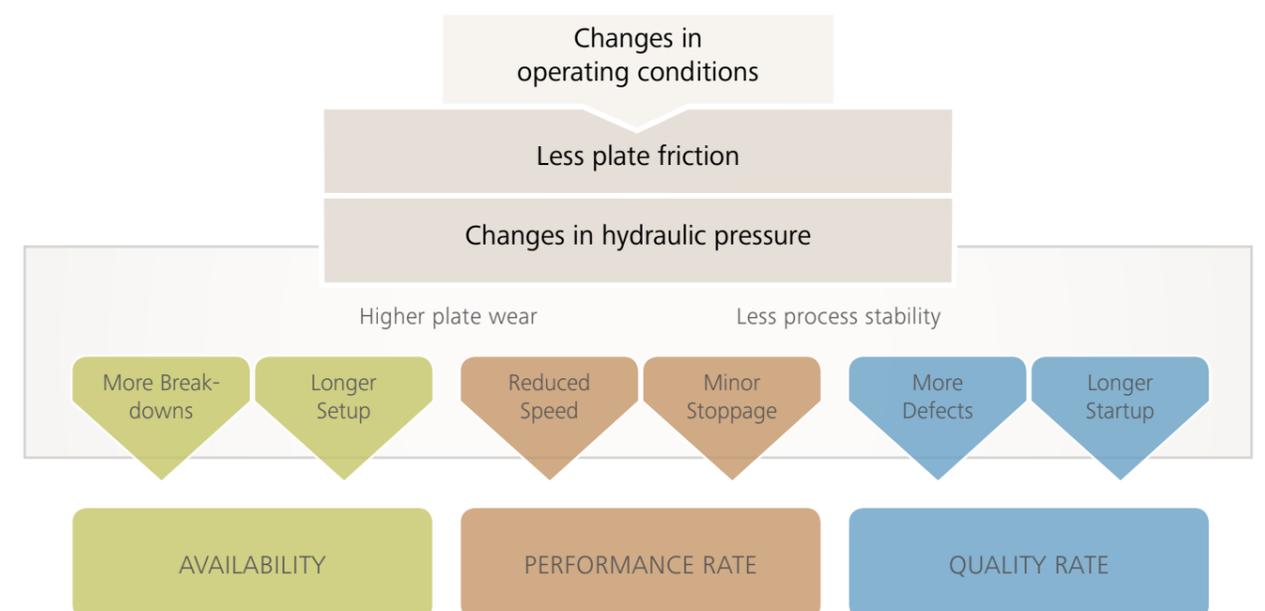


Overall Equipment Effectiveness.

Pa.go enables the precise closed-loop control of clutch-brake units in large presses. While such control brings considerable benefits during normal operations, it also helps to counter the impact of changes in operating conditions like temperature, wear, oil leakage, etc.



Pa.go and Pa.go Control mitigate the effects of these changes in operating conditions thanks to the precise regulation of forces. At the same time, the detailed status diagnosis of the clutch-brake unit ensures process stability.



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