KISTLER

measure. analyze. innovate.

AkvisIO process data management

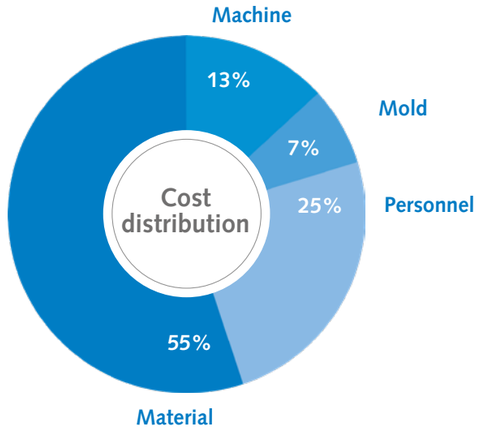
Shopfloor management with added value
for injection molding production

Kistler – leveraging the full potential of injection molding

Key factors in cost-efficient injection molding production:

- High process stability, efficient quality control, and short machine setup times to minimize scrap
- Short machine setup and cycle times to increase machine availability

Kistler offers an extensive portfolio of solutions to optimize injection molding processes. Our process monitoring systems in the ComoNeo series are based on cavity pressure measurement. Together with AkvisIO, they support you in many different ways: with validating the injection mold during the setup or Design of Experiments phase, during series production, or when starting the mold on a different machine. In combination with AkvisIO software, cavity pressure systems help to boost the quality of your products and optimize utilization of machine capacity. You will also reduce your main cost drivers such as material, machine, tooling, mold, and staff costs.



Production costs for a polyamide injection-molded part (180g;180,000 p.a.)
Source: ISBN 978-1-56990-796-2 – Plastics Industry 4.0

Material costs
It is not practicable to change the material after the product design phase. If product quality can be maintained with the use of recycled material, costs can be reduced by re-using sprues or rejected parts. In this case, the production process requires particularly strict monitoring because the properties of recycled material fluctuate.

Staff costs
Assistance systems such as AkvisIO can provide guidance for machine operators. This enables them to set up stable, reproducible production processes in the minimum of time – and they can look after multiple machines simultaneously. What's more: if all the machines are networked, an alarm system can be set up so that machine operators are quickly and efficiently alerted to any errors that occur.

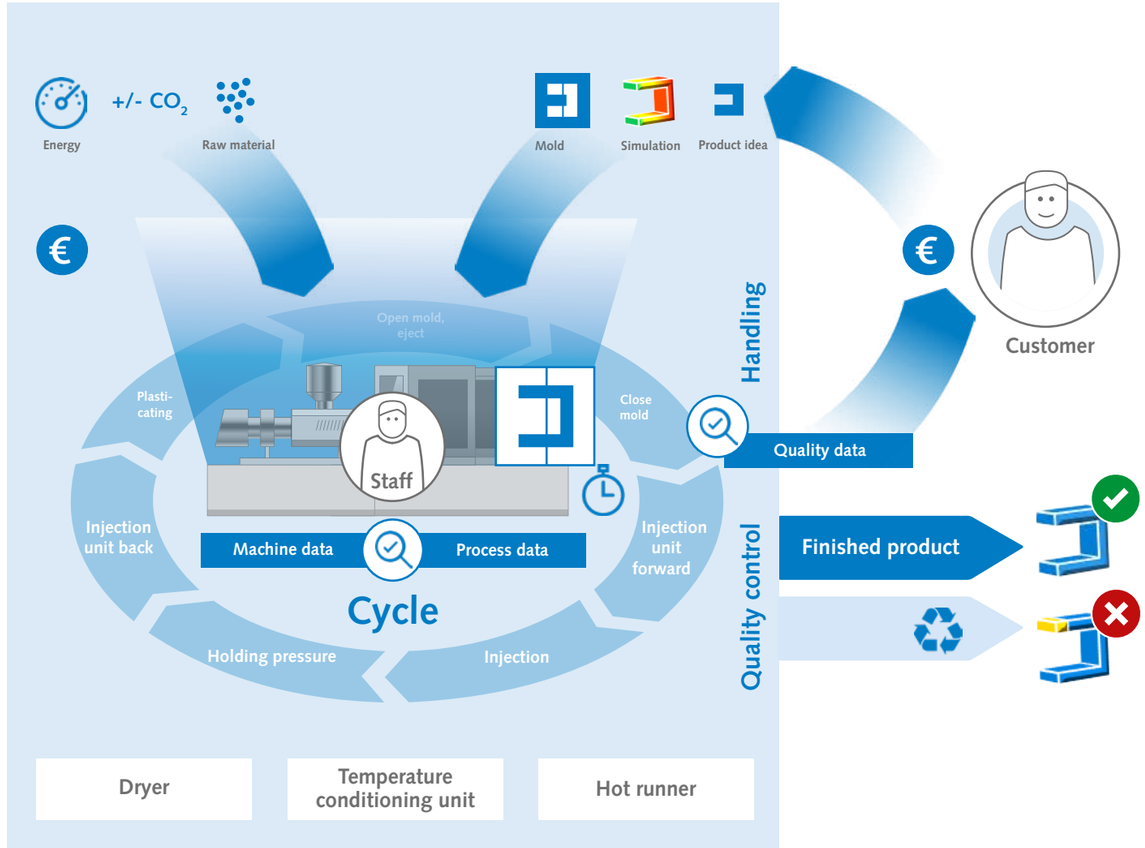
Machine costs
Alongside acquisition and maintenance costs for injection molding machines, energy consumption is another major factor in the cost balance. Prices and energy efficiency differ widely depending on whether the type of clamping force chosen for the machine is hydraulic or electrical. If the goal is to maximize overall system efficiency, the number of faulty cycles must be decreased, machine availability must be increased, and maintenance outlay must be reduced. Our solutions deliver high-resolution process data that provides information about possible wear before it leads to quality defects in the molded part. This makes it possible to plan smaller-scale maintenance interventions with shorter downtimes.

Tooling/mold costs
Tooling and mold costs result from the design and production processes, and from maintenance expense. Wear – and the mold maintenance costs it causes – can be reduced by optimizing the operating parameters. A data acquisition system such as AkvisIO makes it simpler to adjust these parameters.

AkvisIO Injection Molding – process optimization throughout the value chain

As an injection molder, you are aware of the importance of being able to produce various quantities of different molded parts with varying cycle times and consistently high quality. Another key factor is to have control over the disturbance variables that cause quality fluctuations.

All process data that includes cavity pressure, as well as the machine data, is recorded in real time and correlated by our AkvisIO Injection Molding software. On the basis of this synchronized high-resolution quality data, you can identify deviations in the parameter curve for the injection molding process and eliminate their causes.



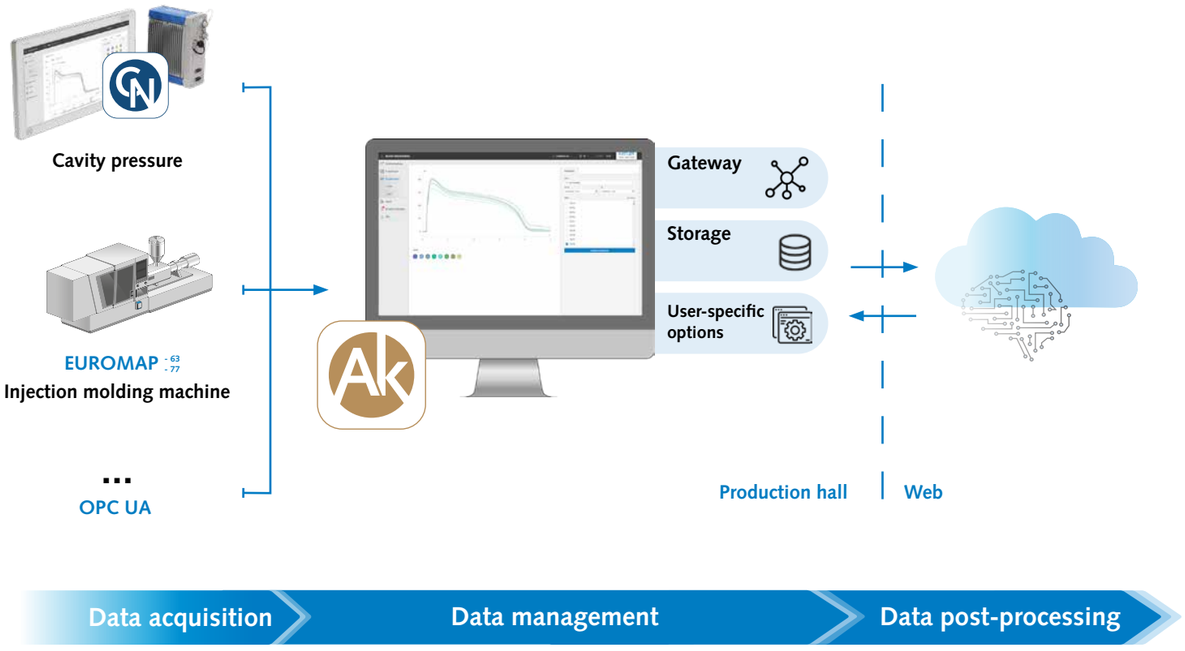
For example: you can recognize if the machine parameters are no longer right because the pellet composition or other ambient conditions have changed. End-of-line inspections are no longer used merely to assess statistical quality: they also provide a reference for a series of synchronized quality data related to the part. AkvisIO stores this data centrally.

The result: an injection-molded product that is manufactured with efficient use of resources, all the way from the original idea to the finished part (energy, materials, mold, machines, staff, and CO_2) – with end-to-end traceability.

Software for central process data management

Exploit your process data to boost the efficiency of your injection molding production! Central storage and consolidation of data on the main systems and production units are the key requirements for data-driven optimization of the efficiency of your injection molding processes. Shopfloor-level data interfaces that provide high-resolution data for further analyses are essential so you can derive recommendations for action.

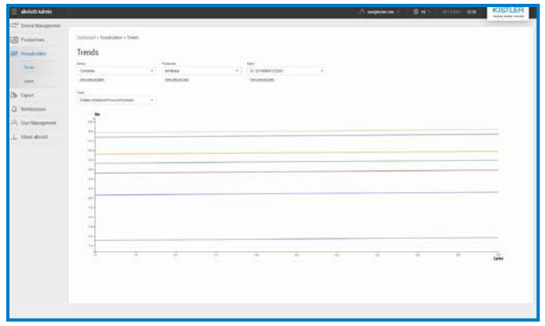
Your valuable process data is stored for post-processing and data analysis. The gateway connects with IoT platforms to enable export for data analysis. Thanks to close communication with the enterprise management system, manufactured parts can be tracked seamlessly throughout the entire production process. This makes it possible to record a high-resolution cycle for the relevant value-adding core processes.



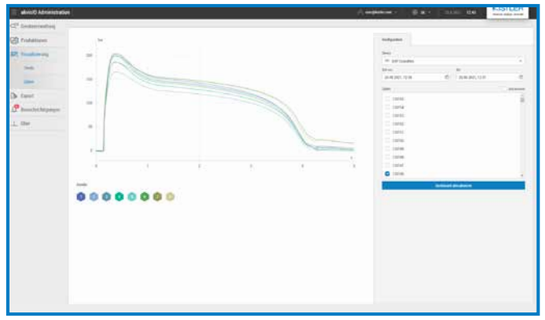
Always keep everything in view – with AkvisIO

AkvisIO uses standardized interfaces to connect with the main machines for your processes. The software records and synchronizes accurate data from your injection molding machine and the mold for each cycle. As well as detailed cycle and trend graphs, AkvisIO offers you a user-friendly system to manage connected devices and machines.

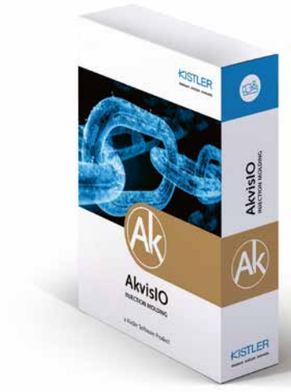
AkvisIO generates clear visualizations of trend- and cycle-based data, making it easier for you to derive potential process optimizations. The software can be expanded to connect future processes, and it was developed to generate edge analyses.

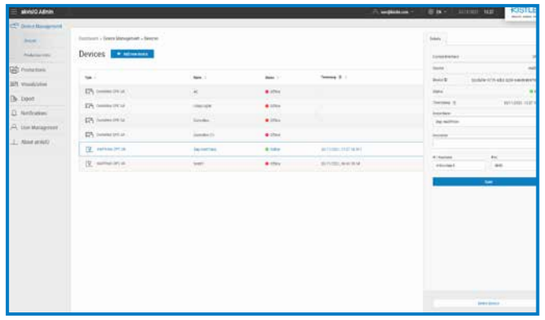


Visualization using trend-based graphs



Visualization using cycle-based graphs





Device management

Interface for production process data
AkvisIO connects digitally to standard injection molding interfaces such as EUROMAP 63, EUROMAP 77, and OPC UA, and also to your ComoNeo. An additional benefit: process monitoring systems in the maXYmos product family can be integrated.

Storage and analysis functions
AkvisIO offers analysis options to help you gain a better understanding of injection molding processes so you can improve process engineering as well as product quality. Storage of process data allows you to examine production batches and structure data for post-processing.

Gateway access
As a gateway, AkvisIO offers options to connect with IoT platforms so data can be exported for post-processing and analysis.

Device management
New devices can be added and configured via a control interface (such as OPC UA). The device status function indicates whether the device is online or offline. Injection molding machines and ComoNeo process monitoring systems that are added can be connected to form one production unit so their data can be synchronized accurately for each cycle.

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The Kistler software suite

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www.kistler.com/loesungen

Kistler Group
Eulachstrasse 22
8408 Winterthur
Switzerland
Tel. +41 52 224 11 11

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