



KePlast



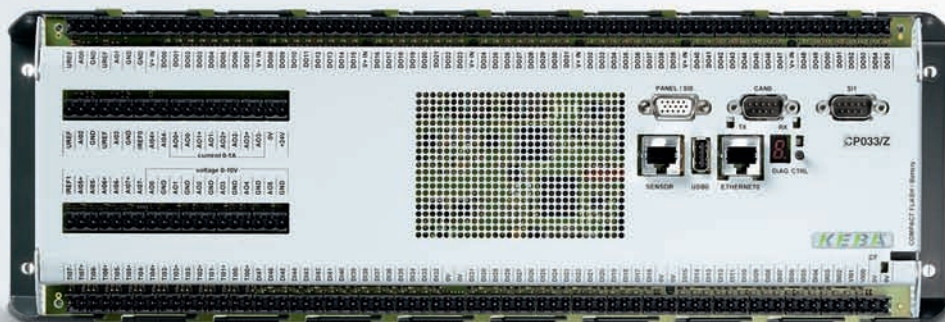
The optimized automation solution
for plastics machinery

KEBA[®]

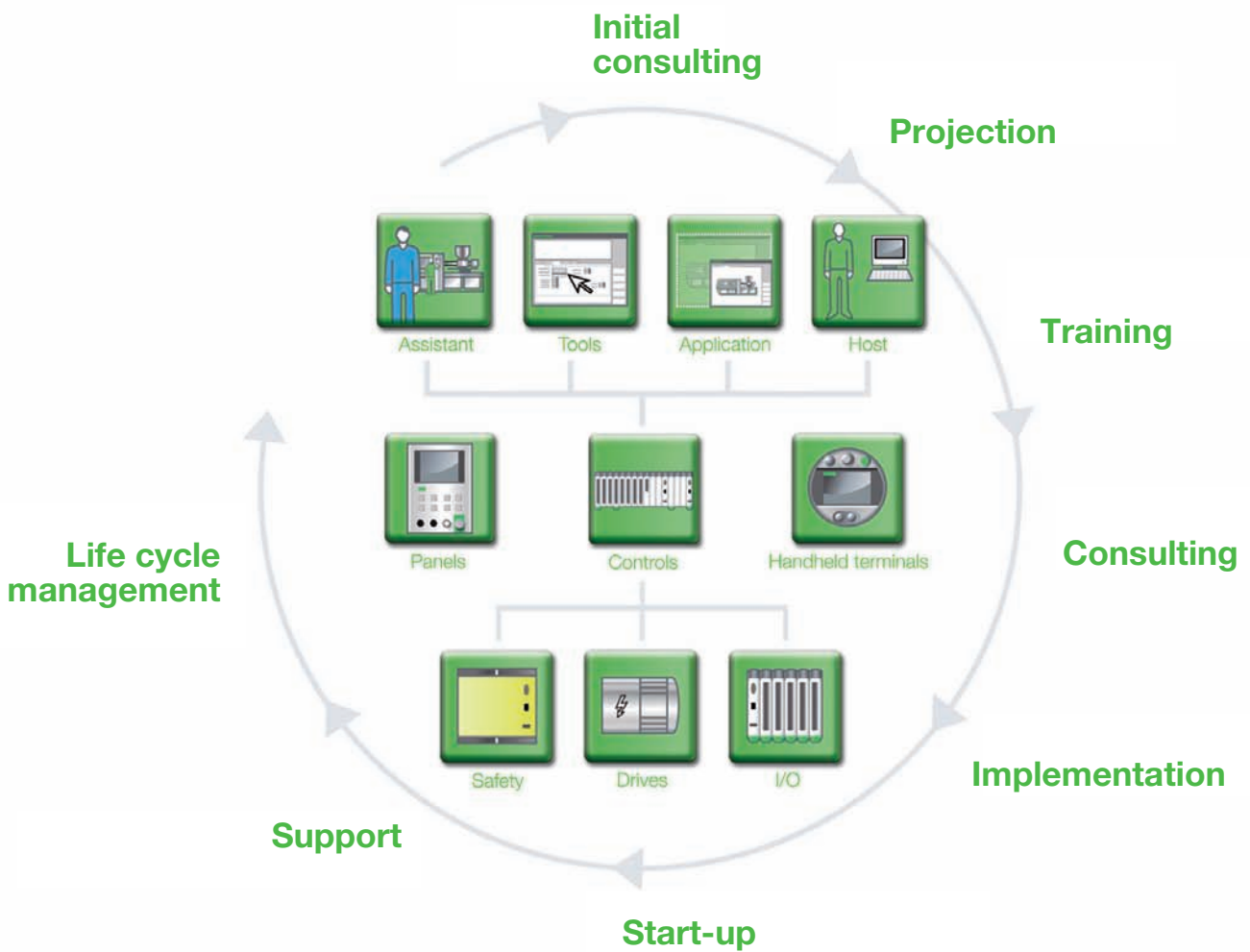
Automation by innovation.


KePlast overview

The KePlast branch solution	4
Hard- and software	6
One software for every performance category	8
The KePlast product range	10
KePlast i1000 – cost and function-optimized	12
KePlast i2000 and i5000 – performance-optimized	14
KePlast AppCo – the programming assistant	16
KePlast EasyMold – the start-up assistant	18
An intelligent operating concept	20
KEBA – the technology experts for optimized branch solutions	22









The branch solution for plastics machinery automation

KePlast control systems have been specially developed for use in plastics machinery. The range covers the complete spectrum of applications from simple hydraulic and fully electric injection molding machines, to complex multi-component plants with handling robots.

One-stop shopping approach

KEBA offers a perfect service, which fulfils every requirement from initial consulting, system design and installation, to training and maintenance.

A uniform concept

All machines are designed on a uniform basis, irrespective of whether they are hydraulic, hybrid or fully electric. The end result is injection molding machinery that stands out due to:

- Uniform project design
- Uniform look and feel
- Uniform diagnosis and maintenance

Best value for money

The control and electric drive technology of injection molding machines are optimized to meet the respective application. With the help of innovative solutions from the scalable KePlast series, expensive under- and over-sizing are a thing of the past.

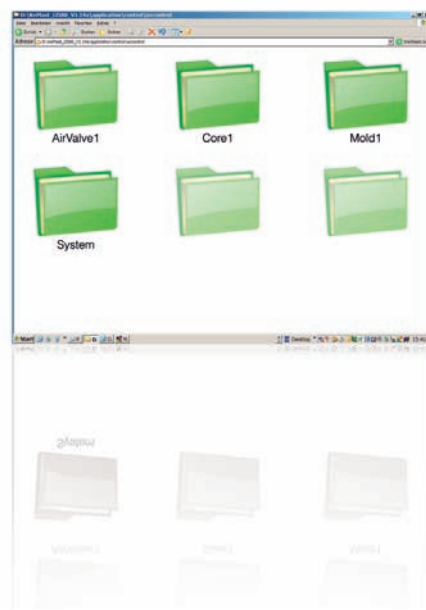
Hard- and software



The KePlast series consists of hard- and software solutions developed for the plastics branch on the basis of standard components from the KEBA modular system for the automation of machines and robots.

Software

KePlast software is highly portable. Indeed, programs developed for an injection molding machine can run on other KePlast controlled machines with differing hardware without the need for adaption. Moreover, in order to ensure that applications can be simply and quickly created, extensive software libraries for injection molding machines are included within the scope of delivery.



Controls

KePlast control systems are future-proof as they combine the classic strengths of PLC technology consisting of real-time operation, suitability for industrial use and stability, with modern computer technologies such as Ethernet and USB, as well as the platform independence of the Java programming language.

The PC-based hardware architecture offers high levels of technological security, the shortest possible time to market, but also protects investments for years to come.



I/O and drives

The functional scope of every KePlast control system can be simply supplemented by plugging in a choice of additional analog, digital, temperature measurement and communication I/O modules. Further serial links and various field bus connections, including SERCOS, EtherCAT, CAN and PROFIBUS can be realized via the communications module. The SERCOS real-time Ethernet interface enables linkage to KEBA KeDrive servo drives, or drives from other leading manufacturers.



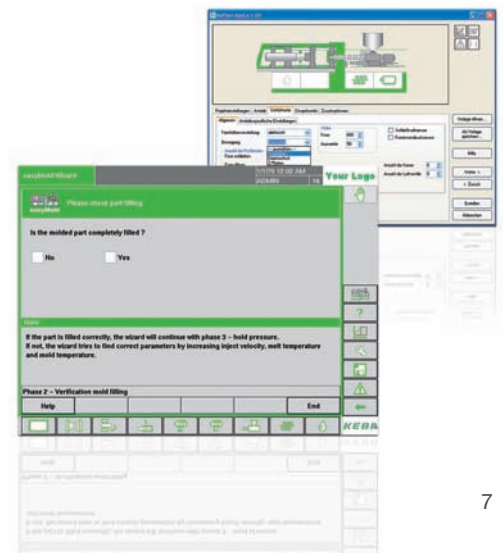
Operation and visualisation

Depending on requirements, a selection can be made from various TFT displays in both vertical and horizontal formats. Operation takes place using a film keyboard or touch screen. In addition to these stationary operating and visualization possibilities, KeTop is available as a mobile alternative for maximum freedom of movement.



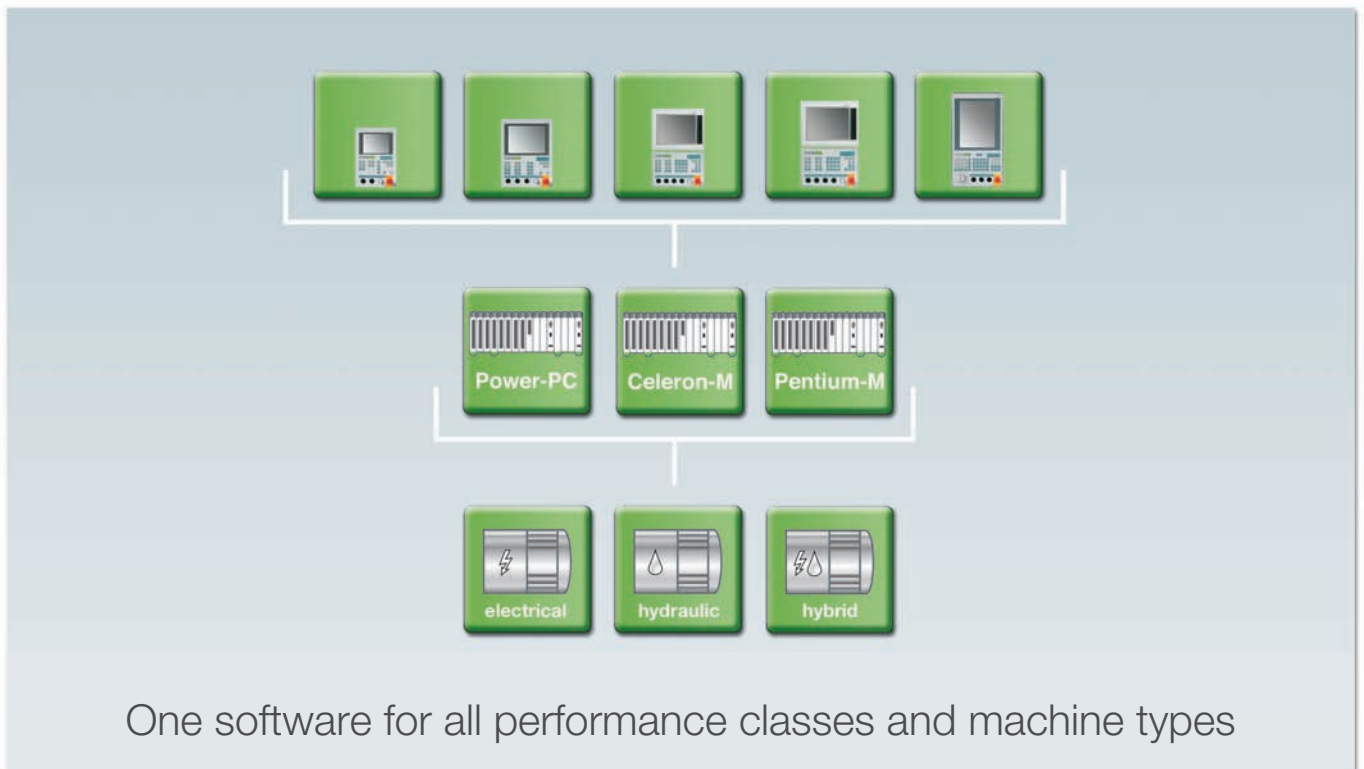
Tools

KePlast control systems contain an extensive selection of tools for service, process data logging and quality supervision within the scope of supply. The KePlast EasyNet control stand solution provides central data saving, machine monitoring and servicing. The KePlast AppCo assistant facilitates the efficient compilation of machine applications without programming, while owing to interactive KePlast EasyMold software, the correct machine settings for a new mold can be determined in a very short time.





Irrespective of whether single board computers or complex modular systems, hydraulic, hybrid or fully electric injection molding machines are involved, all KePlast solutions are based on a single, comprehensive, scalable control platform.



One software for enhanced effectiveness

Scalable display sizes

The KePlast i1000 start series offers high-luminosity, TFT graphic displays in 8 to 10 inches. Touch screen operated, 8- to 12-inch TFT displays with full graphic capacity are available for the visualisation of the i2000 controls. The KePlast i5000 control systems only employ 12- and 15-inch, high-quality TFT touch displays with a choice between vertical and horizontal formats.

Scalable CPU performance

The ultra-compact, single board computers in the KePlast i1000 series possess a 400 MHz, 32-bit processor core. i2000 series KePlast control systems are equipped with Celeron processors, while the heart of KePlast i5000 control systems is formed by Intel embedded processors from the M line.

Uniform software

Programming takes place in a uniform, modular design development environment. The operating concept and scope of service are individually matched to machine performance and the target market. In this way, customers receive an ideally dimensioned control system irrespective of whether the machine is:

- Hydraulic
- Hybrid
- Electrical



The KePlast product range

KePlast control systems cover a complete equipment range from simple hydraulic injection molding machines to complex multi-component units with handling robots.



KePlast i1000

As a result of its powerful computer core, the KePlast i1000 control system has a real time capability and thus facilitates constant, regulated production quality.

- For standard hydraulic injection molding machines
- Ultra-compact single board computer
- 8 to 10" TFT displays
- Operation via a film keyboard
- Closed-loop injection process
- SPC package (Statistic Process Control)
- Extendable via CAN bus
- Networking capacity through an Ethernet connection



KePlast i2000

As opposed to the single-board computer, i2000 series hardware is of modular design and can be extended via module groups or the integrated CAN bus.

- For hydraulic, hybrid and fully electric injection molding machines
- Modular hardware on an Intel-Celeron basis
- 8 to 12" TFT displays
- Touch screen operation
- Seamless integration of KeDrive drives
- Comprehensive quality data package
- Simple enlargement using module groups
- Application package for fully electric injection molding machines



KePlast i5000

i5000 series control solutions offer top computing performance and maximum flexibility. They are of modular design, provide complete scalability and can be combined with panels of differing display sizes.

- For hydraulic, hybrid and fully electric high end single or multi component injection molding machines
- Modular, Intel Pentium M based hardware with multi-CPU capacity
- 12 to 15" TFT displays in vertical and horizontal formats
- Touch screen operation
- Integrated control for handling robots
- Comfortable user registration with RFID

An economic solution



Favourably priced i1000 series KePlast control systems have been specially developed for standard hydraulic injection molding machines. As a result of the clear focus on the essential, the KePlast i1000 offers an unbeatable price-performance ratio.

Cost-optimized solution for injection molding machines

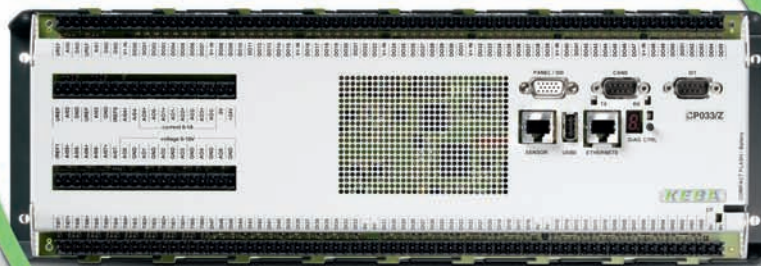
i1000 series control systems are capable of providing the quick and low cost automation of some 90 per cent of all hydraulic injection molding machines. The ultra-compact, single-board computer has all the I/Os required for the automation of hydraulic, standard injection molding machines, as well as additional speed inputs and current outputs for the direct control of inboard proportional valves.

HMI/Visualisation

- ✓ Integrated graphic processor for the direct connection of various panels (8" and 12")
- ✓ Comfortable, complete operating surface for injection molding machines
- ✓ SPC functions
- ✓ Injection diagram
- ✓ Quality data logging
- ✓ Integrated service pages

Process functions

- ✓ Closed loop controlled injection process with automatic tuning
- ✓ Automatic calibration
- ✓ Multi-channel closed loop temperature control with automatic tuning
- ✓ Euromap 12/67 robot interface
- ✓ Integrated hot runner controller

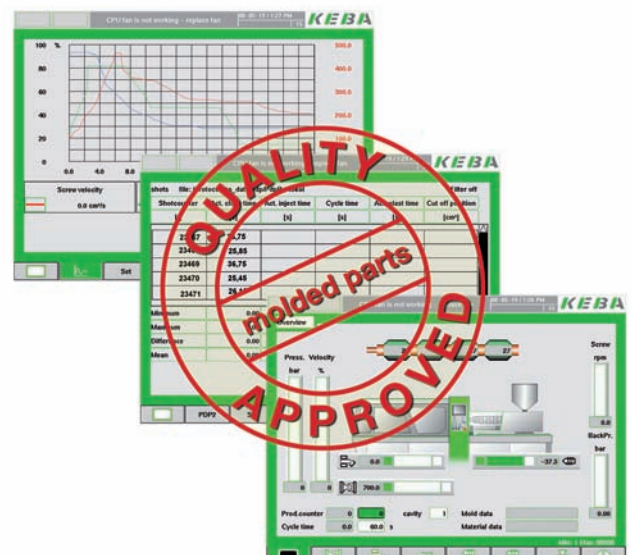


Hardware

- ✓ Powerful 32-bit processor
- ✓ All I/Os for standard injection molding machines
- ✓ PWM power outlets for the direct control of proportional valves
- ✓ Optimized digital outlets for hydraulic control valves
- ✓ Thermo-element inputs for J-, K- or L-sensors
- ✓ Impulse input for screw speed
- ✓ Ethernet connection for the host computer
- ✓ USB connection for printer, modem, USB stick, etc.

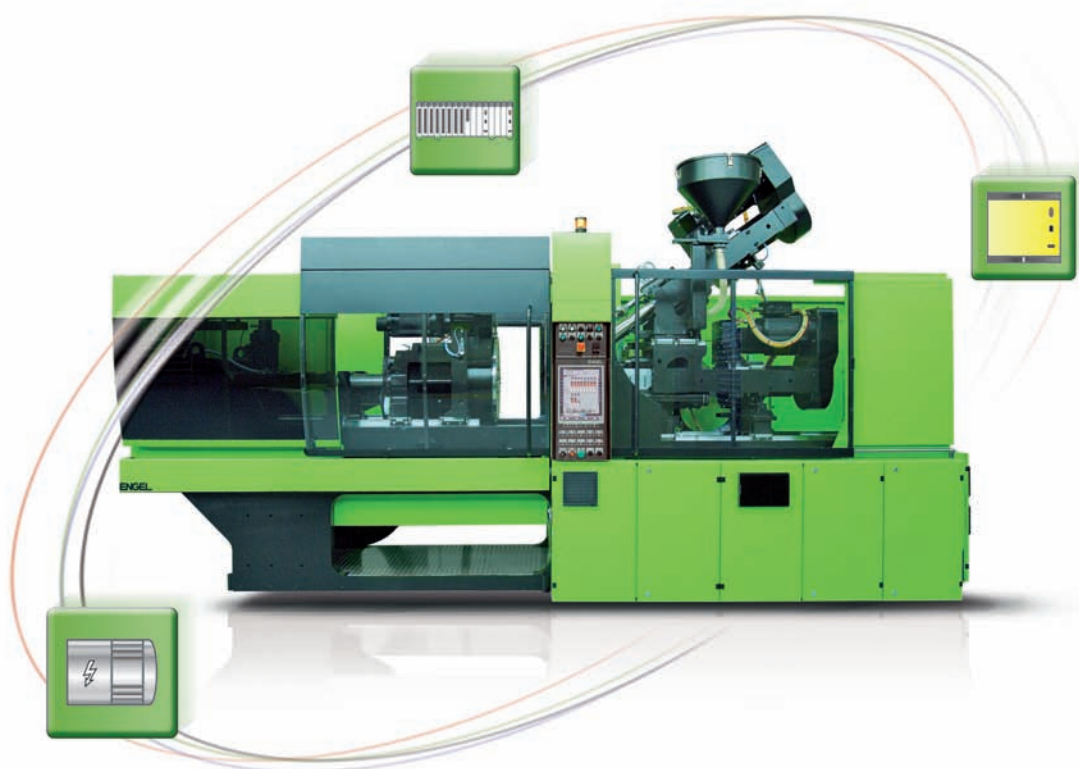
European brand quality

Due to its powerful computer core, this high-quality series has a full real time capability and therefore represents an economy control system featuring a closed-loop injection process. The compact control system can be integrated into a centralized control system concept and the machine data administered via a PC.



The complete, performance-optimized package for fully electric injection molding machines

With the i2000 and i5000 solutions, KePlast offers a complete and ideally coordinated control, drive and safety technology package. This renders obsolete the difficulties with regard to the combination of differing components, such as compatibility problems and the related costs, incurred to date by mechanical engineers.





Top-class controls

The control systems of the i2000 and i5000 series stand out due to their precision and high productivity, and ensure economic energy consumption. Precision is provided by fast controller cycle times, while increased productivity can be achieved due to the outstanding performance of the controls using movement parallelisation.

High-performance drive technology

KeDrive D4 and D6 drive systems are available for fully electric injection molding machines. The drives are cost-efficient and with up to 350 A current peaks offer especially high dynamism levels. In addition, they are extremely economic to operate as they have an active front end and can provide an energy balance via a shared DC link.

Mature safety technology

KePlast offers a comprehensive safety solution for fully electric injection molding machines, which consists of integrated drive safety functions and a safety module. In addition to effective protection for both man and machinery, its straightforward design ensures robustness with regard to defects. Moreover, installation times are effectively reduced, thus creating cost savings. In combination with the especially high degree of safety functionality already inherent to KePlast, the entire machine can be easily certificated in line with all standard safety norms.



During the preparation of control applications in dialog form, the ergonomic KePlast Application Composer software tool guides the machine manufacturer through the entire configuration process up to the finished control program, without the necessity of programming skills.

Fully programmed software elements

In an initial step, the manufacturer defines the equipment of the machine quickly and simply by selecting the fully programmed elements from the KEBA library:

- Injection unit
- Ejector
- Cores
- Hot runner controller
- Clamp unit
- Robot interface

KePlast AppCo – the assistant for fastest-possible application building

Programming know-how in software form

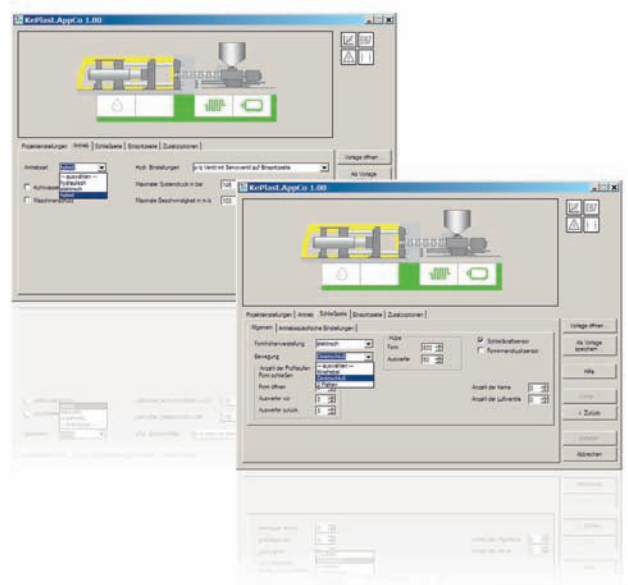
While the operator enters the machine description into a given enquiry matrix, the assistant provides the entire control software in the background. The transfer of the application then takes place in comfort using Compact Flash.

Applications at the click of a mouse

KePlast AppCo enables machine manufacturers to obtain their control applications with unprecedented speed. Time-consuming programming procedures are reduced to the selection of ready-to-use software elements. The correct combination of the modular elements then takes place automatically.

Reduced training expenditure

KePlast AppCo frees application producers from the need to enter program commands. Expensive and time-consuming employee training in complex programming languages is therefore unnecessary.



KePlast EasyMold – the assistant for ultra-brief mold setups



KePlast EasyMold is an interactive software tool for the rapid definition of correct machine settings for a new mold that requires no special experience or know-how on the part of the user.

Intelligent material database

The KEBA material database, which is integrated in the controls, contains all the basic material parameters required for every area of plastic injection molding.



Bundled control and process know-how

The KePlast EasyMold software package contains the entire control and process know-how required for the plastics injection molding field.



Guided operation

The assistant guides the operator to the correct setting of the machine parameters by means of simple yes/no questions. All the machine operator has to do is to assess the produced prototype with regard to its filling. The software then automatically adjusts the machine parameters until the perfect item is produced.

Shortest possible start-up procedure

Using KePlast EasyMold, optimum operation can be obtained within a very short time without any special injection molding know-how.

Reduced training expenditure

With the help of KePlast EasyMold, any employee can carry out a mold change, a task that was previously restricted to specially trained experts.

Improved mold setup quality

The employment of KePlast EasyMold standardizes the process of defining the correct tool parameters and thus makes it reproducible. The result is a major improvement in the quality of the entire mold setup procedure.



Everything in sight, everything under control

Remote maintenance



KePlast visualisation software

The software included within the scope of delivery of the KePlast control system permits rapid adjustment to individual ideas and ensures a clear machine overview.



Uniform surfaces

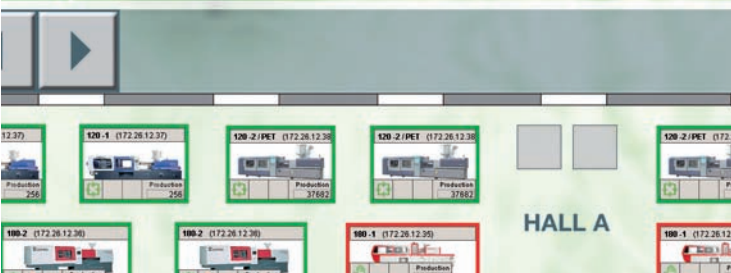
The user surface is identical for every type of machine and irrespective of whether electrical, hybrid or hydraulic drives are involved, operators always use the same surface.

Simplest possible operation

The uniform surface allows machine operators to work with every type of injection molding machine without undergoing additional training.

Individual appearance

The visualisation concept employs Java technology and therefore offers a look and feel similar to that of Windows. Owing to the comprehensive library of pre-produced visualisation elements, the creation of customized user surfaces constitutes a simple matter.



Status data for all machines at a glance

Using KePlast EasyNet, the operator can obtain a clear overview of all settings and the production status of the entire machinery at a glance. In addition, KePlast EasyNet also combines quality and tool data of every machine centrally on the control stand PC.

Uniform operation

The user surface on the control stand PC is identical with that on the machine, which means that training is not needed and work can commence immediately.

KePlast EasyNet – central machine management on the control stand PC

KePlast EasyNet is a simple, user-friendly program for the favourably priced networking of injection molding machines, which runs on the PC control stand and is ideally suited to central data acquisition and backup.

Optimum data management

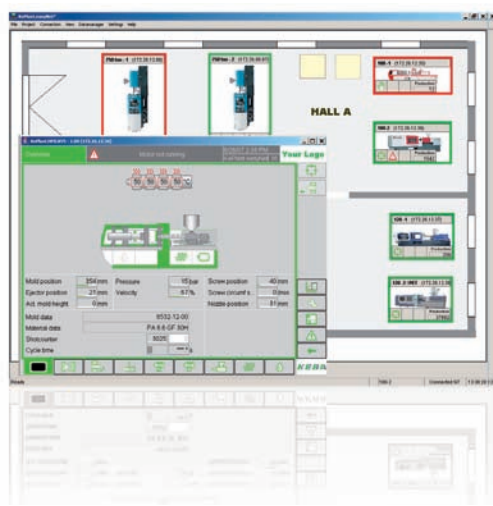
KePlast EasyNet facilitates a considerable improvement in machine hall data management.

Central machine data management

A clear and central machine data overview is available and can be retrieved quickly and simply. Time is saved due to the possibility for the transfer of previously proven parameters from the control stand to the machine.

Central quality data management

The collation of quality data from every machine facilitates evaluation at any time and safe archiving.



Efficient use of working time

KePlast EasyNet greatly simplifies the monitoring of machines in a hall. Supervisory tours of the machine hall are reduced and working time is saved.



“A complete, one-stop shopping automation solution in just two simple steps!”

A modular system

With our assistance, you first select the basic elements for your automation solution from a wide range of fully scalable, tried and tested standard components.

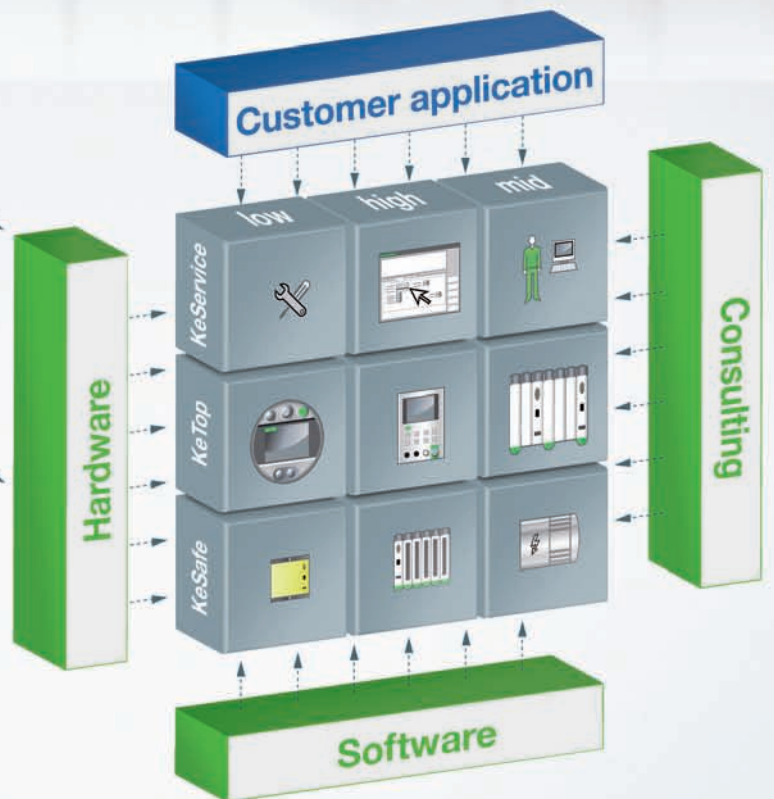


Specific branch fine tuning

In the next step, the components which are entirely, mutually compatible are upgraded through fine tuning with regard to:

- Hardware
- Software
- System-related services

On this platform, you can realize your own application.



Branch solutions

In this manner, individual, optimized overall solutions are available for the following branches:

- Injection molding
- Robotics and handling technology
- General mechanical engineering

KePlast is an optimized, complete and scalable control platform, specially designed for the plastics injection molding sector, which covers every performance segment.

KeMobile offers systems solutions with KeTop, the proven, mobile handheld terminal, as a nucleus. The operating device is characterized by special ergonomics, unusual robustness and top quality in an attractive design.

KeMotion provides the extensive functionality of a genuine robot control system in combination with the openness and flexibility of efficient SPS controls.

KeSystems furnishes innovative automation solutions for the general mechanical engineering industry, from performance-intensive control processes, to complex motion tasks.



The technology experts for optimized branch solutions

KEBA AG is a successful international player in the electronics field, which in line with its credo, “Automation by innovation.”, develops and produces innovative, top quality automation solutions for the industrial, banking and service branches.

Leading international mechanical engineering groups, robot manufacturers and service suppliers all build on KEBA’s automation solutions.

In the Industrial Automation business area, the technology experts for optimized branch solutions focus on the automation of robots and injection molding machines by means of the KeMotion and KePlast systems. In addition, KeSystems provides individual automation solutions for the general mechanical engineering sector, while robust, top quality KeTop handheld terminals cover the mobile automation sector.

With this extensive product range, KEBA offers complete, one-stop shopping solutions.



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