Unilog B8 / B8X control system

Everything under control

world of innovation

UNILOG B8 / B8X

Optimal operating logic and high-performance hardware

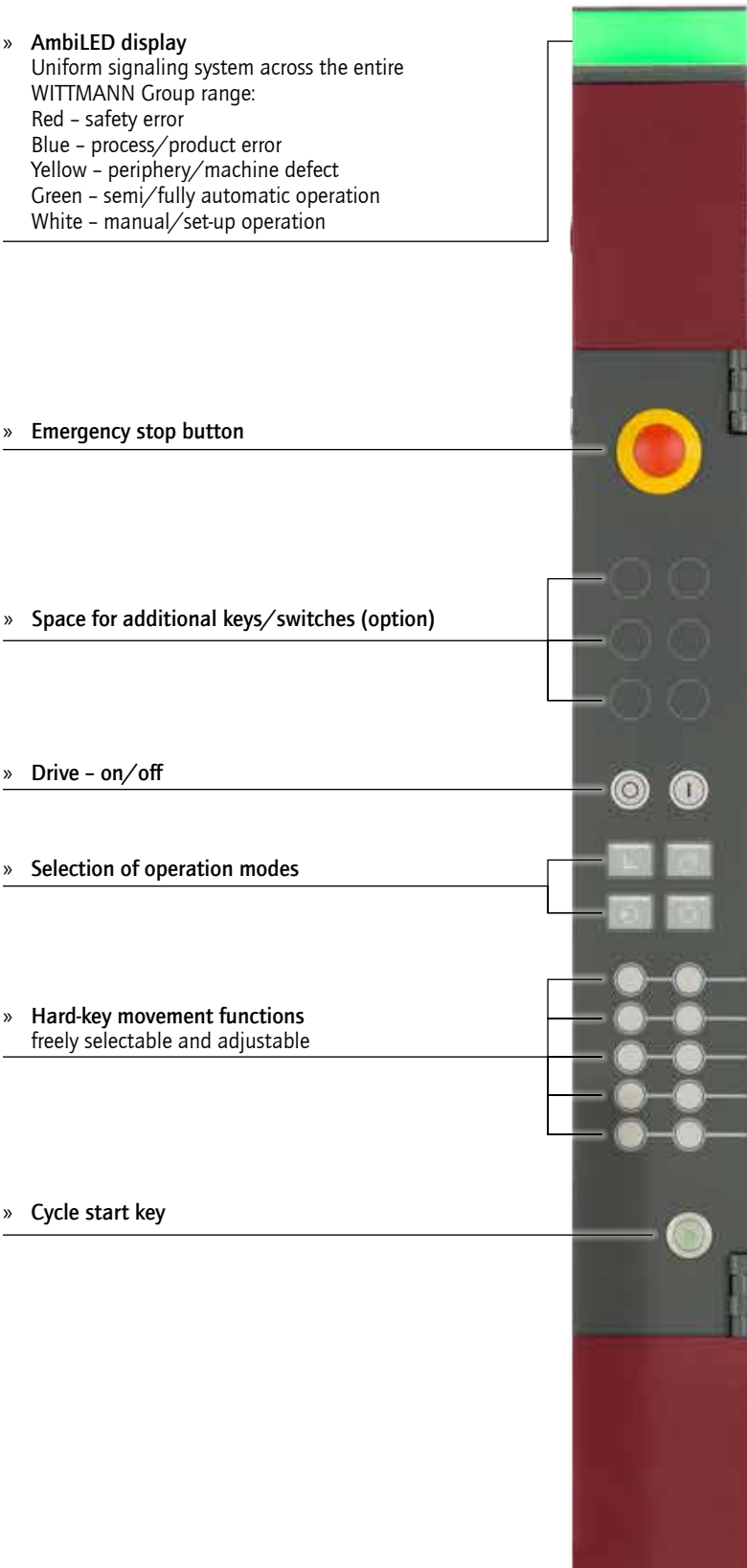
The highlights

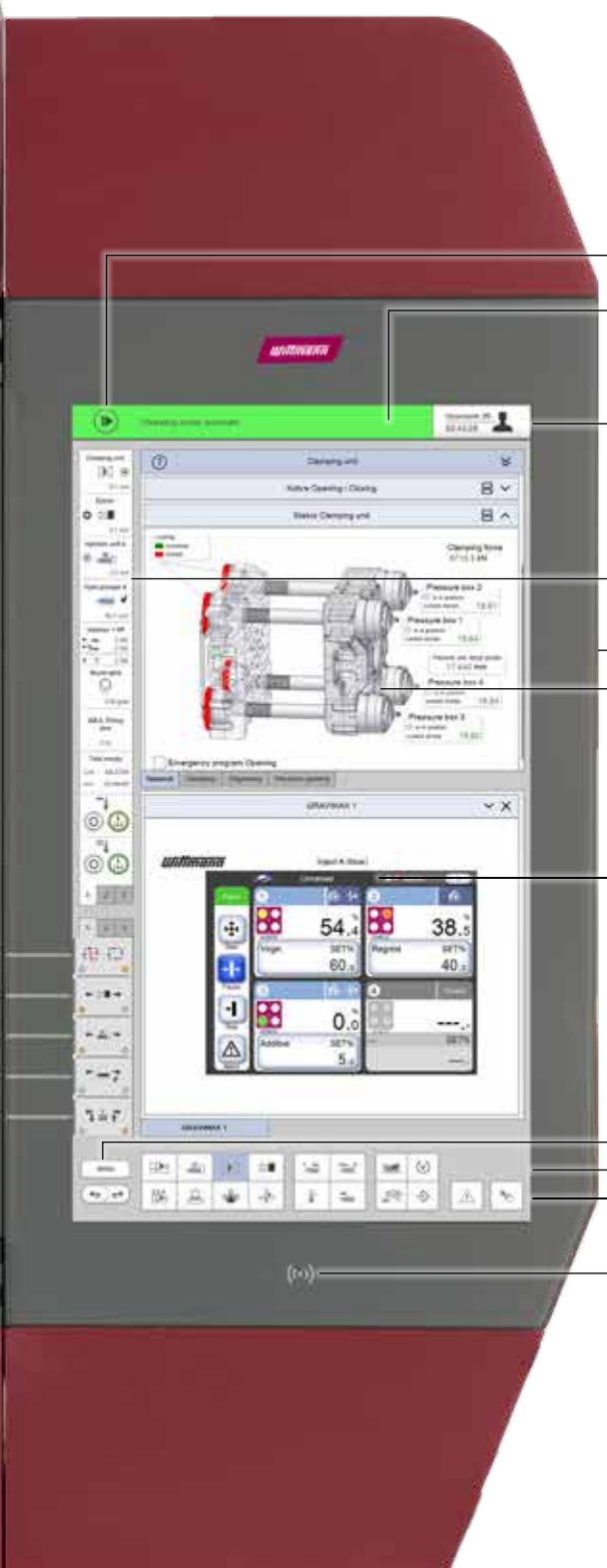
- Brightly lit 21.5" full-HD Multi-Touch screen
- Windows® 10 IoT (Internet of Things) operating system
- Uniform operator interface with intuitive logic for all machines
- Well-known, familiar operating logic, adapted to Windows® 10 IoT
- Display screen can be partitioned for simultaneous display of two process graphs above each other
- Data input possible via touch screen, functional graphs or keyboard pop-ups
- Operation by gesture control
- Movement functions can also be operated via membrane keys
- Easy start by using QuickSetup for initial machine setting
- Free programming of the cycle via icon-based graphic facility
- "Plug & Produce" integration of WITTMANN auxiliaries

Unilog B8X

The B8X control system consists of the proven Unilog B8 control logic and a high-performance B8X hardware. This hardware manufactured in-house by the WITTMANN Group stands out by its greater stability and better performance.

This improves the reproducibility of the manufactured parts and increases the dynamics of the moving axes.





» **Help menu**

» **Headline – operating status/alarm**

» **Headline pop-up menu**
Login, external access, language selection, network, user limits, USB status, memo

» **Status bar and function selection**

» **USB interface**

» **SmartScreen**
Screen display splitting to display and operate two different functions simultaneously

» **Menu key**

» **Function icons**

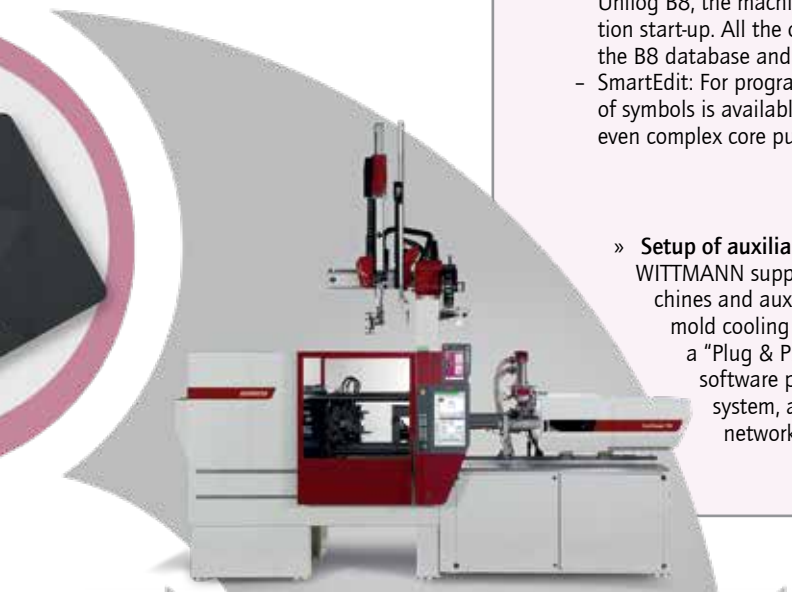
» **Point of contact for RFID login**

A NEW QUALITY OF PROGRAMMING
Complete software for high-quality injection molding

» **RFID authorization system**
The operator access to the control system comes with an RFID access control. Via this personalized identification system, the program settings and preselection of view pages can also be personalized. In addition to identification via an RFID card or RFID key ring, login via a password still also remains possible.

» **QuickLook 4.0**
Via QuickLook 4.0, a production check can be carried out quickly and easily from a Smartphone. This makes it possible to look at the production data, status, cases of alarm and production parameters of all Wittmann 4.0-compatible appliances in a Wittmann 4.0 production cell.

» **SmartMonitoring**
For monitoring of machines or production cells or even entire shop floors, WITTMANN BATTENFELD works with a MES System (Manufacturing Execution System). In combination with the SmartMonitoring software module, the current status of an injection molding production plant can be visualized in real time on any of the machine's monitor screen.



SETUP

» **Machine setup**
- QuickSetup: With the QuickSetup automatic programming system in Unilog B8, the machine can be set even more quickly and easily for production start-up. All the operator needs to do is to enter the material data from the B8 database and the dimensions of the mold.
- SmartEdit: For programming the movement sequences, an icon-based system of symbols is available. Starting from a basic process, it enables editing of even complex core pull, ejector and air valve actions.

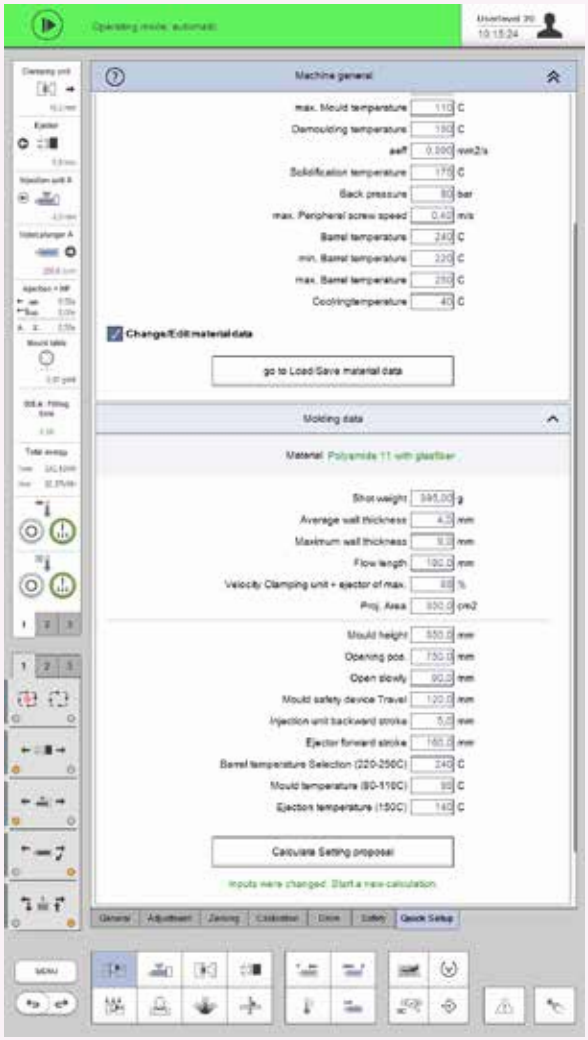
» **Setup of auxiliaries**
WITTMANN supplies a comprehensively coordinated portfolio of machines and auxiliary systems (robots, material handling and recycling, mold cooling and temperature control systems). All units come with a "Plug & Produce" interface to the machine based on a uniform software platform. Via the "Wittmann 4.0" communication system, a production cell can be integrated into the customer's network via a single IP address.

PRODUCTION

» **Production**
In the standard version, the dosing and injection processes and the melt cushion volume are monitored by stroke-based measured value integrals with up to 400 measurement points within adjustable limit values. Whenever the tolerance limits are exceeded, an alarm is triggered which requires an intervention by the machine operator. A similar function is in place for mold protection. Optional HiQ programs for process control are also available.

» **Quality management**
For quality monitoring, a quality data table with display and monitoring of 6 parameters and 1000 events is available as standard, plus 5 graphic curves of actual values and one envelope curve. One option is the expert package with an extensive range of additional functions. Another is the HiQ process control package.

MACHINE SETUP
Initial parameter setting via QuickSetup



QuickSetup
The QuickSetup assistance program is the machine version of the "WIBA-Assist" mobile app. It offers the advantage of quick, easy programming of the production system's initial parameter settings.

Following the selection of the material data from the database within the B8 and entry of the mold dimensions, the program automatically calculates an initial setting which can be taken over for production start-up.

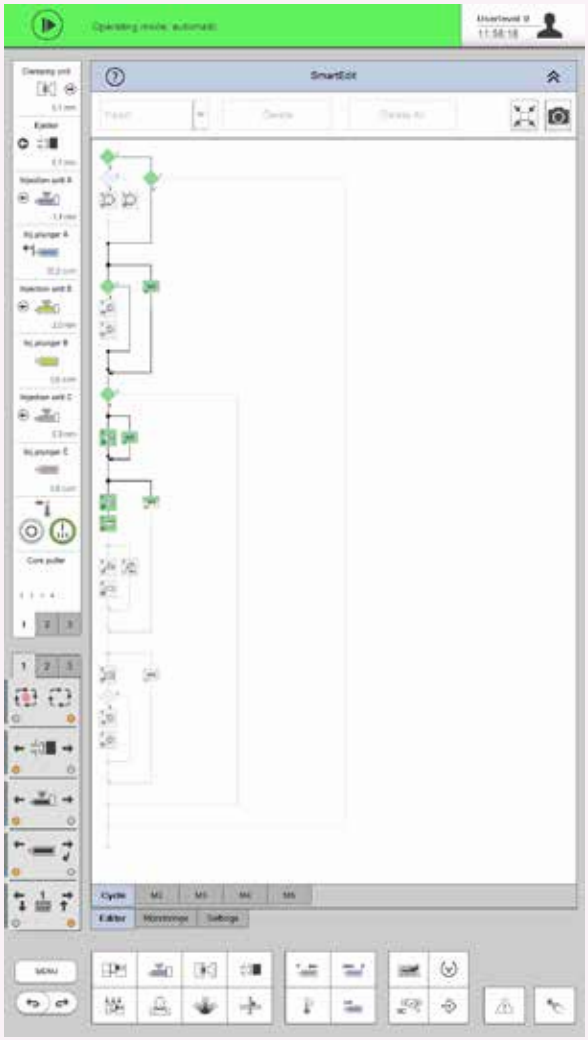
Individual sequences can be set in SmartEdit for all movements not included in the general initial setting. QuickSetup offers a help library for cycle optimization and for solving problems in the process sequence.

The advantages
» Process-oriented machine setting
» Initial setting based on material data
» Entry of the most important mold dimensions is the only additional data input required.
» The calculated initial settings can be taken over directly into the machine cycle.

SmartEdit in detail

SmartEdit
SmartEdit is a visual, icon-based cycle sequence programming facility, which enables direct addition of special functions (core pulls, air valves, etc.) based on a standard process via touch operation on the screen. In this way, a total user-defined sequence can be compiled from a sequence menu. This machine cycle, visualized either horizontally or vertically, can be adjusted simply and flexibly to the process requirements by finger touch with "Drag & Drop" movements.

The advantages
- » Icon visualization ensures clarity.
- » Clear events sequence through node diagram
- » Alterations without consequences through "dry test runs"
- » Theoretical process sequence can be quickly implemented in practice.
- » Automatic calculation of the automation sequence based on the actual set-up data set without machine movements



APPLICATION TECHNOLOGY SOFTWARE

Comprehensive programs for standard and as option

STANDARD

Plasticizing + injection process

Melt Monitoring
(monitoring of dosing)

Flow Monitoring
(injection integral monitoring)

Cushion Monitoring
(monitoring of the melt cushion)

Pre-Shut
(closing of the check valve by counter-rotation – EcoPower)

Mechanics

Mould Protect
Highly sensitive mold protection (for EcoPower, MicroPower)

Basic StepForce
Injection parallel to clamping force build-up (for EcoPower, MicroPower, MacroPower E)

Basic Coining
Sequential standard embossing programm (for SmartPower, MacroPower)

Programming + documentation

SmartEdit
Icon based touch programming

B8 Basic Quality Monitoring
Basic package

OPTIONAL PACKAGES

HiQ packages

HiQ Melt
(material quality monitoring)

HiQ Flow
(control of changeover point and holding pressure)

HiQ Cushion
(melt cushion control)

HiQ Metering
(active closing of the check valve – EcoPower)

Expert packages

Mechanics

Expert-Coining
Coining during injection with all-electric machines (for EcoPower)

Expert-Coining
Coining during injection with large 2-platen machines (for MacroPower)

Expert-pvT-Coining
Precision coining with all-electric machines (for MicroPower, EcoPower)

Expert-StepForce
Step-by-step parallel clamping force build-up (for EcoPower, MicroPower, MacroPower, SmartPower)

Expert-Venting
Controlled mold opening for ventilation

Programming and documentation

B8-Expert-Quality Monitoring
Control system extension

NETWORK Services

INDUSTRY 4.0

SmartMonitoring
Process data collection in cooperation with TEMI+

Machine Supervision
via Webcam and WLAN B8 Remote Control

Web-Service 24/7
Globally available service and assistance network

WIBA QuickLook 4.0
Mobile phone app for mobile viewing of order and status data of WIBA* machines and robots

Wittmann 4.0

„Plug & Produce"
Full integration of all WITTMANN auxiliaries (also link-up to a process control system with central process parameter monitoring is possible)

* WITTMANN BATTENFELD

STANDARD SOFTWARE
Production made easy

In the standard version, the machine's control system already comes with an extensive package of application software, which enables optimization of the cycle sequence and an increase in process accuracy.

» **Melt Monitoring** (monitoring of doses)
» **Flow Monitoring** (injection integral monitoring)
» **Cushion Monitoring** (monitoring of the melt cushion)
» **Pre-Shut** (closing of the check valve by counter-rotation – EcoPower)

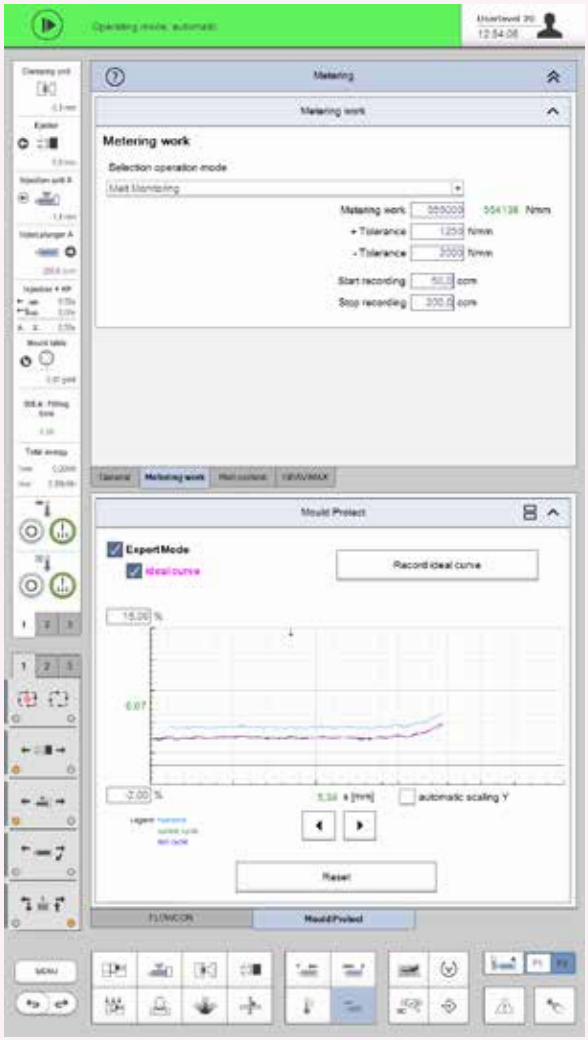
Process monitoring is based on records of stroke-related measurement integrals with up to 400 measuring points. Each integral value exceeding or falling below the tolerance margin triggers an alarm signal and requires intervention by the machine operator.

» **Mould Protect** – highly sensitive mold protection
(for EcoPower and MicroPower)
The highly sensitive, self-learning mold protection function is derived from sensitive motor speed measurement and monitoring of the servo-electric clamping unit drive.

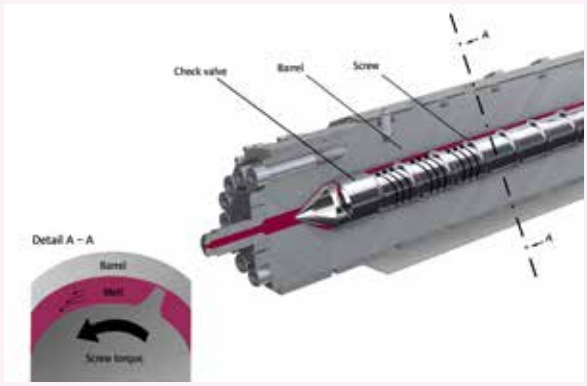
» **Basic StepForce** – Injection parallel to clamping force build-up.
(for EcoPower und MicroPower)

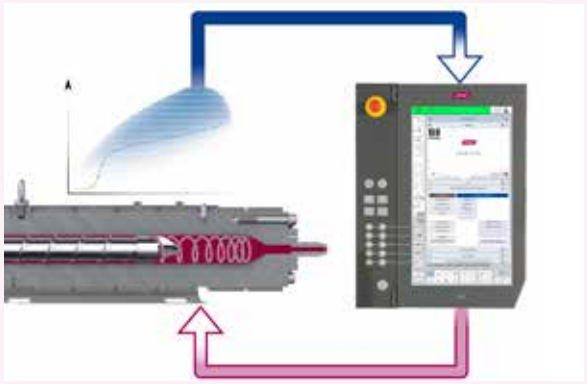
» **Basic Coining** – standard compression molding program
(for SmartPower and MacroPower)
The sequential standard coining program is a high-precision stroke control system of the clamping unit, suitable for applications with symmetrical force distribution inside the mold.

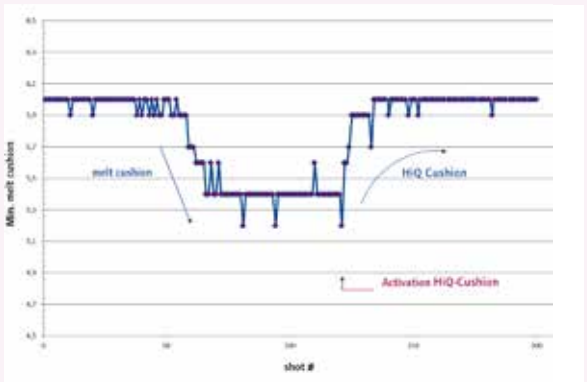
» **Basic Quality Monitoring**
- Quality data table for displaying and monitoring of 6 parameters and 1000 events
- 5 graphic actual value curves
- Envelope curve monitoring (single)

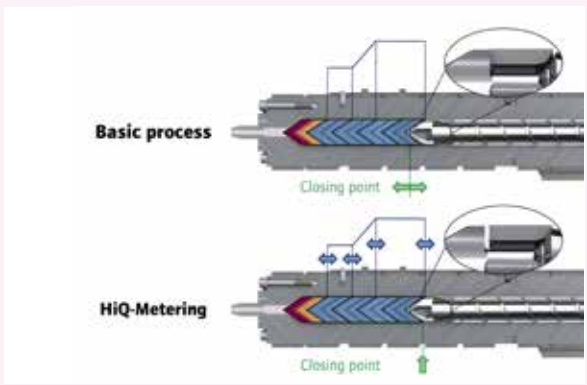


HIQ SOFTWARE (OPTION)
Compensates environmental factors









» **HiQ Melt**
monitoring of material quality

HiQ Melt is a method of monitoring material quality. Its key parameter is the plasticizing energy. It is measured by the screw torque in relation to the plasticizing stroke, shown as a numerical value and monitored within a set tolerance margin. Deviations in material quality an be detected easily and recorded.

» **HiQ Flow**
material viscosity quality-related injection control

HiQ Flow uses the melt compressibility and the pressure data from the injection curve to calculate a parameter proportional to the component weight, the so-called SMUV injection volume (**SM**art **U**ncompressed **V**alue). The pressure and stroke data are recorded and the SMUV volume is calculated every 2 milliseconds along the injection stroke. The calculated SMUV volume is used to control the switchover point and/or the holding pressure phase. External material data is not necessary, since all necessary material parameters are determined during a production cycle. Viscosity fluctuations due to, e. g. the use of regrind or batch fluctuations can thus be compensated for and enable robust production and component quality

» **HiQ Cushion**
melt cushion control

This melt cushion control system is able to recognise trends in the change of the cushion length due to viscosity fluctuations or wear in the checkring assembly and to compensate it within certain limits. For the purpose, the length of the melt cushion is measured at the end of the injection process, and if required, the plasticizing stroke is adjusted within the next cycle.

» **HiQ Metering**
Active closing of the check valve

Between metering and the decompression stoke, the checkring is depressurized and brought into the “closed” position by targeted movements of the screw. So the check valve is already closed before the injection phase starts. Even the smallest metering end point deviations are rectified by shifting the injection profile and the changeover point. In this way, exactly the required amount of material is injected with every shot, which ensures the highest possible consistency in part weights.

EXPERT SYSTEMS (OPTION)
Intelligent clamping unit

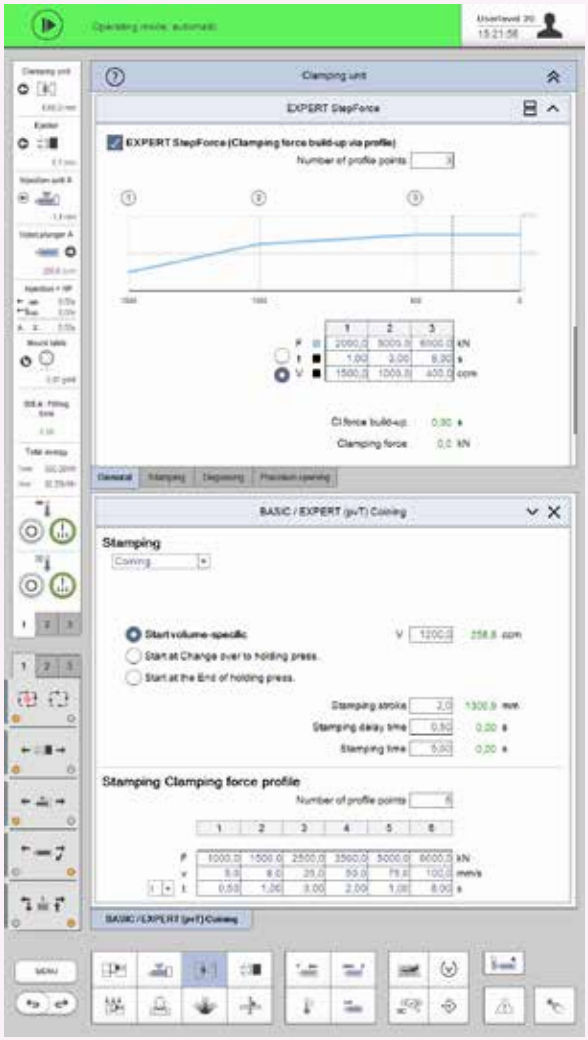
- **Expert-Coining** (for EcoPower)
  High-precision coining and mold opening with the servo electric clamping unit

- **Expert-Coining** (for MacroPower)
  High-precision coining and mold opening including parallelism control and parallel operation of all four tie-bar pressure pads. The coining process is carried out volume-controlled (depending on screw position). Thanks to high-precison mold opening, structured foam injection molding is also possible.

- **Expert-pvT-Coining** (for MicroPower, EcoPower)
  Highly dynamic coining process based on the correlation between the specific volume and temperature of the plastic melt in the mold.

- **Expert-StepForce** (for EcoPower, MicroPower, MacroPower, SmartPower)
  Step-by-step clamp force build-up depending on the injection stroke. This facilitates venting of the cavities via the mold parting line as well as an easier mold filling and promotes savings in the machines drive energy.

- **Expert-Venting**
  Mold opening for mold venting, for example in combination with thermoset processing



WITTMANN 4.0
Easy, future-proof communication

With its communication standard Wittmann 4.0, the WITTMANN Group offers a uniform, data transfer platform between injection molding machines and auxiliary equipment from WITTMANN. For an appliance exchange, the correct operating software is loaded automatically via an update function according to the "Plug & Produce" principle.

Connection of auxiliaries via Wittmann 4.0

» **WITTMANN Flowcon plus water flow regulator, Gravimax blenders and ATON dryers**
- Units are directly addressed and controlled via the machine's control system
- Joint saving of data in the production cell, the machine and in the network via MES

» **WITTMANN robots with R9 control system**
- Operation of robots via machine's monitor screen
- High-speed communication between machine and robot to synchronize movements
- Important machine movements can be set via the R9 robot control system

» **WITTMANN Tempro plus D temperature controllers**
- Setting and control of temperatures via the machine's control system possible
- All functions can be operated either on the temperature control unit or via the machine's control system

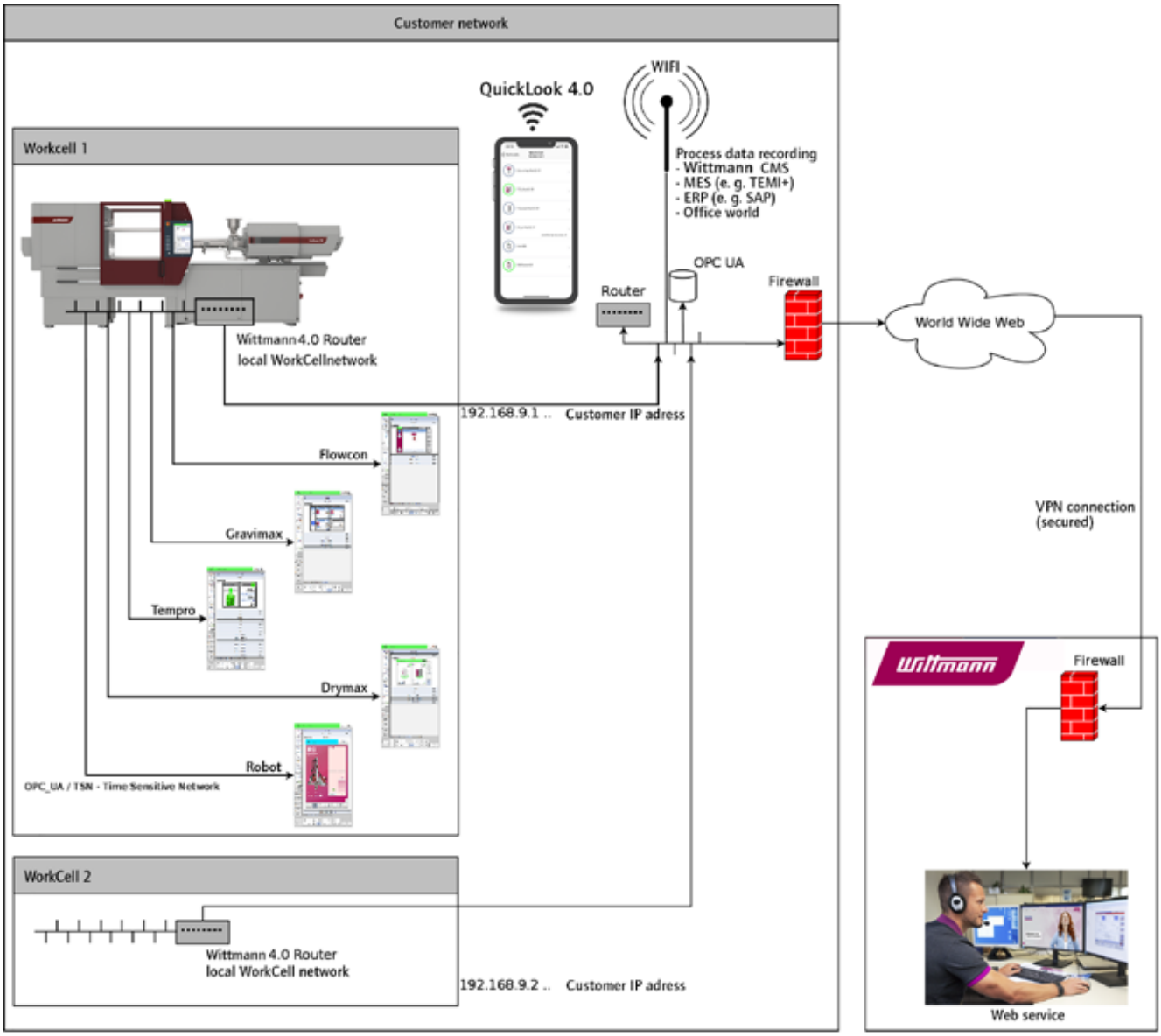
Integration in MES system

The integration of machines and complete production cells in an MES system is a prerequisite for an efficient and transparent production facility according to the Industry 4.0 concept.
Depending on customers' requirements, small and medium-sized companies as well as global players are offered a compact MES solution based on TEMI+. Due to the Windows® 10 IoT operating system, it is also possible to have selected status information from all connected machines on the production floor shown under SmartMonitoring on the display screen of every machine.

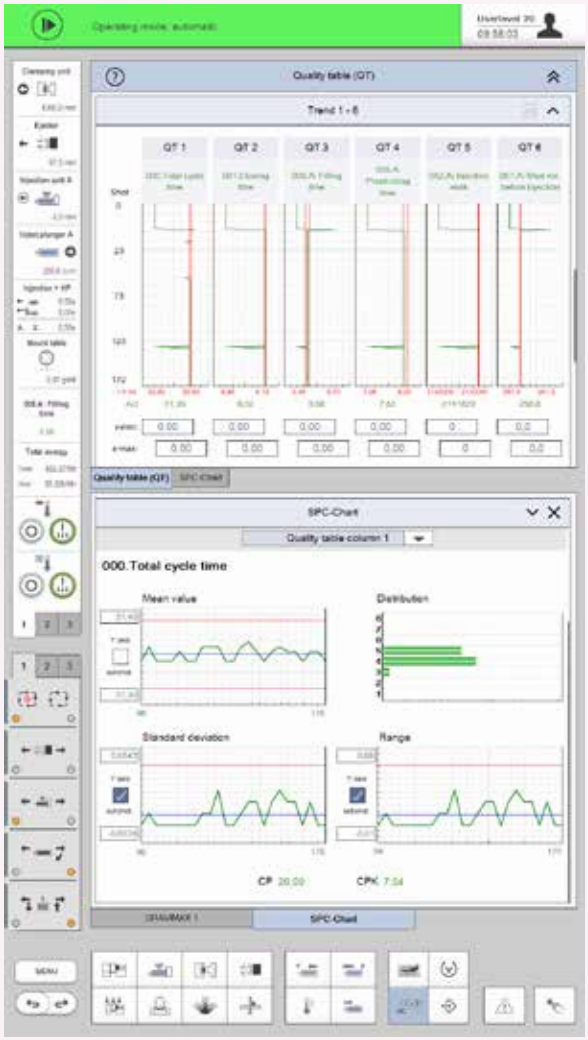
» **QuickLook 4.0**
Production status check via smartphone – simple and comfortable:
- Production data and statuses of all essential appliances in a production cell
- Complete overview of the most important production parameters
- Access to production data, error signals and user-defined data
- The production cell overview offers a clear, simple overview of the production cell's general condition and that of its individual Wittmann 4.0 appliances.

External security

The WITTMANN communication architecture ensures maximum possible data security.
Inside a production cell, the machine communicates with the auxiliary units via an internal network. On the outside, the production cell communicates with its own corporate network via one fixed IP address, for example for production and quality data collection. Communication between WITTMANN service centers and the relevant corporate networks into the production cells runs via a coding system as well.



QUALITY
Reliability through process documentation



The basis of the WITTMANN BATTENFELD product quality documentation and tracing system is recording of all process data measured by the control system. For this purpose, several different programs are available, which serve as the basis for quality data documentation as part of a quality management system.

» **Data protocol**
It saves the process data on the machine and thus provides the basis for further processing either directly in the machine's control system or from an external PC.

» **Data graph**
It enables simultaneous recording of several process sequences in the form of curves to enable comfortable analyses of cause-and-effect relationships and variances.

» **Data monitoring**
It enables online monitoring of quality limit values and takes them as the basis for calculating statistical key figures such as average value, standard deviation and machine capability (Cm and Cmk).

» **Histogram function**
It handles processing of quality-related process data according to frequency distribution, which reveals possible causes of fluctuations.

» **Expert-Quality Monitoring**
Control system expansion:
- 4 freely programmable network interfaces
- 16 graphic actual value curves
- 4 envelope curve monitoring systems
- Quality data table for displaying and monitoring of 12 parameters and 10000 events
- SPC-evaluation
- Trend diagrams

WITTMANN BATTENFELD ASSISTANCE
To keep everything running

The new Unilog B8 control system with its communication channels designed for maximum security is ideally suited for World Wide Web communication. It thus provides the prerequisites for efficient support from external specialists. But there is also an extensive assistance package available within the machine itself.

Assistance facilities for the machine include:

» **Online-Service-Network**
The global web service is available all year round for 24 hours on 7 days a week via direct Internet connection to the WITTMANN BATTENFELD service centers.

» **Onboard help system**
A help system with graphic displays is integrated in the machine's control system, to assist with the operation and servicing of the injection molding machine. It is divided into content-, screen page- and alarm-related segments, offering targeted support for trouble-shooting. This help system covers not only mechanical aspects, but also control system and process functions. Moreover, it is linked to QuickSetup to provide support in every production start-up.

» **Remote Control**
The WITTMANN BATTENFELD remote visualization facility enables networking of the injection molding machines within your production plant – without external web connection. This makes quality management and machine setting possible from an office via a PC or wireless via tablet.

» **Web-Training**
The WITTMANN BATTENFELD training service offers supportive web seminar or update training units as required.

» **Webcam**
The image from a live webcam can be shown on the B8 monitor and used for service communication as well as training modules.

CONNECT

WITTMANN BATTENFELD GmbH
Wiener Neustädter Strasse 81
2542 Kottingbrunn | Austria
Tel.: +43 2252 404-0
info@wittmann-group.com

www.wittmann-group.com

Control system | Article number: BPK0000027 (English) | 2022/08 | Subject to change. | Printed in Austria.