

# E.HMI CONNECT

PARTICLE FOAM HMI BY ERLENBACH

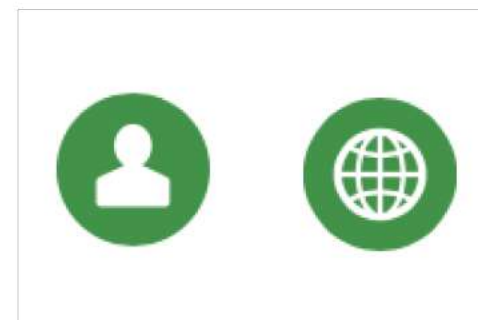


# PARTICLE FOAM PROCESSING

## EQUIPMENT & BRAND CONTEXT

Erlenbach GmbH is an internationally active manufacturer of particle foam processing systems and has gained a worldwide reputation for complex special solutions in this field.

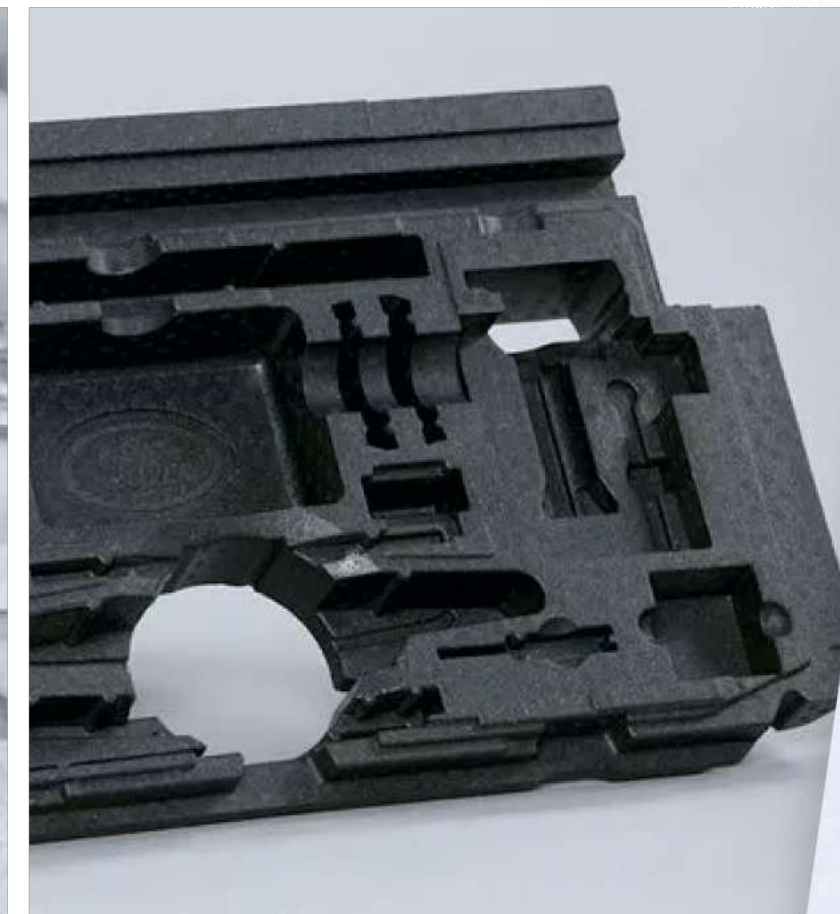
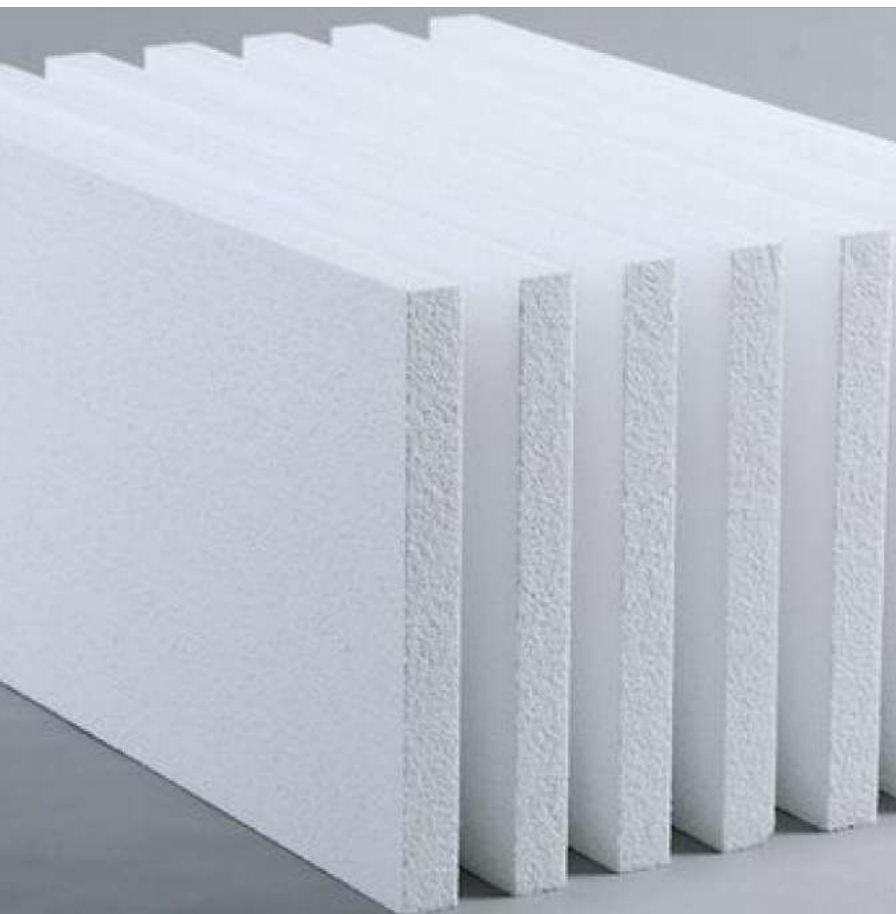
The goal of the project was to develop a modular, scalable HMI standard for the shape molding machines that can be adapted to the clients complete machine portfolio. Based on a user-centric approach all requirements were identified through detailed context analyses. The resulting concept was validated and optimized through prototyping and user testing.



PRODUKTE



Materials & product examples



Shape molding machine



# OPTIMISED USABILITY

BY SIMPLE BUT PROVEN SOLUTIONS

## MULTITOUCH GESTURES

FOR EASY & MODERN OPERATION

## RESPONSIVE DESIGN SYSTEM

FOR MULTIPLE SCENARIOS & DEVICES

## PRODUCTION OPTIMISATION

SUPPORTED BY ARTIFICIAL INTELLIGENCE

## PERFECT ACCESSIBILITY

BY OPTIMISED DESIGN & HIGH CONTRASTS

The user interface is characterized by a contemporary dark look. Based on a flexible column and grid system, a comprehensive and ergonomic design system was developed. It can be operated intuitively through various swipe and multi-touch gestures.

By reducing the complexity a fast start for new operators is guaranteed. This reduces teaching time, operation errors, downtime and leads to an increased effectiveness and efficiency. And last but not least more joy of use.



## ERGONOMIC & INTUITIVE

FOR SAFE & ACCURATE OPERATION

## MULTIPLE USER ROLES

WITH DEPENDENT SCOPE OF FUNCTIONS

## QUICK OVERVIEW OF MOST IMPORTANT

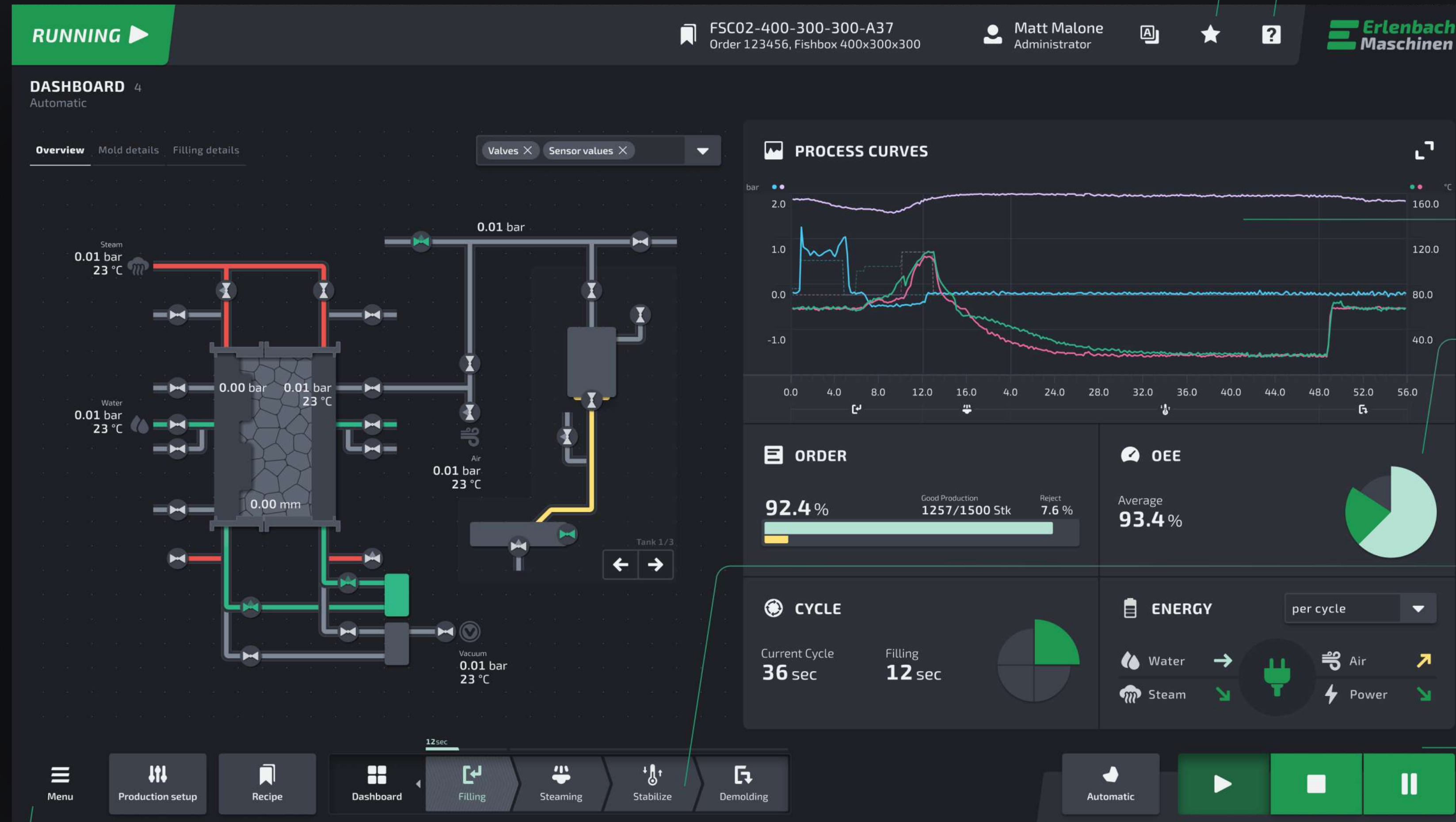
PRODUCTION DATA & FUNCTIONALITIES

## OPTIMISED FOR VARIOUS

MACHINES & PRODUCTION SCENARIOS

# EXCELLENT USER EXPERIENCE

PROVIDED BY TAILOR MADE FEATURE SETS



## CUSTOMIZABLE BY USER

Access to favorite parameters, settings or pages via an individual sidebar

## FULLY INTEGRATED AND ELABORATE CONTEXT HELP

Available at any time / overlaid as a sidebar / with content that matches the current displayed situation

## QUICK- & EASY-TO-READ INFOGRAPHICS

Integrated perfectly into the interface / with an easy-to-understand shape and color system

## DASHBOARDS & WIDGETS FOR ENERGY, EFFICIENCY & OPTIMIZATION

Thematically bundled display of the most important information and settings / elaborated responsively for various display situations

## PROCESS BASED FOOTER NAVIGATION

Simplified abstract visual representation of the process flow / highlight on current cycle step and remaining time for best control

## MACHINE & OPERATING MODE CONTROLS

Always accessible in the application footer for full production control at all times

## GLOBAL MAIN MENU

Available at any time / offering the user access to all available navigation options

# SUSTAINABILITY BY DESIGN

SMART WIDGETS & EASY-TO-READ DATA

Various infographics help to display the complex production and machine data. A clear and simple graphic design integrates the visualization seamlessly into the design system. Strong contrasts support a low-barrier design which also takes red-green blindness into consideration. Each state is obviously displayed with the help of icon-text combinations and specific area extensions.



## SIMPLE VISUALIZED STATUS INFORMATION

With an easy-to-understand icon language and an intuitive color system

**PARAMETER**

Steaming: 12 bar

Stabilization time: 2.5 sec

**CYCLE**

Current Cycle: 36 sec

Filling: 12 sec

**ORDER**

93.4% Good Product 1257/1

7.6%

**OEE**

84.2%

**ENERGY** (by cycle)

Water → Air →

Steam → Power →

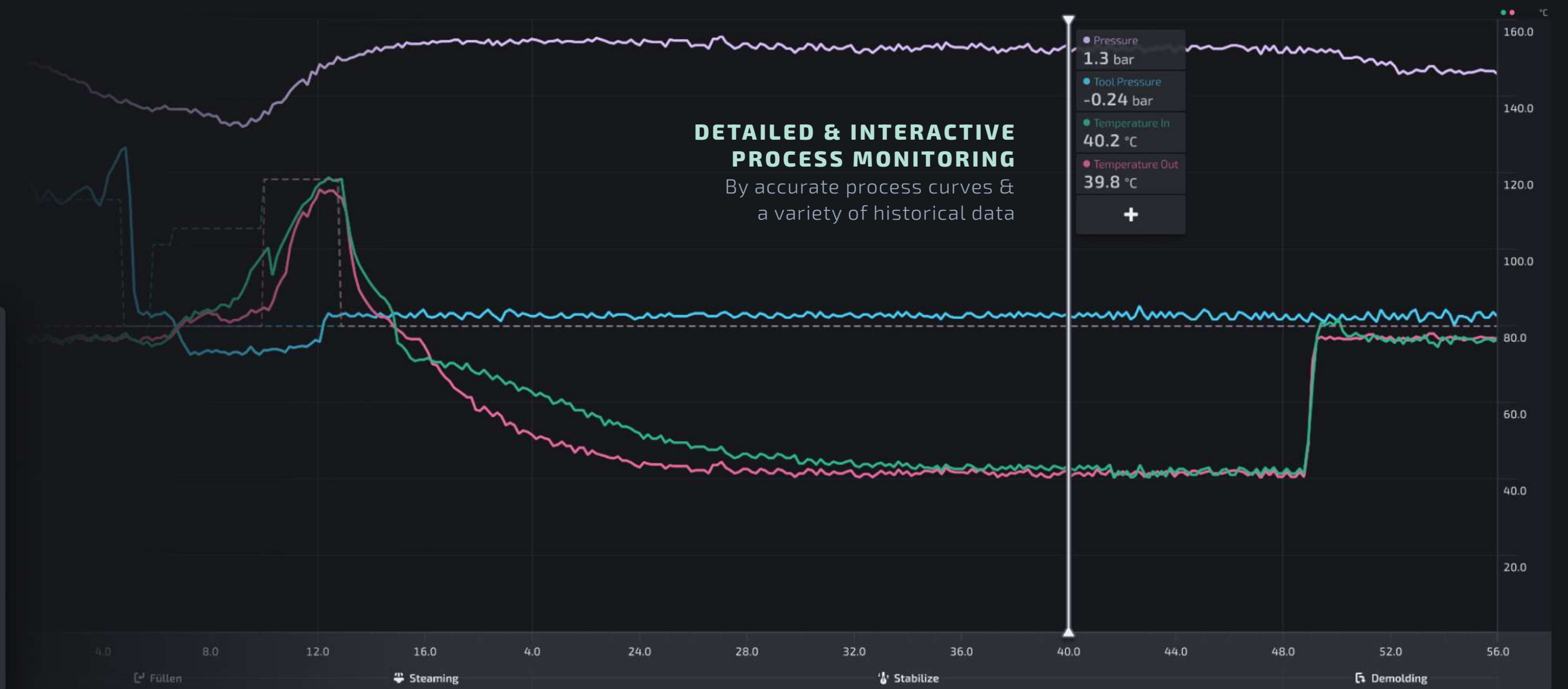
low consumption

12sec

Steaming Filling Steaming Stabilize Demolding

## FLEXIBLE & RESPONSIVE WIDGET SYSTEM

Designed for different display situations, production scenarios & user levels



## DETAILED & INTERACTIVE PROCESS MONITORING

By accurate process curves & a variety of historical data

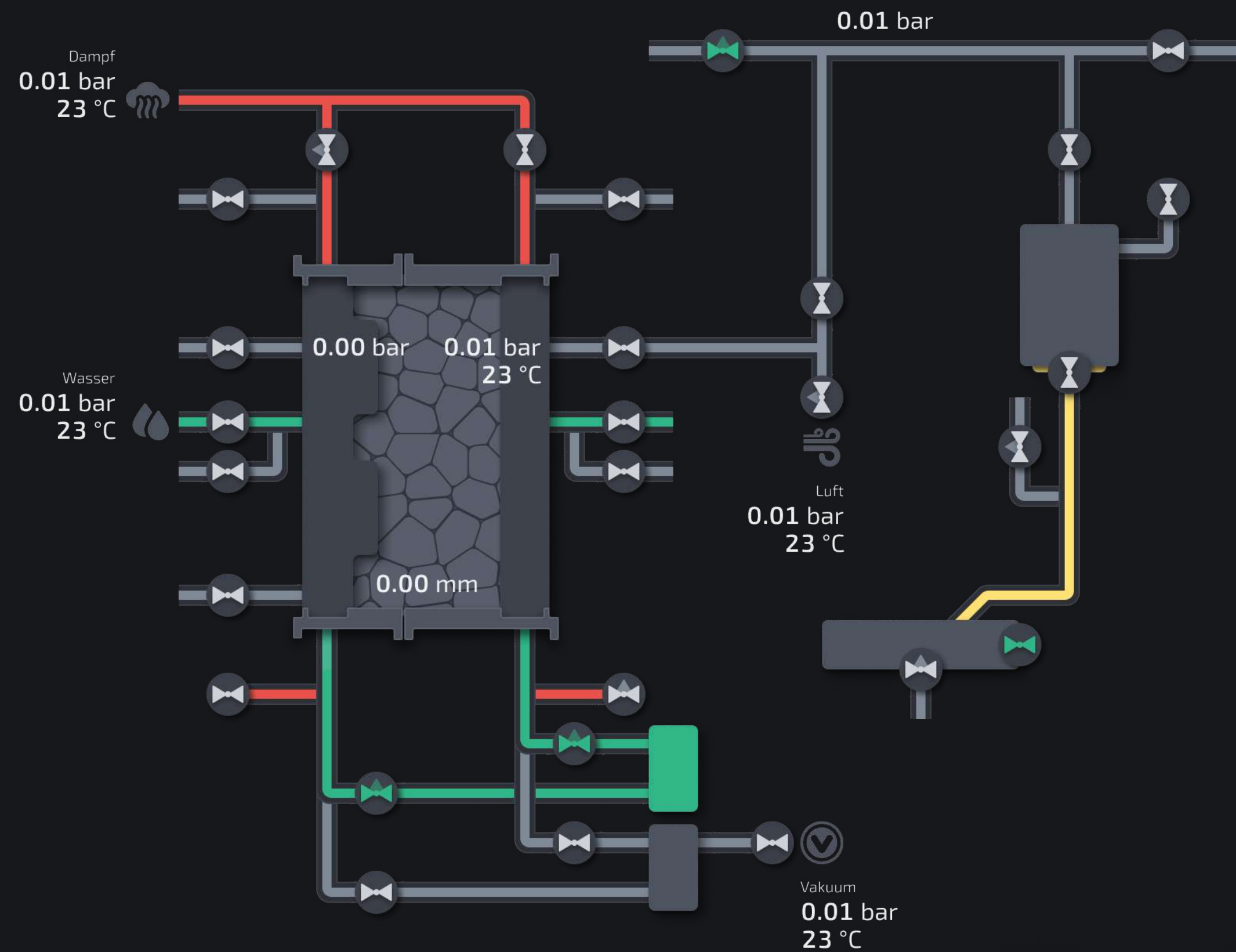
## ALWAYS INFORMED ABOUT CURRENT CYCLE STEP

Through process based structure, visual highlighting & an animated progress bar

# INTERACTIVE ILLUSTRATIONS

AUTO-GENERATED BY A MODULAR COMPONENT SYSTEM

Experienced users work with an interactive machine illustration (e.g. valve switching) and real-time parameter displays that help the user to monitor the production process and adjust the plant. The colors of the pipes are matching the physical machine, for an easy and fast orientation during mechanical work. Switching between several more or less detailed views enables an ideal user experience in each use case.



**INTERACTIVE  
PLANT PICTURE**  
VISUALIZED SIMPLE &  
QUICKLY UNDERSTANDABLE

**LOW COMPLEXITY**  
BY SWITCHING INFORMATION  
ON & OFF

**AUTO-GENERATED**  
DEPENDING ON  
MACHINE CONFIGURATION

**MODULAR SYSTEM**  
BASED ON A RESPONSIVE &  
FLEXIBLE GRID

**EXTENDABLE**  
TO VARIOUS OTHER  
MACHINES



# MAXIMUM CUSTOMIZABILITY

NEED & PROCESS BASED DISPLAYS AND FUNCTIONS

**Erlenbach Maschinen**

★ ?

**Favorites** ✕

- Removal: 2.56 mm
- Rot. Speed: 3.50 %
- Torque: 5.30 %
- H1 Rot. Speed: 7.99 %
- H2 Rot. Speed: 7.99 %
- H3 Rot. Speed: 3.43 %
- H1 Torque: 2.11 %
- H2 Torque: 2.32 %

TIME

0.5 s

3.0 s

5.0 s

5.0 s

5.0 s

Settings

▶ ■ ||

**RUNNING** ▶

FSC02-400-300-300-A37  
Order 123456, Fishbox 400x300x300

Matt Malone  
Administrator

**Erlenbach Maschinen**

**MANUAL FUNCTION** 4  
Manual

Manual functions >

Movement >

Manual functions >

**MOVEMENT**

Mold movement

Removal

Ejector plate

Slider

8.0 mm

800.00 mm  
0.00 °/s  
0.02 Nm

1.0 mm

800.00 mm  
0.00 °/s  
0.02 Nm

1.0 mm

800.00 mm  
0.00 °/s  
0.02 Nm

12 sec

Menu Production setup Recipe Dashboard Filling Steaming Stabilize Demolding Manual ▶ ■ ||

## EXPERT OPERATION

Extensive options for manual machine setups / Supported by clear and simple machine part visualizations

## INTUITIVE DRAG&DROP EDITOR

For easy customisation of process flows / based on preconfigured process steps

**QUICK ADJUSTMENT RECIPE**

**Define process**  
Drag and drop the options shown here to the desired location in the flow shown below.

**Adjust order**  
You can also change the order of the individual process steps using drag and drop.

**Update process**  
Via the "Apply" button you can apply the process for the current production.

**Optional settings**  
Saving changes back to the recipe

Filling Steaming Stabilize Demolding Insert Part Adjust mold

position the process steps via drag and drop to the desired position

Cancel Apply

## FREQUENTLY USED PARAMETERS AND FUNCTIONS

Can be saved in the favourites sidebar to be accessed from anywhere at any time / Individually customisable by each user according to their needs

# SAFETY INCREASE & ERROR REDUCTION

BY SMART ASSISTANCE AND MESSAGING SYSTEMS

**CONTEXT HELP - AVAILABLE AT ANY TIME**

**Steaming**

Start of steaming  
Here you can select whether to start steaming from the fixed or moving side.

**Note!**  
In most cases, it makes sense to start steaming on the solid side.

Flushing both sides  
When the function is switched on, both chambers are rinsed simultaneously.

Flush  
Within this time, the incoming steam forces the air and residual water contained in the corresponding mold half (movable or fixed) into the condensate. After this time has elapsed, the corresponding condensate valve closes.

**Note!**  
The "Flush" time should not be set too long ( 0.7 to 1.2 sec, depending on the steam chamber size), otherwise the steam flows freely into the condensate (increased steam consumption)

Cross steaming 1  
During this time, the steam valve on one side of the mold and the condensate valve on the other side are open, so that the steam must flow from one side across the mold part to the

Open in online help

Automatic

## CONTEXT HELP - AVAILABLE AT ANY TIME

Digital documentation on the HMI / With index and search option / Easily accessible via tooltips, a collapsible sidebar or a full screen help page

## MESSAGES SYSTEM

Error messages are supported by clear descriptions, context-sensitive illustrations, crosslinks to settings pages, suggested troubleshooting solutions from the manufacturer / And the ability to add individual operator comments

**READY**  **SOFTWARE UPDATE AVAILABLE** 01.01.2022 11:30  
General system information

**RUNNING** **E23 - EMERGENCY STOP ACTUATED** 01.01.2022 11:30  
... / Safety / 01 General / Emergency stop

**STOPPED** **E23 - EMERGENCY STOP ACTUATED** 19.10.2022 13:27  
... / Safety / 01 General / Emergency stop

FSC02-400-300-300-A37  
Order 123456, Fishbox 400x300x300

Matt Malone  
Administrator

**NOTIFICATION & STATUS SYSTEM**  
Clear status and alarm notifications visible on screen at all times / Mobile monitoring including notifications on smartphone

**E23 - EMERGENCY STOP ACTUATED**  
01 Molding machine / 00 General / Safety / 01 General / Emergency stop

**Location**  
see alarm image or [Safety Overview](#)

**Timestamp**  
19.10.2022, 13:27

**Information**  
The emergency stop button was actuated due to an unknown incident.

**Lösung**  
1. Unlock the emergency stop pushbutton by pulling it out.  
2. Acknowledge emergency stop by pressing the blue button

Acknowledge Alarmlist Alarm Details

Alex Admin, 12.11.2021, 10:38  
The emergency stop pushbutton must be pulled firmly to unlock it completely. It has already happened that the release did not engage and thus it was not possible to continue driving afterwards. So please do it with a bit of vigor.

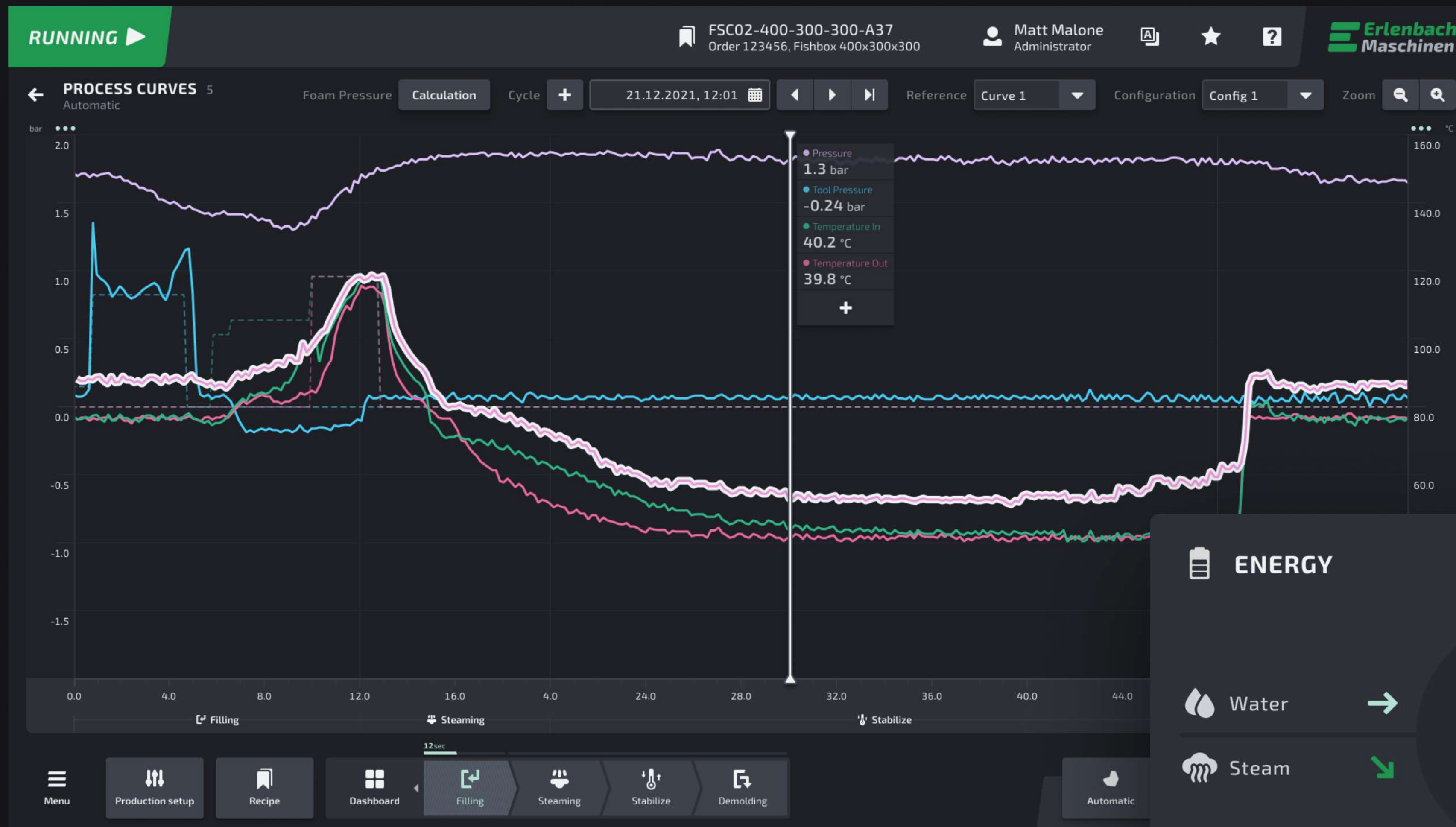
Semi-automatic



# PREPARED FOR THE FUTURE

INTELLIGENT ENERGY MONITORING & MACHINE LEARNING FEATURES

**HIGHEST QUALITY  
WITH SHORT CYCLE TIMES  
AND LONG  
MACHINE LIFETIMES**



**ENERGY OPTIMIZED  
PRODUCTION**  
WITH REAL TIME MONITORING  
OF ALL THE SENSORS

**MACHINE LEARNING &  
AI SUPPORT**  
FOR AUTOMATED OPTIMIZATIONS  
OF PRODUCTION PARAMETERS

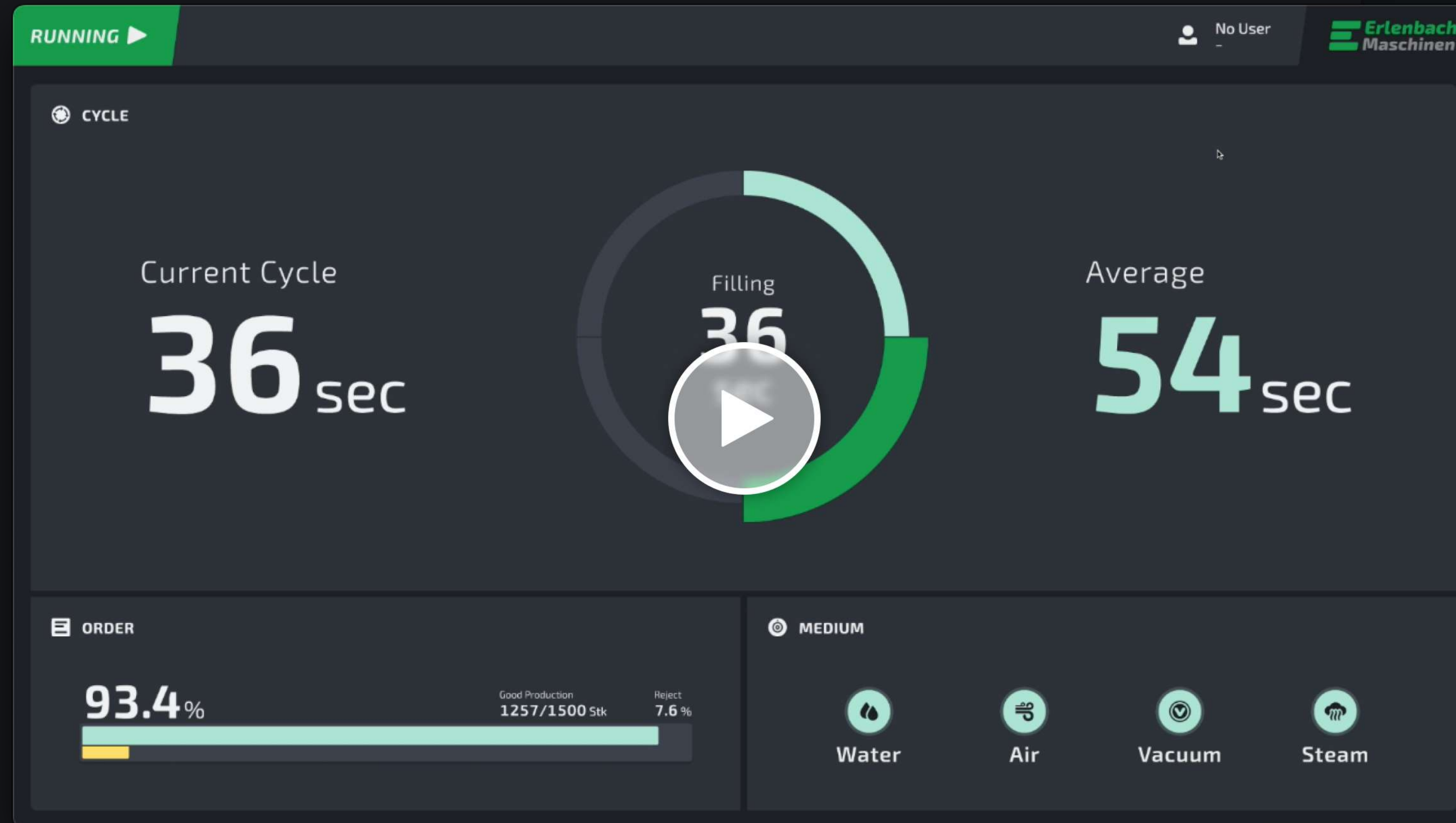
The energy monitoring overlay shows the following components:

- ENERGY** (Battery icon) with a dropdown menu set to 'per cycle'.
- low energy** status indicator (Green plug icon).
- Water** usage (Water drop icon) with a green arrow pointing right.
- Steam** usage (Steam icon) with a green arrow pointing down.
- Air** usage (Air icon) with a yellow arrow pointing up-right.
- Power** usage (Lightning bolt icon) with a green arrow pointing down-right.

# ANIMATION ENHANCED EXPERIENCE

DISPLAYING ALL CHANGES WITH VISUAL FEEDBACK

Page transitions and (micro) animations additionally contribute to a unique user experience and support a general understanding of the software behavior. During the design phase all animations were prototyped and tested. A selection of animation patterns can be experienced in this screencast video.



[VIDEO ON VIMEO](#)

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