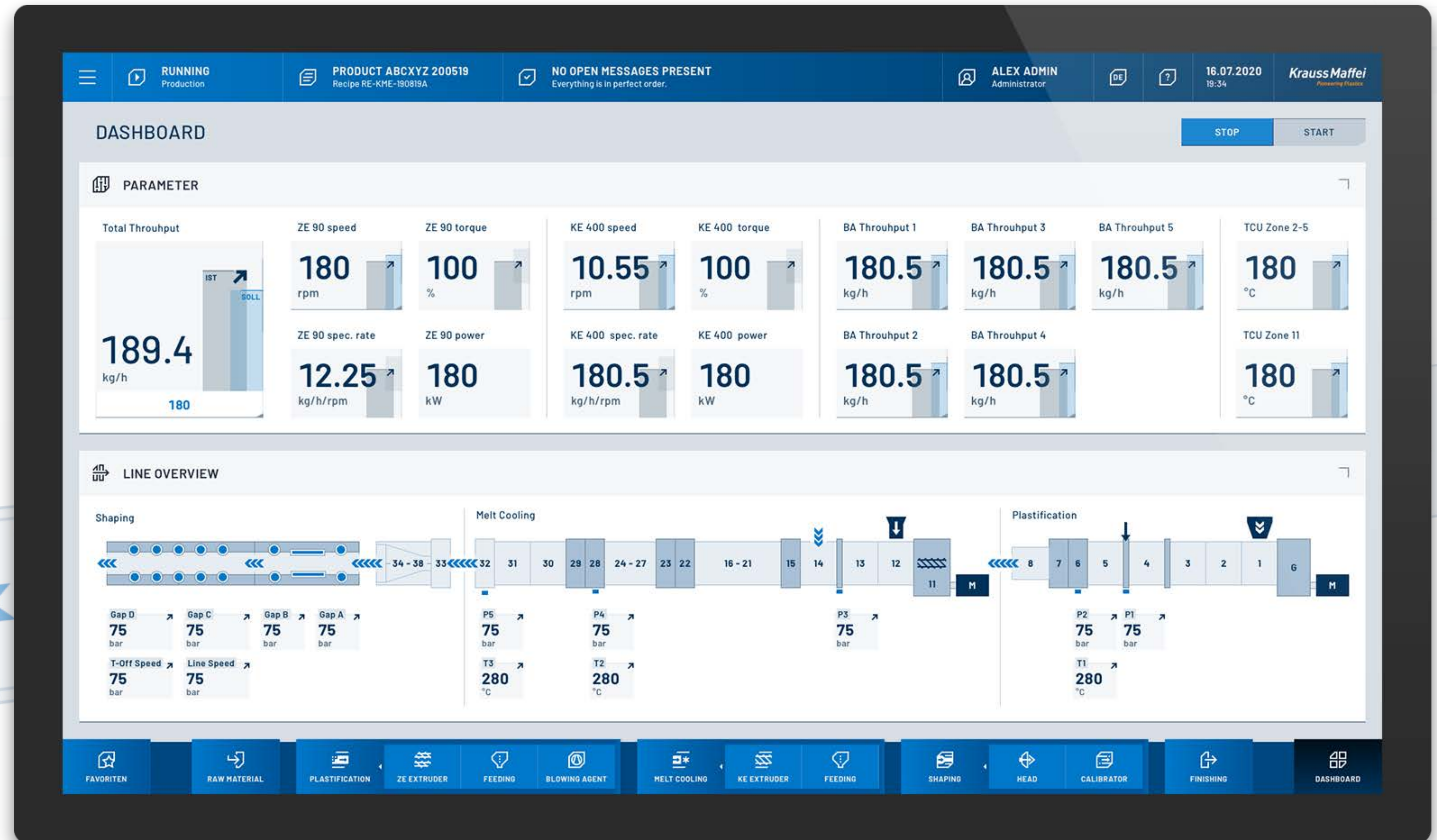


Pioneer Process Control

Next Generation User Interface for Plastic Manufacturing



Starting Point

Context

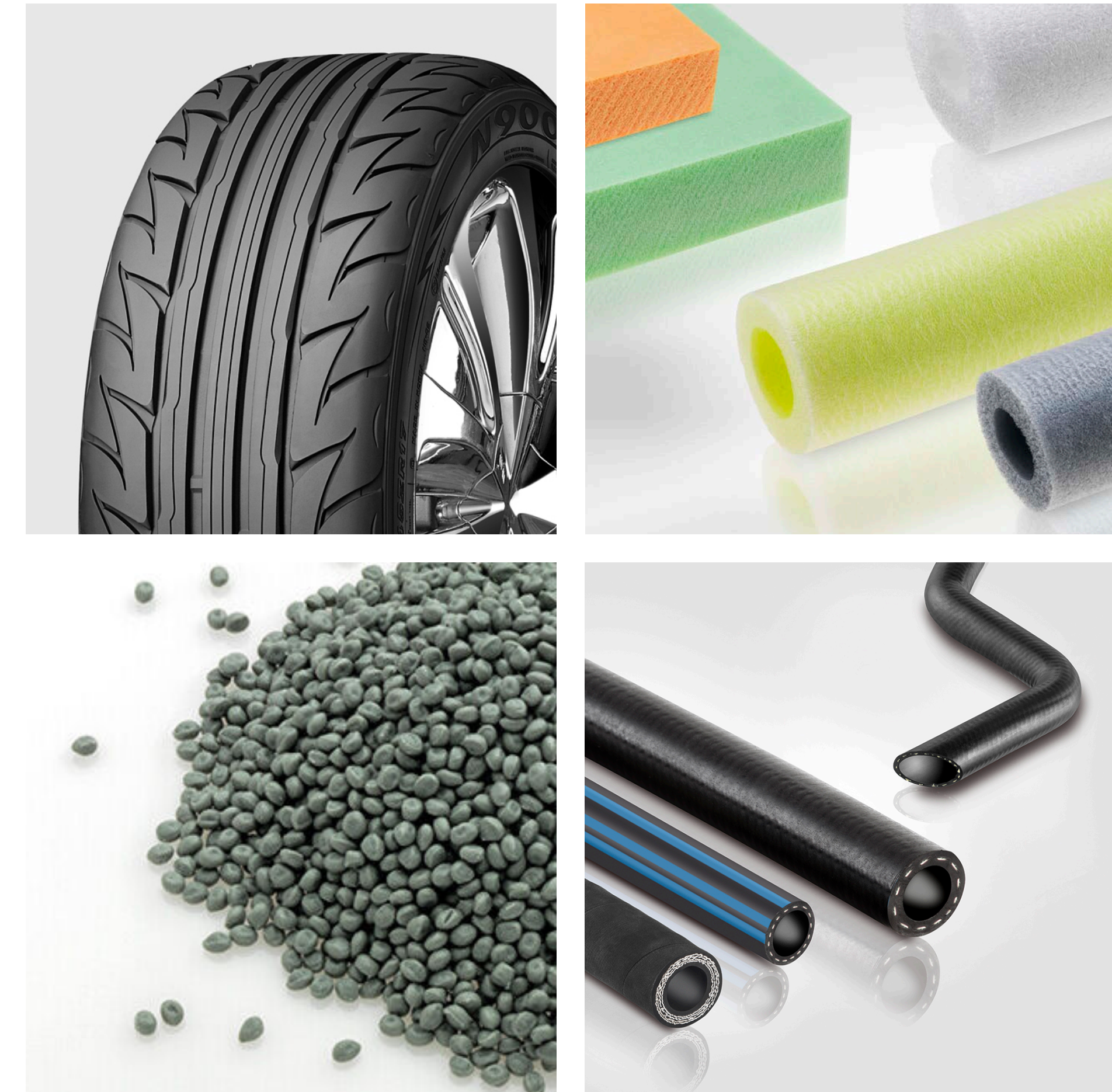
User interface for industrial machines for extrusion and recycling of plastic and rubber products. The interface is used for process monitoring and machine operation of compounding, tires, profile-, sheet-, foam- and pipe extrusion.

Design Challenges

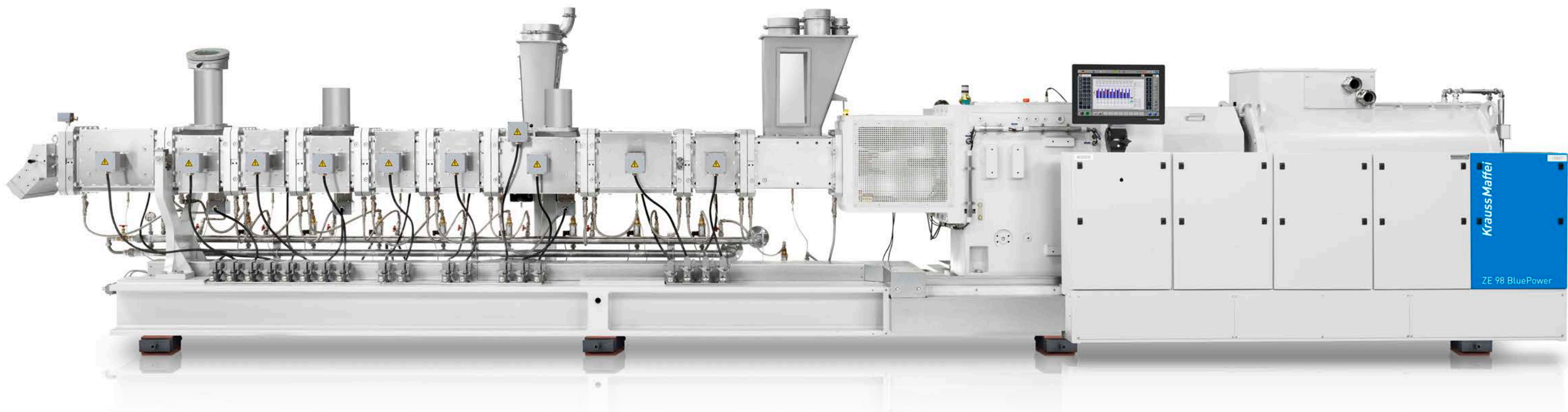
- Simplify and harmonize the complex and heterogeneous manifestations of the current User Interface
- Develop a flexible and modular system, that can be transferred to other business segments in the future
- Merging the individual requirements of the different production types



Impressions of the industrial production context



Product portfolio (rubber, foam, pipes and compound)



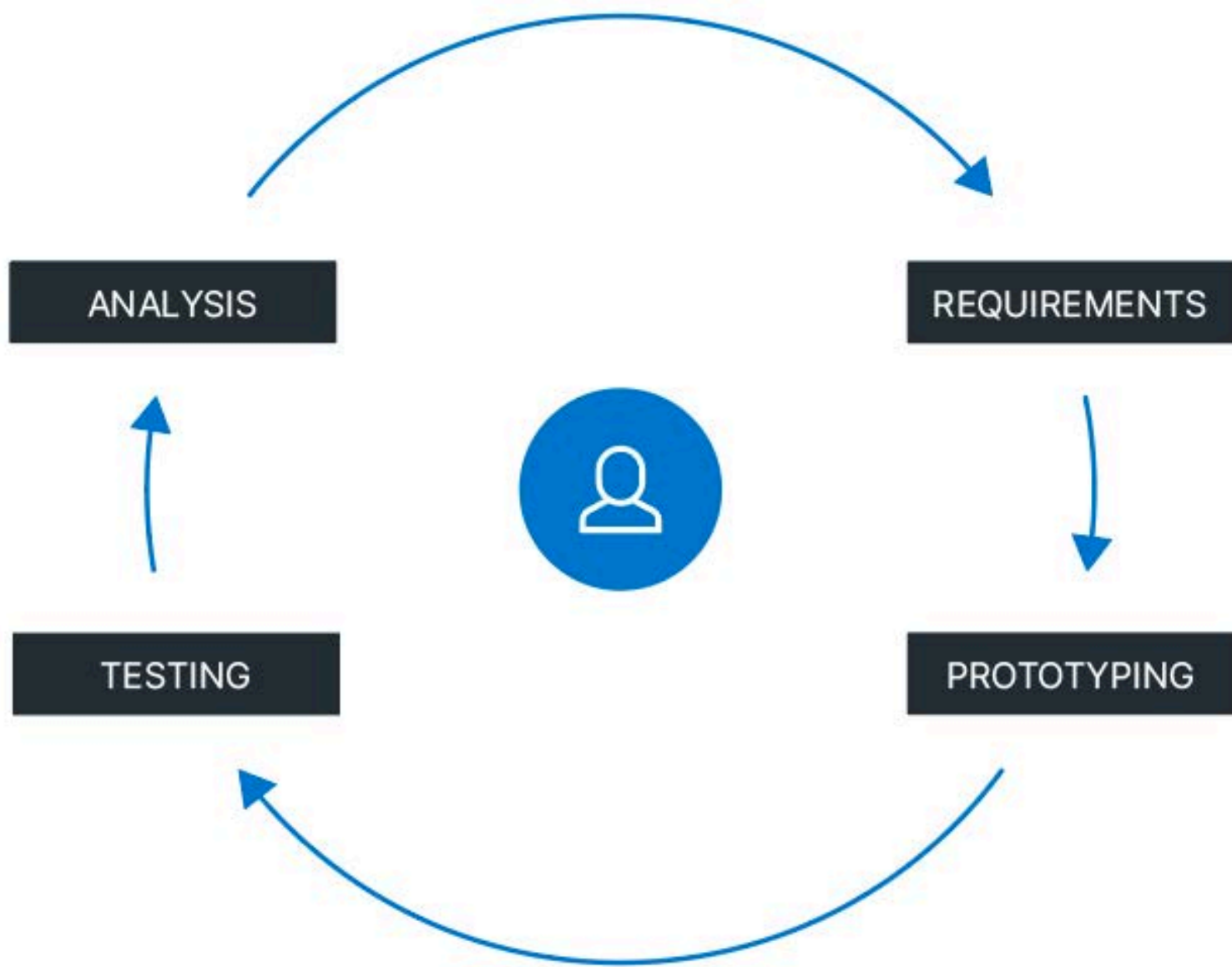
Examples of the manufacturer's machine portfolio:
Machines for nearly all extruded plastic and rubber products

User Centered Design

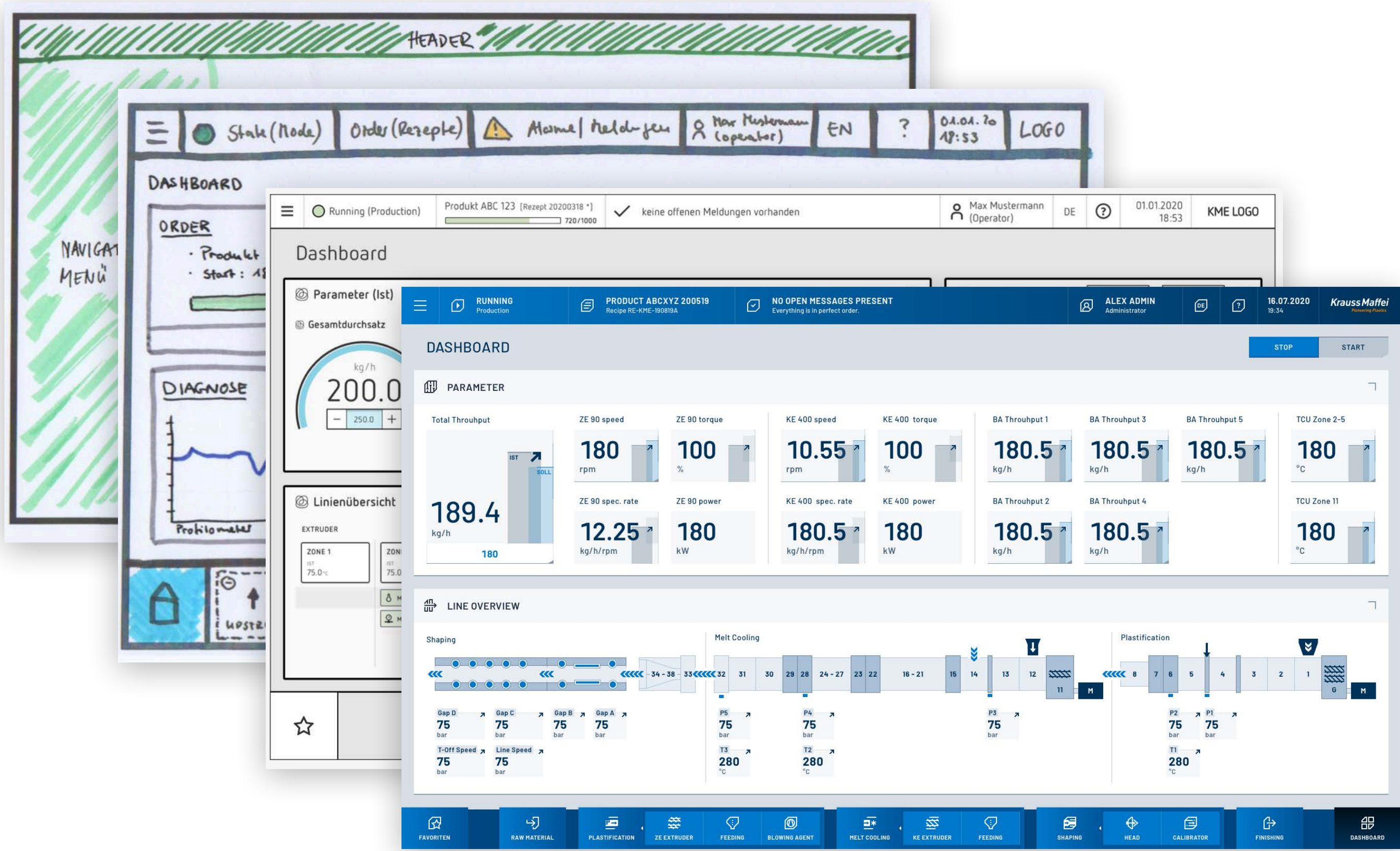
Principles

- Development based on human centered design process
- Comprehensive analysis in close coordination with operators and experts

- Detailed concepts including paper prototyping and wireframing
- Usability tests at the machine manufacturer's site



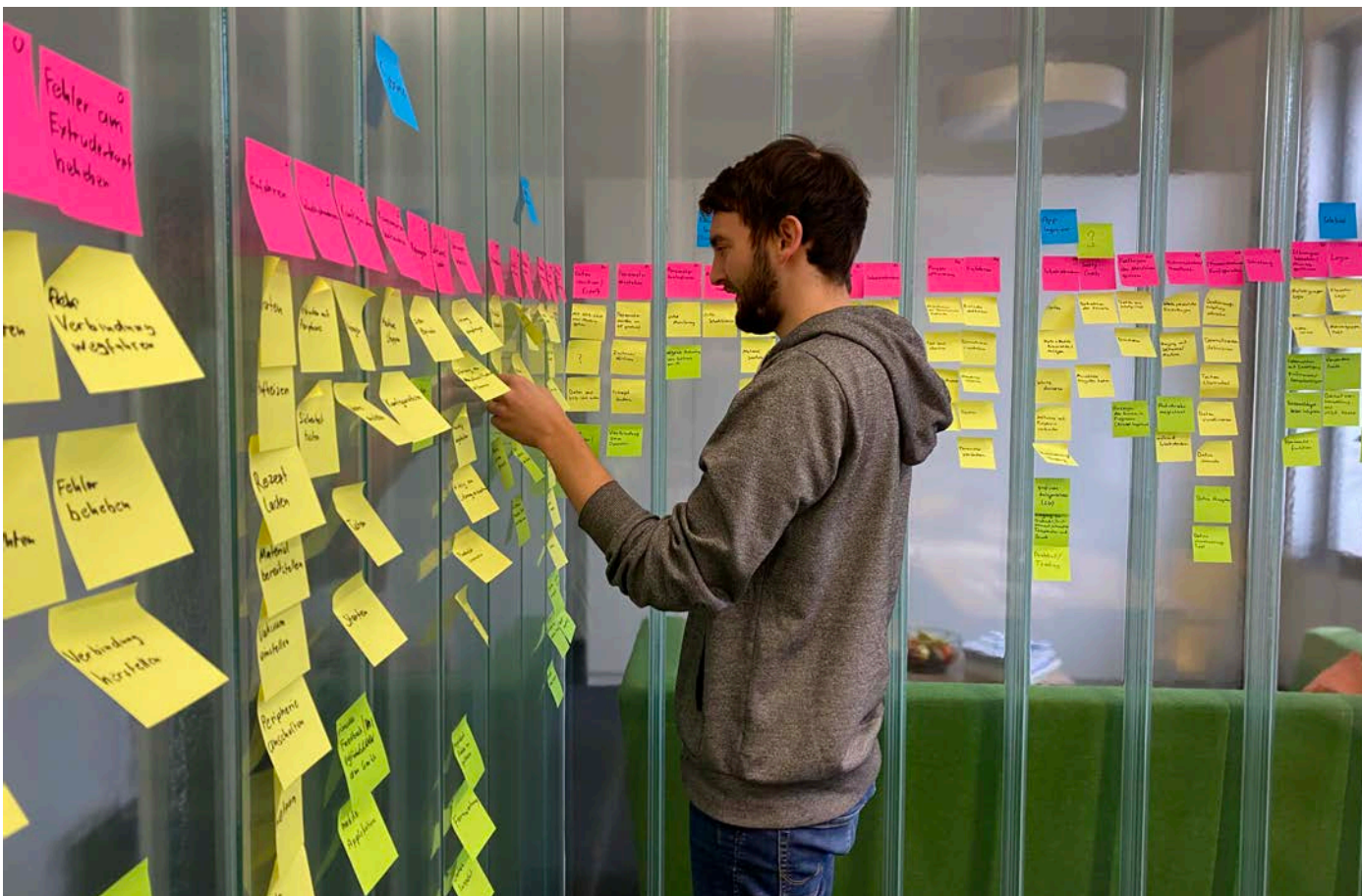
Human centered design process



Design evolution



Requirement workshops / Paper and low fidelity prototyping



On-site analysis and usability testing

User Experience

Principles

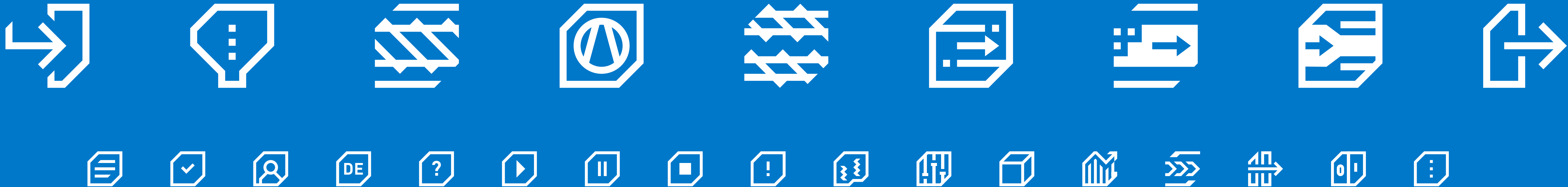
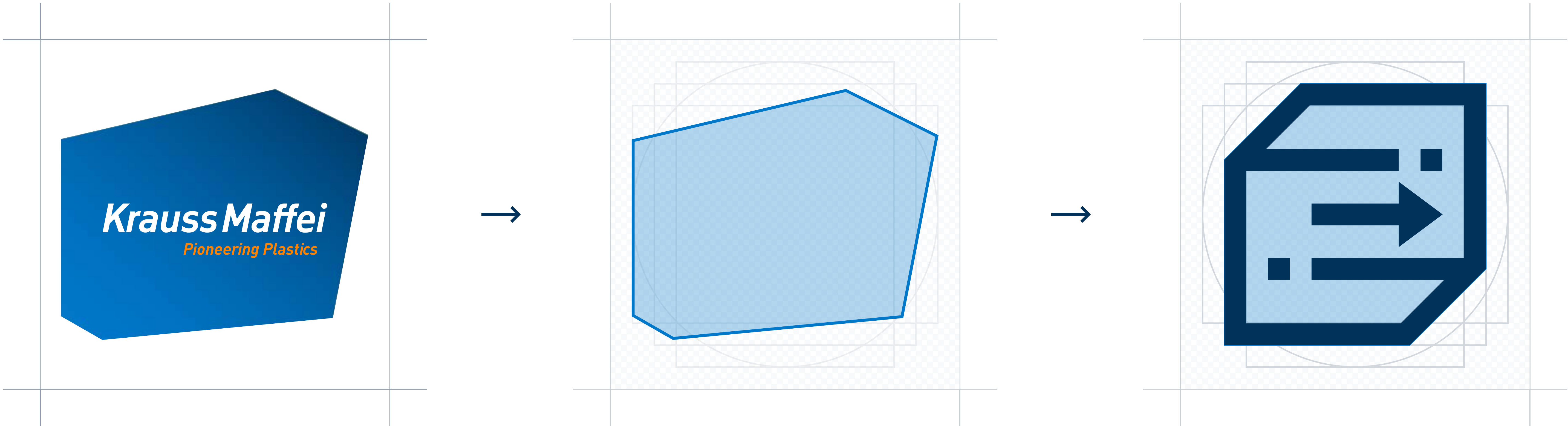
- User role-oriented approach, optimized for individual skill levels
- Consistent and intuitive process-based navigation, that ensures clear overview, quick access and efficient operation
- Comprehensive dive-in principle for complex settings and more detailed information
- Customizable favorites page
- Additional multi-touch gestures for comfortable expert operation
- Clearly structured information using widgets, dialogues and dashboards



Icon Style

Principles

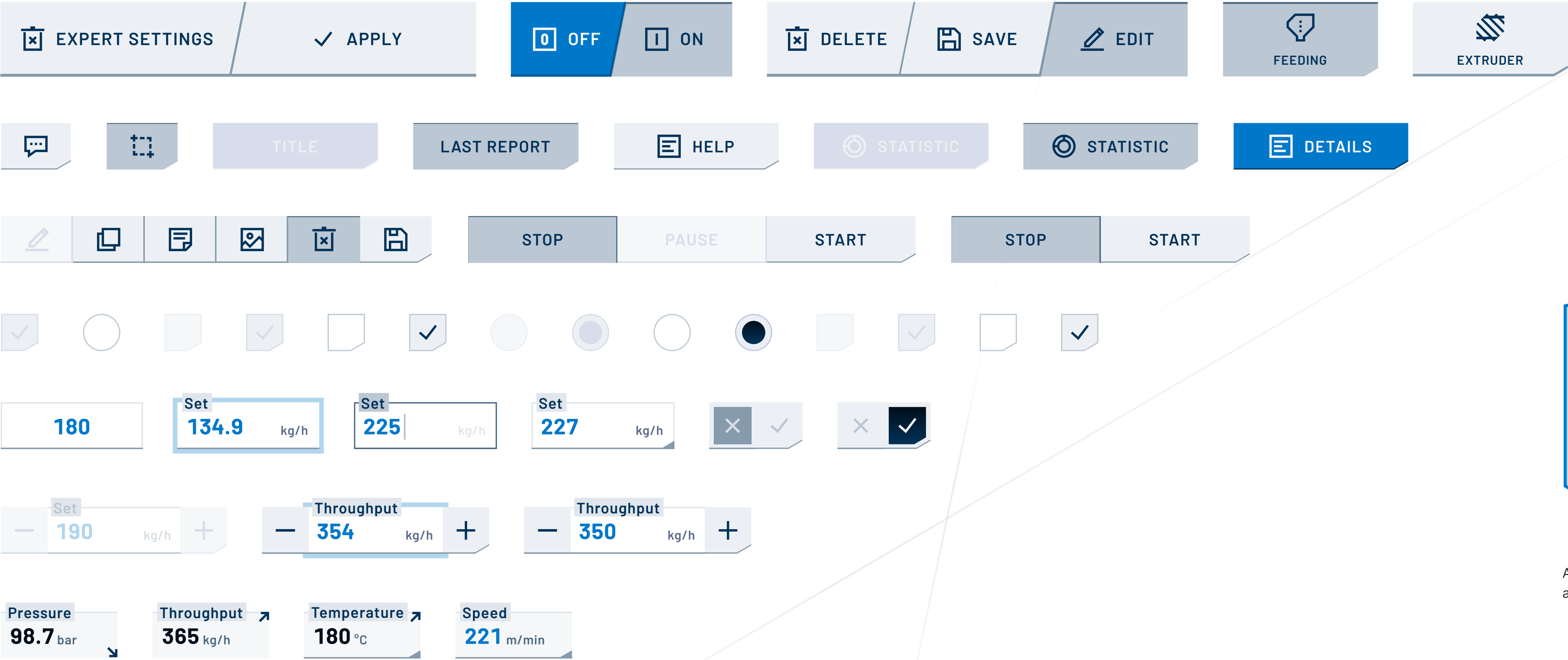
- Important elements and production steps are visually supported by individual icons using a customized icon style
- The specially developed icon style reflects key aspects of the manufacturers corporate design and contributes to a consistent brand image
- The formal language of the brand polygon is used, simplified and abstracted into a symmetrical and easy-to-understand shape
- The icons are seamlessly integrated into the design system and create a coherent overall impression



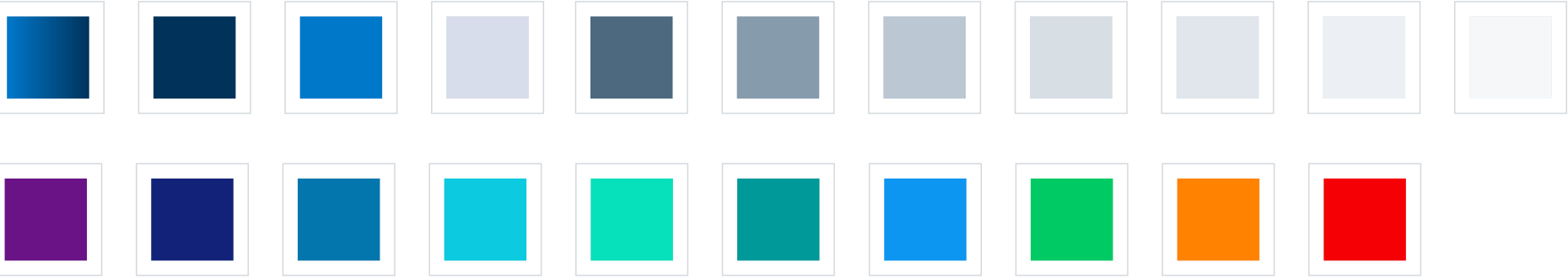
Design System

Principles

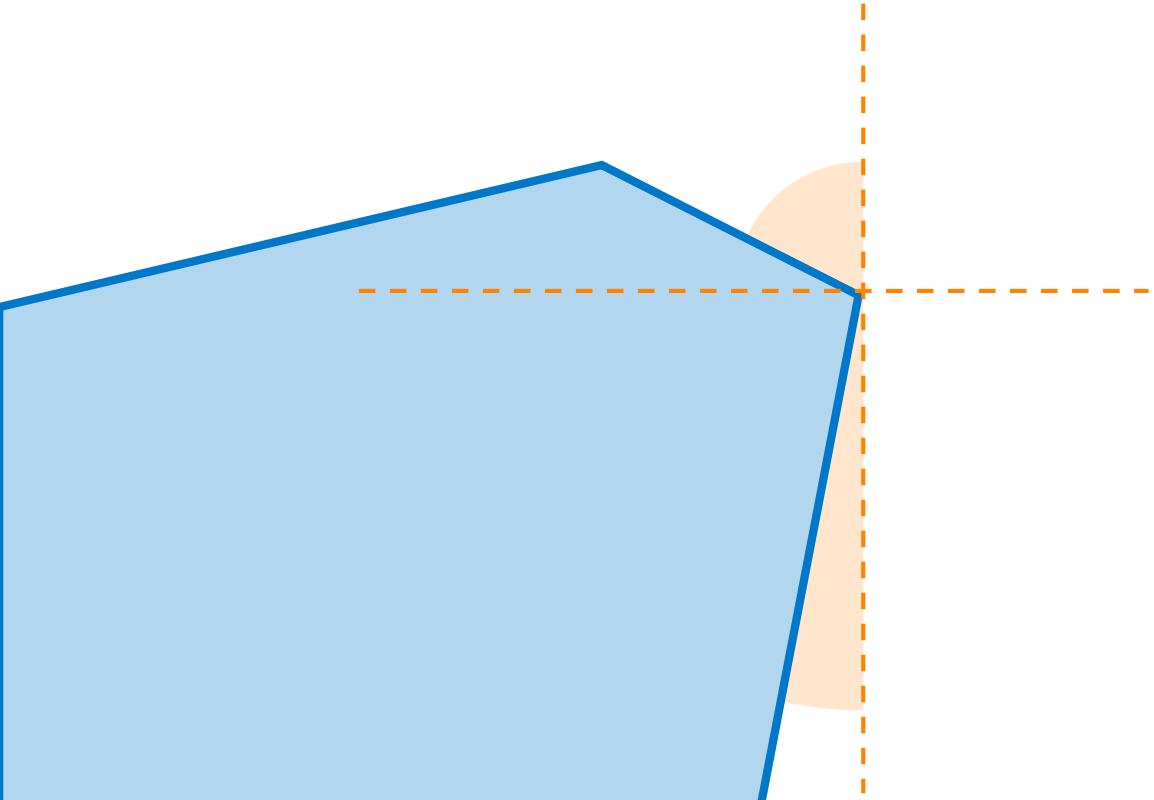
- Graphically reduced, individual and brand-supporting design language
- Quotation of characteristic corporate angels
- Simplified shapes, emphasised edges and strong contrasts
- Self-descriptive control elements
- consistent, brand-oriented color concept and signal colors for alarming
- easy-to-read typography optimized for digital displays



Control System



Color Palette

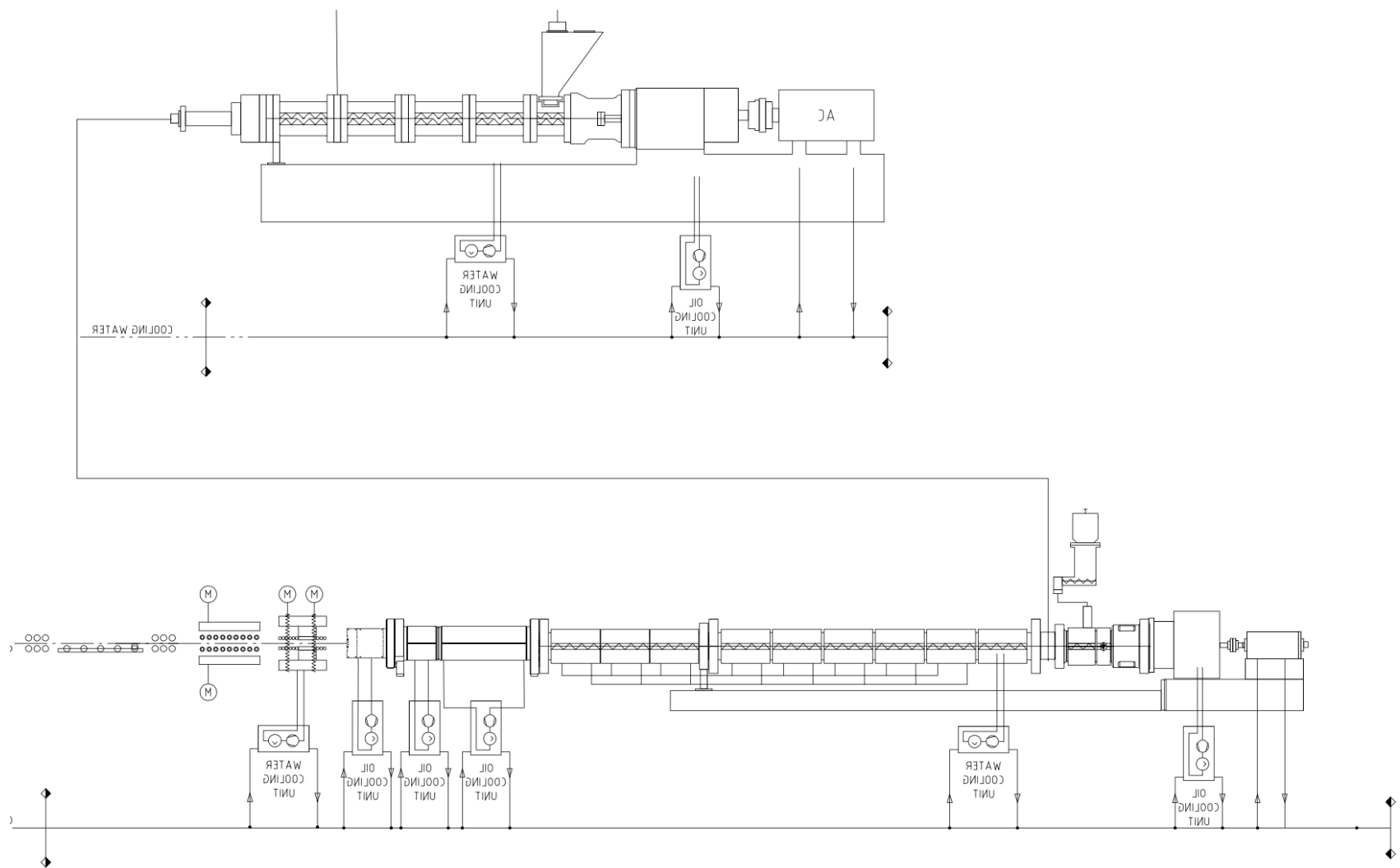


Angles from the manufacturer's corporate logo design and corporate polygon landscape

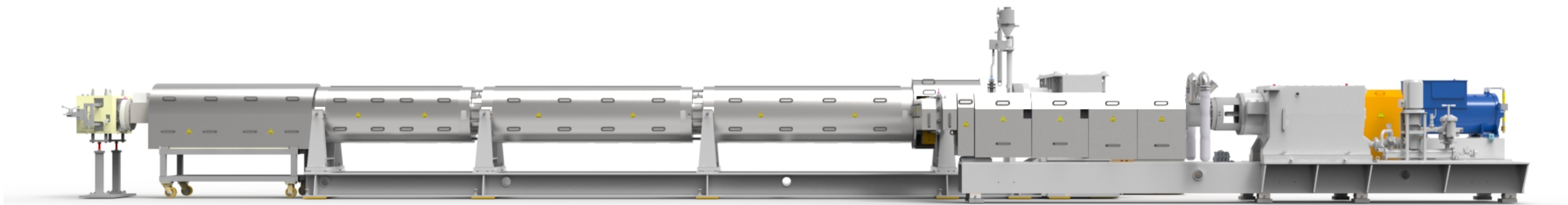
Illustrations

Principles

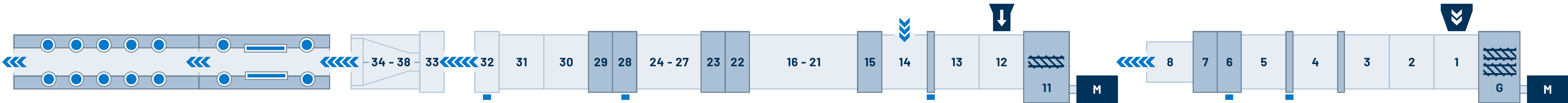
- Abstract, easy to understand illustration of the production process
- Simplification of the process to a linear sequence
- Modular and graphically simple illustration style for quick and easy mapping of production lines, even of complex dimensions
- Extensible library for frequently used, recurring components of production lines, as well as the material flow
- Clean, geometric shapes and strong contrasts



The real machines and their schematics were used as a template to generate a generic, modular illustration system



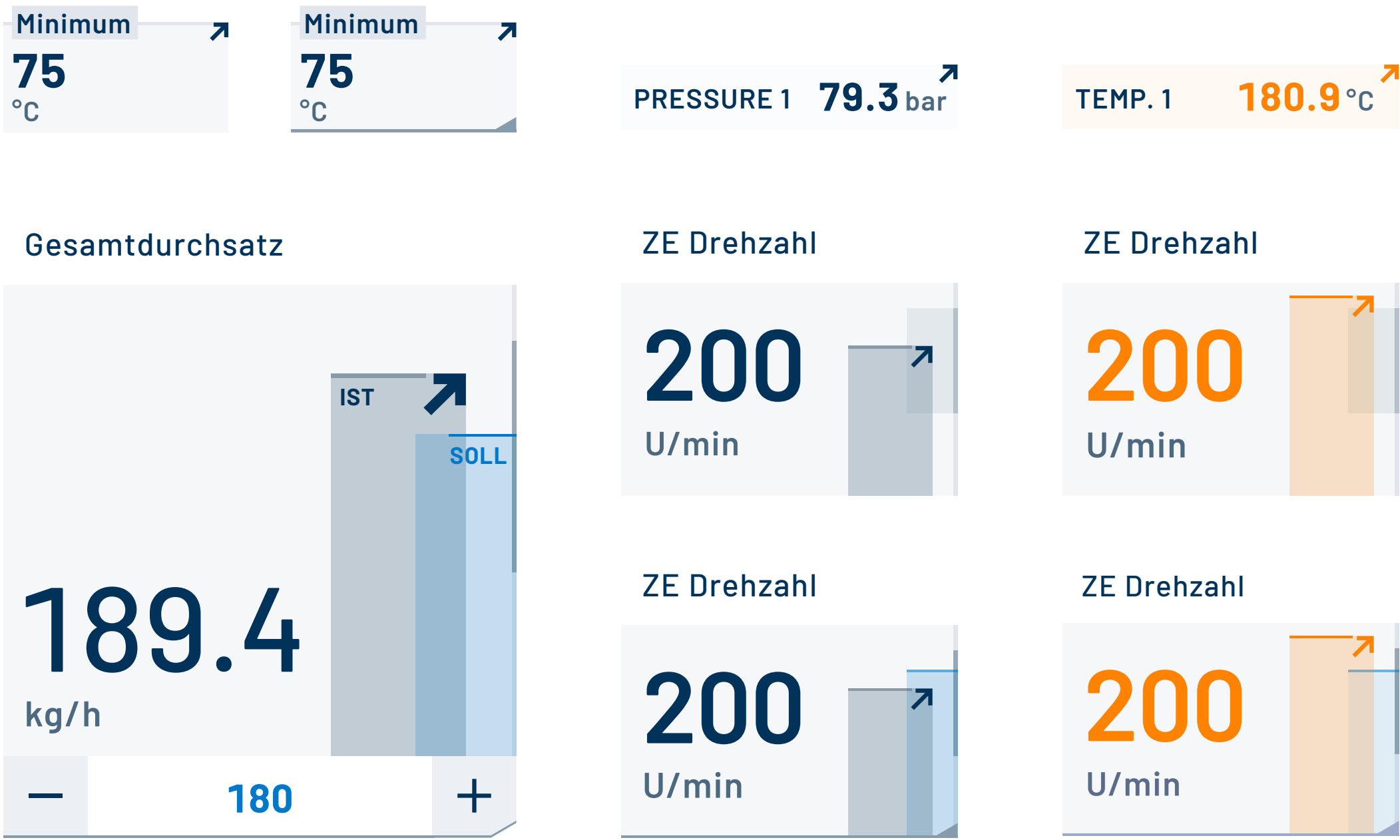
A simple, graphically reduced and modular system is used as the basis for visualizing a wide variety of production lines



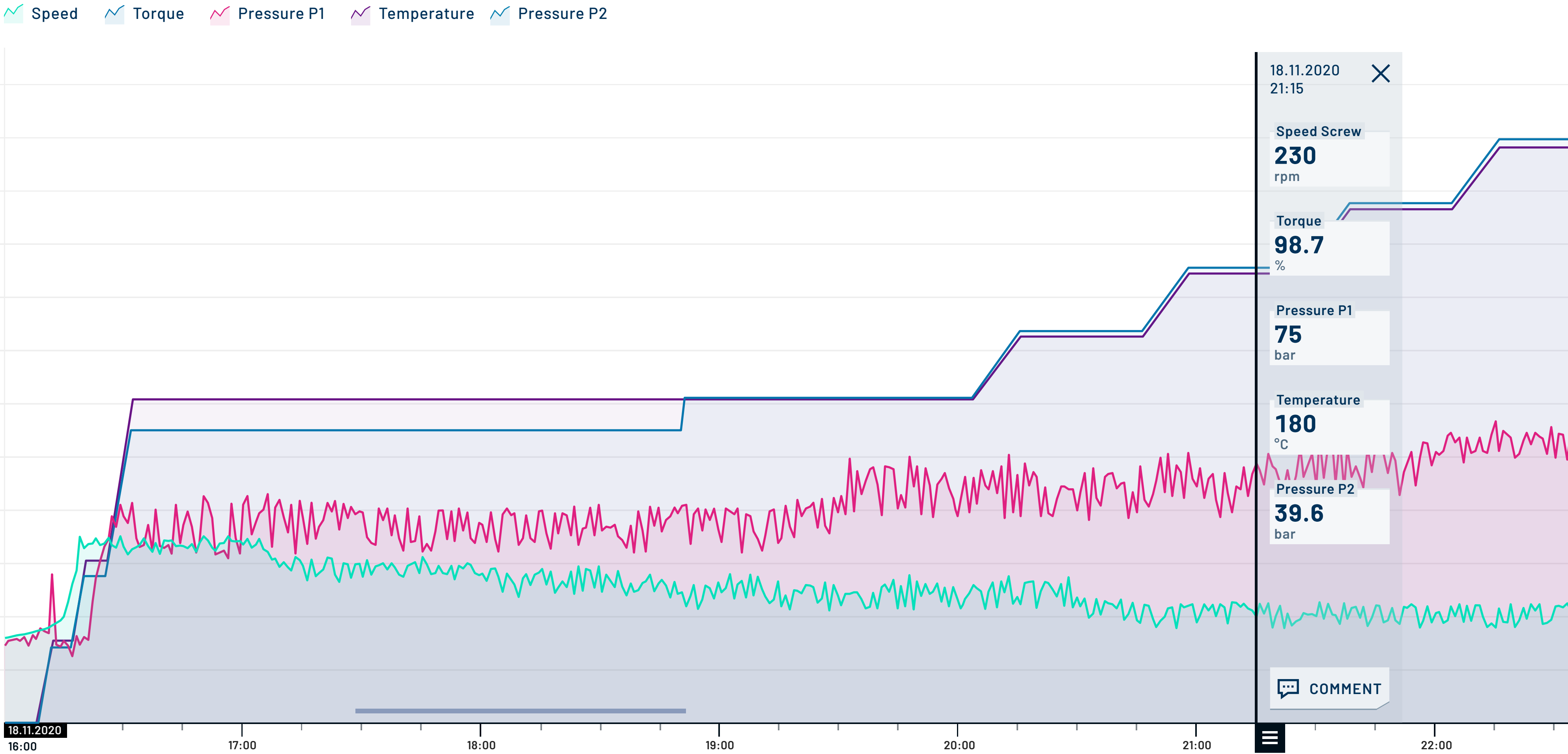
Data Visualisation & Infographics

Principles

- Easily readable key production values in different sizes and variations
- Mini trend visualization next to the output element via arrows or interactive bar graphs
- Illustrations and data visualizations can be combined to create powerful infographics
- Trend graphs with integrated analysis, comparison and statistics functions



Interactive values with additional bar graph visualisation



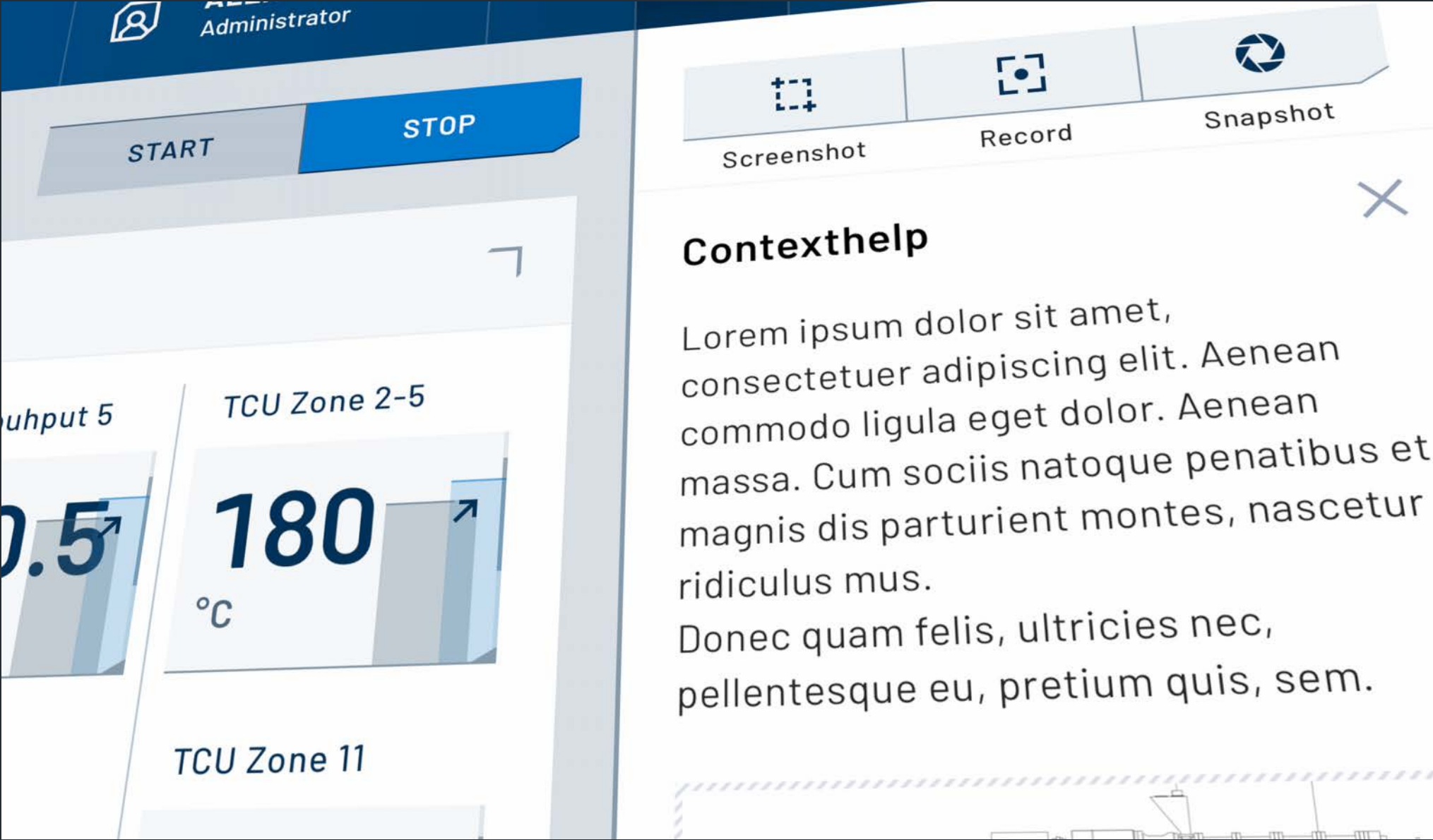
Integrated trend analysis tool with comparison function of different time periods



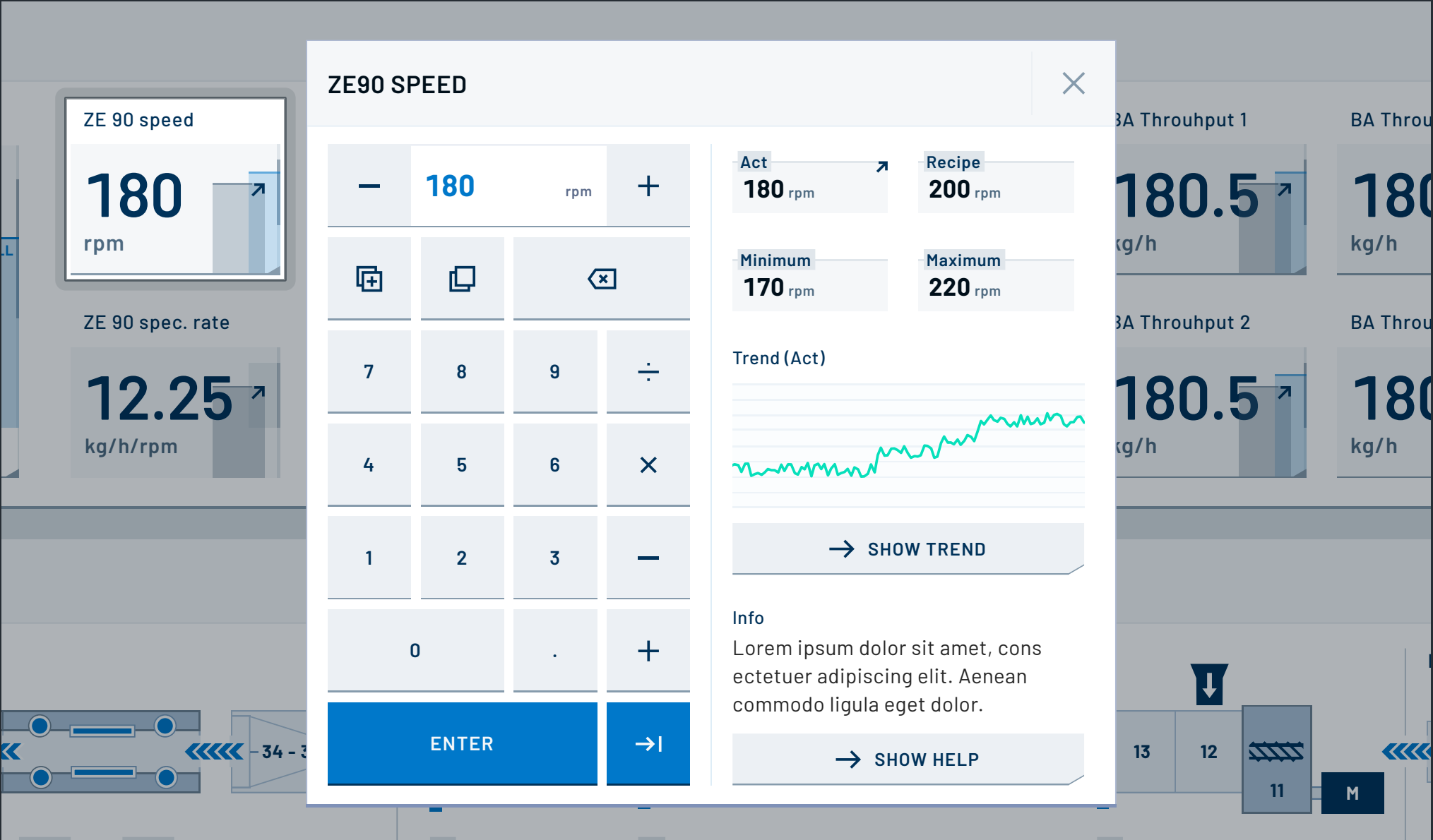
Interactive material tracking visualization

Features

- Extensive user-, role- and rights-management
 - Screensaver with remote effect and display of the most important production parameters and messages
 - Direct integration of external systems
- Clearly structured recipe management with preview and contextual groups
 - Fully configurable favorites page with important parameters and production-relevant quick functions
 - Report functions



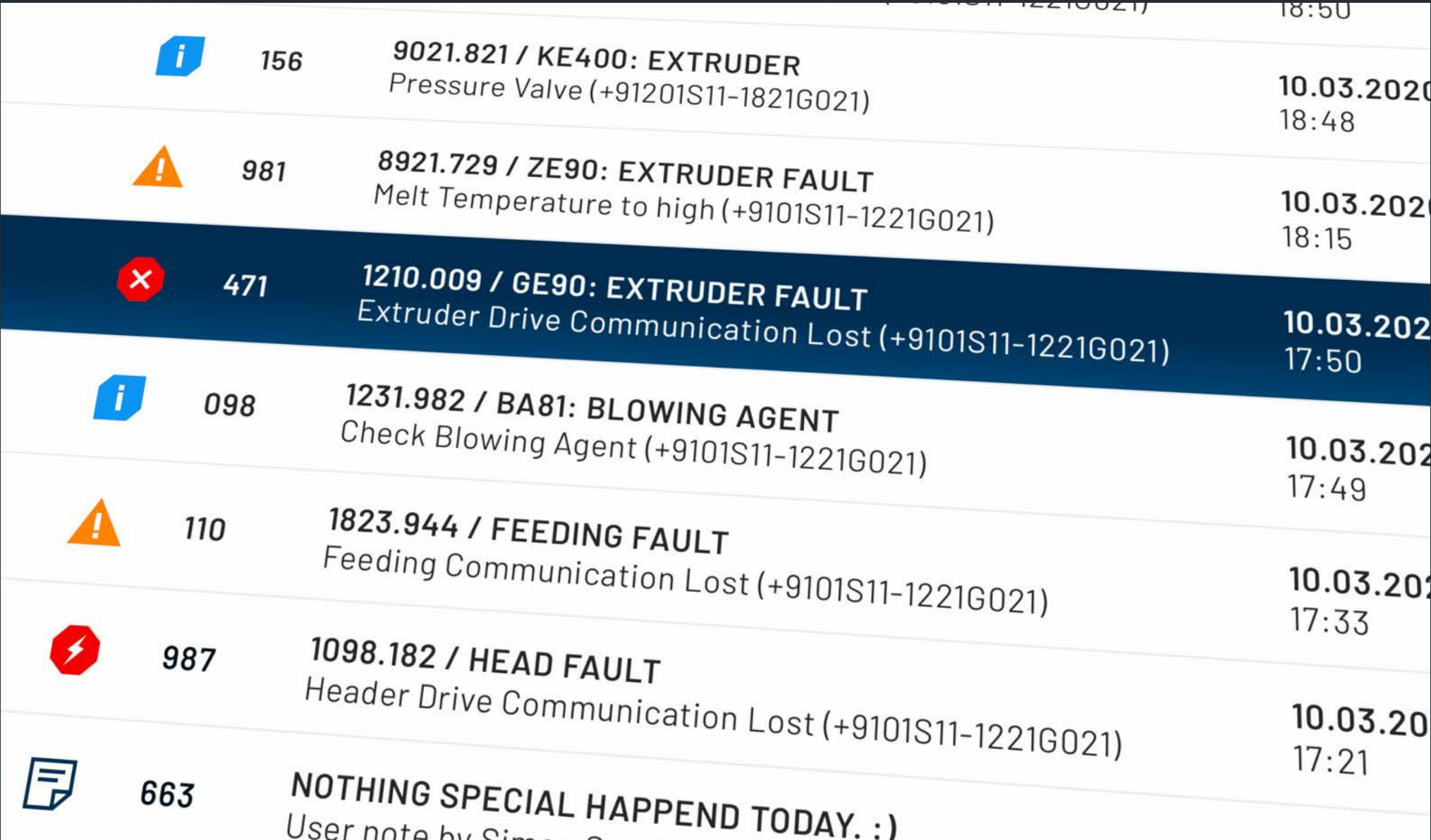
Sidebar with context-sensitive help with descriptions, integrated illustrations and links, as well as additional functions such as screenshot, screenrecord and data snapshot



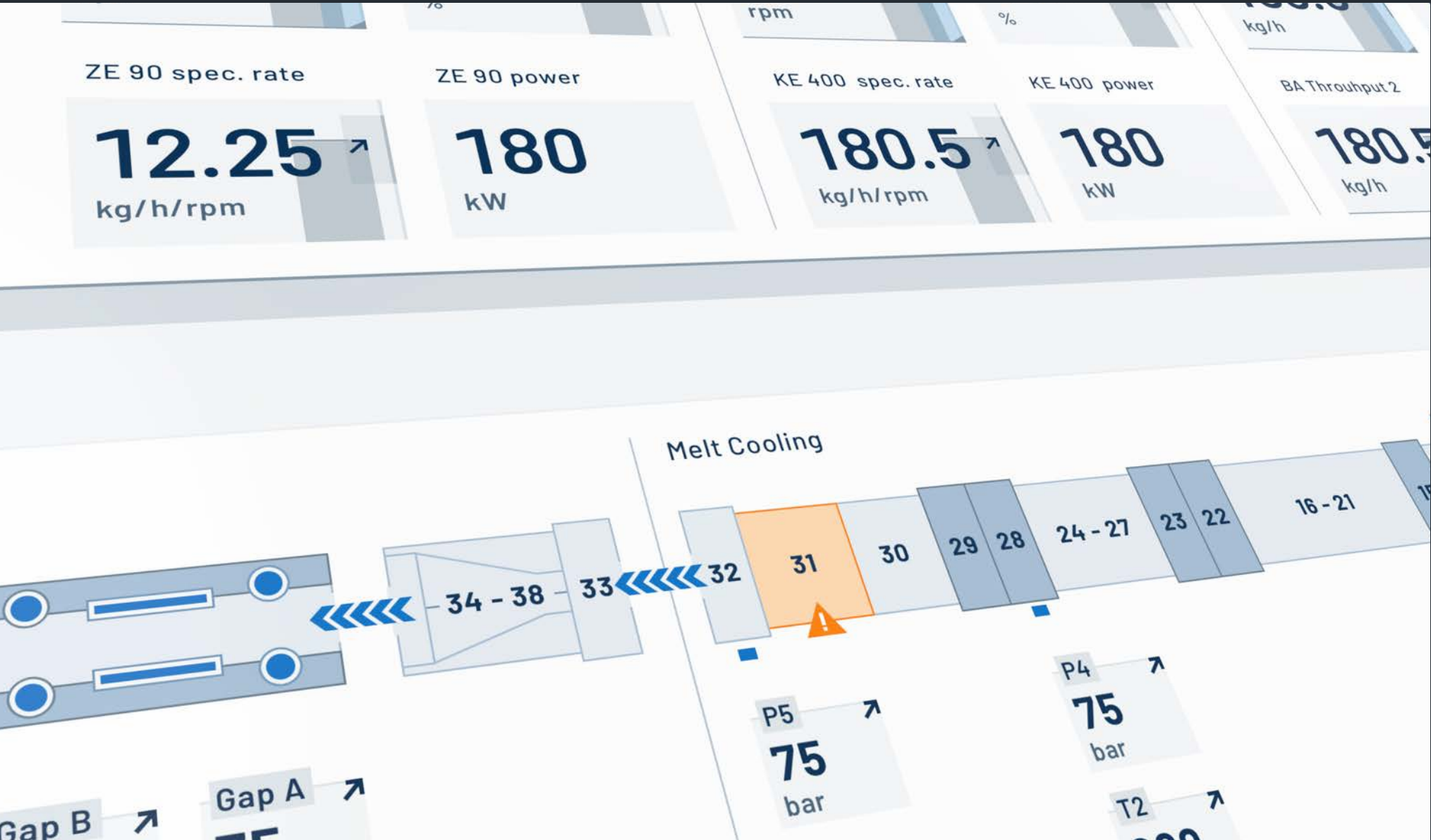
Advanced numpad with calculation functions, additional relevant values, trends and tooltip



Smart and guided presentation of special production processes via workflows / step-by-step instructions



Alarm list with details on localization, with guided solutions and comment function



Clear color coding for alarms and visual error localization



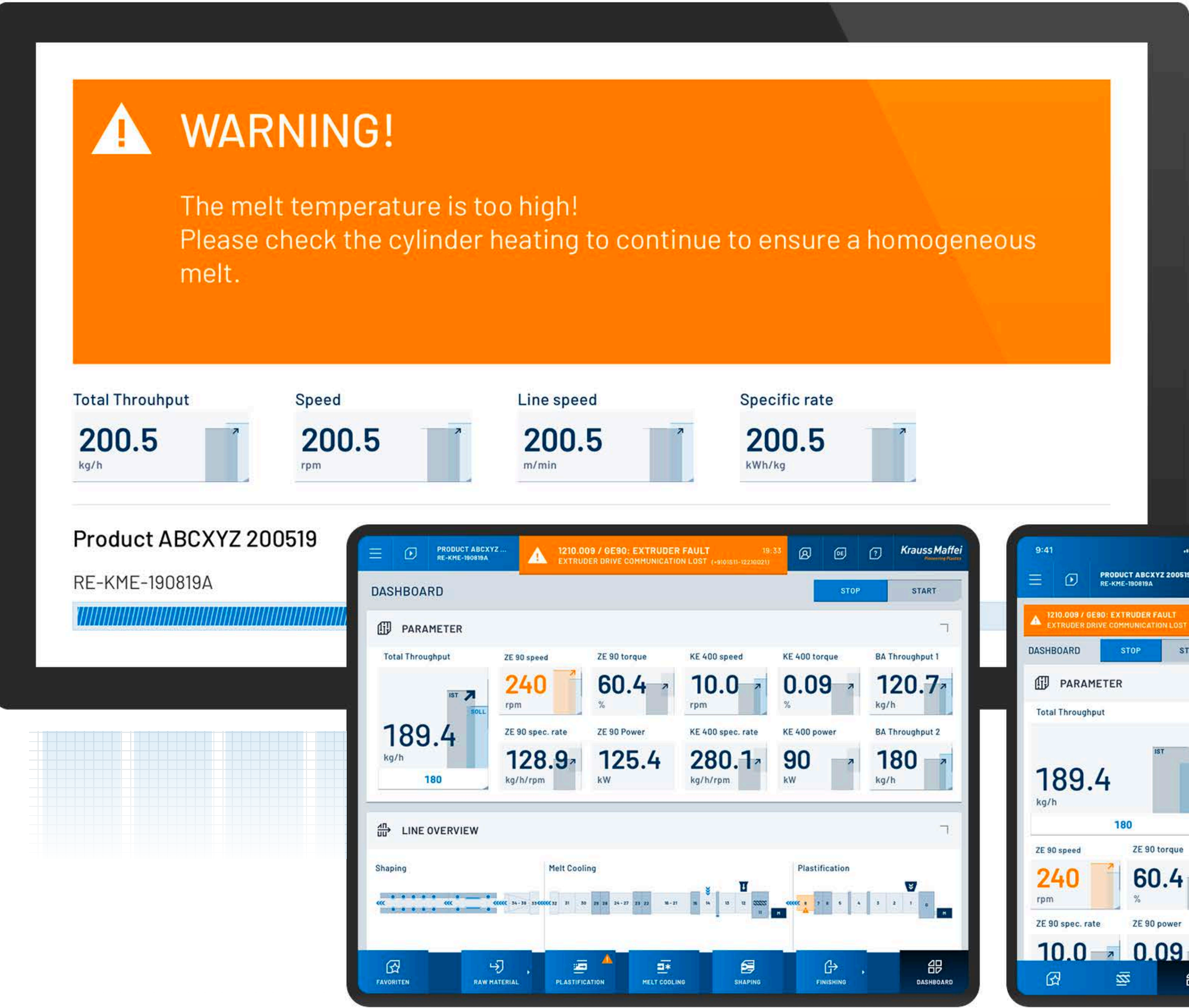
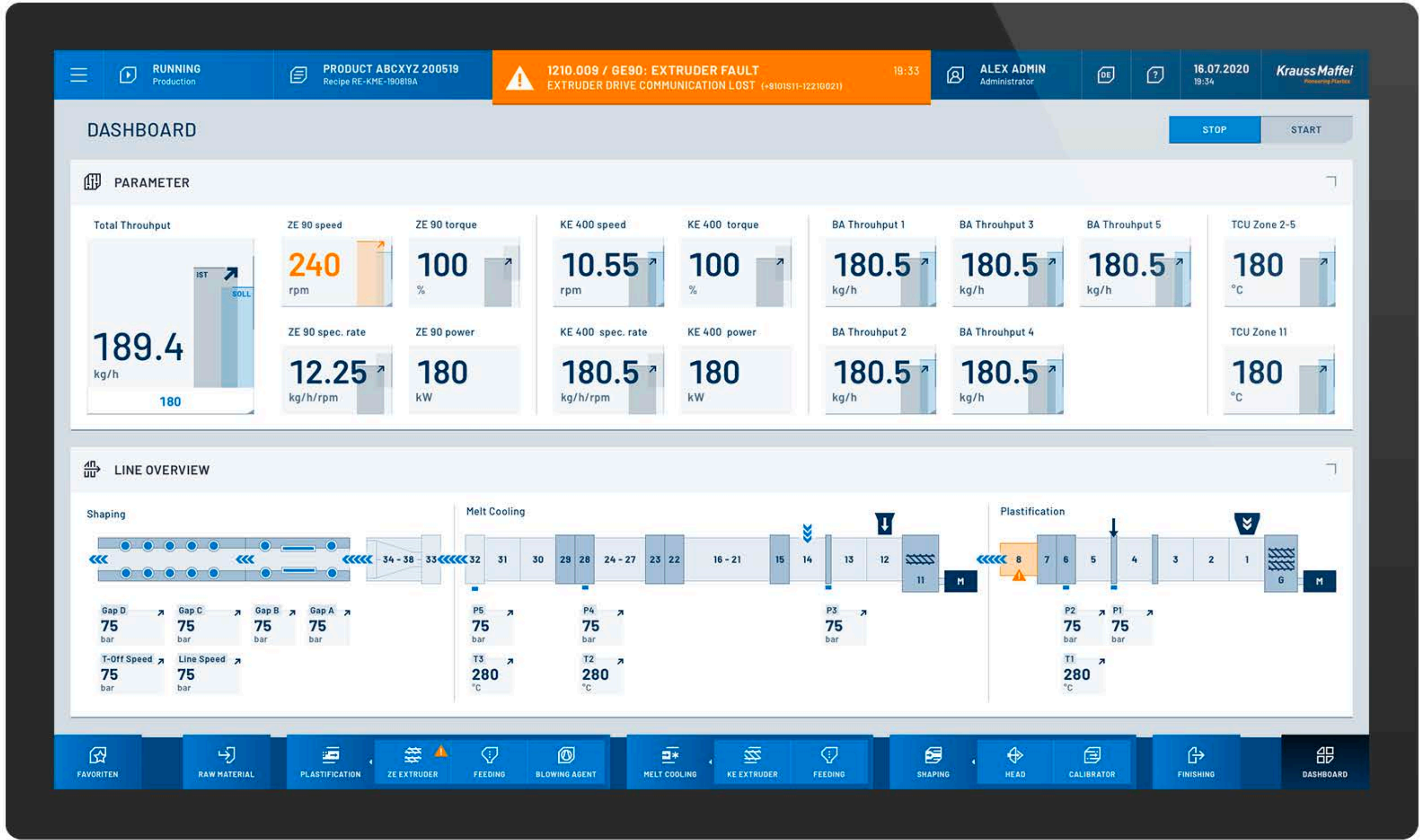
Fast access to the most important information and setting options via unit popups, accessible without navigating through the pages

Responsive Design

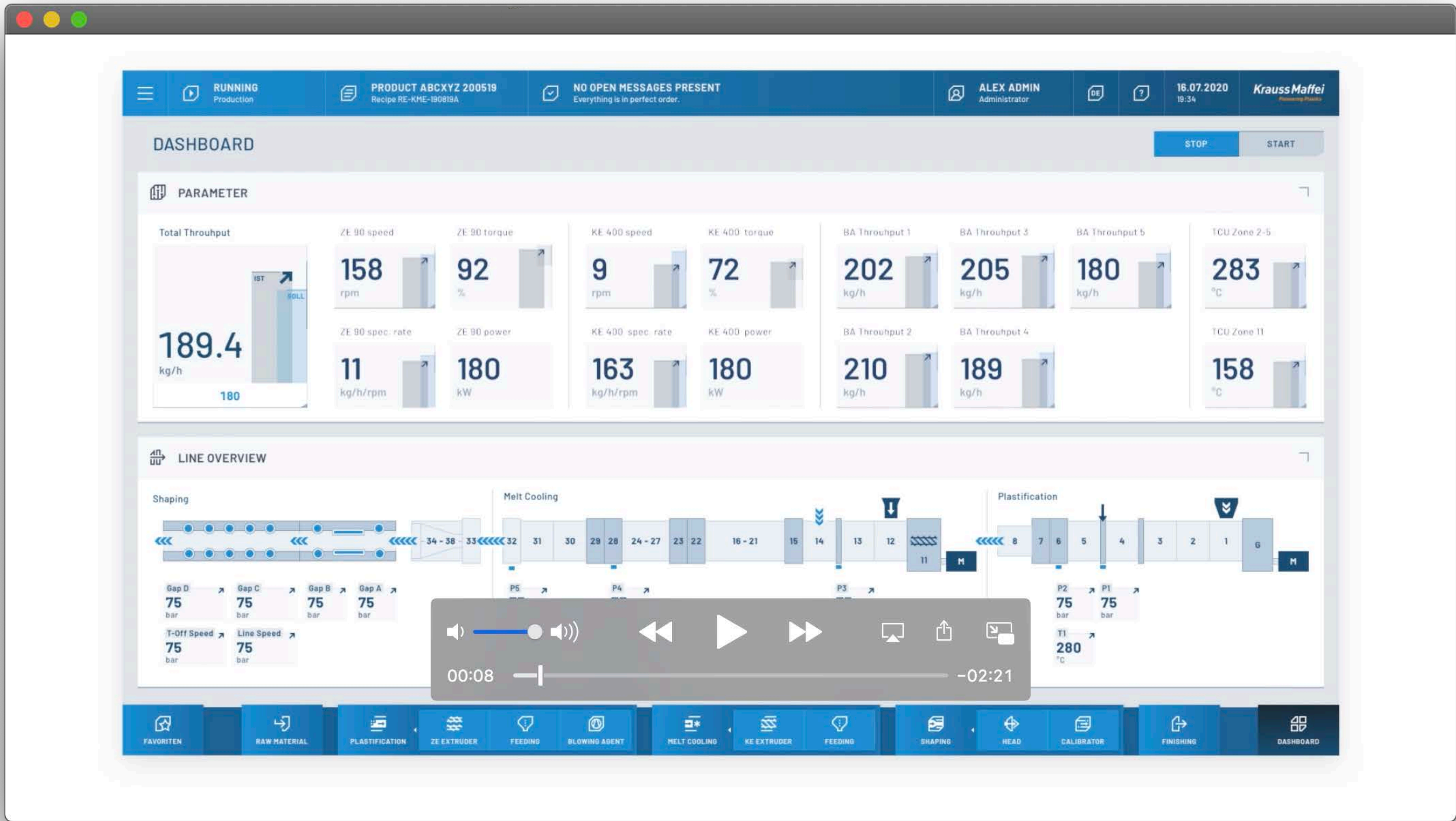
Principles

- Designed for various screen sizes of industrial touch panels
- Specially optimized for Multi-panel work stations
- Support of mobile smart devices

- Grid-based application adjusts to device types and screen resolution
- Implemented with web technology
- Operating system independent uniform display



Additional Information



Product Video

Presentation of context and design features.

<https://vimeo.com/566698579>

Implementation Test Video

Interface walkthrough in an early development state during implementation testing.

<https://vimeo.com/566698579>

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