

logotherm

Adaptive Human Machine Interface for industrial cooling and temperature control systems



Context



Task

For the industrial cooling and temperature control systems of gwk Gesellschaft Wärme Kältetechnik mbH from Meinerzhagen in North Rhine-Westphalia, a user-friendly and highly flexible human-machine interface was to be developed that is suitable for a wide range of applications and monitor sizes.

In addition to the usability, the efficiency and energy consumption of the systems also were to be optimized by clear user guidance. The interface was implemented and tested for the single-circuit temperature control unit first. The adaptation for the rest of the product range followed.



Task

Challenge

In order to design a uniform system for the entire product range, the first step was to determine the requirements of the numerous application areas. Since the gwk range is broad and extends from compact temperature control units to complete cooling systems, our focus lay especially on the flexibility of the interface.

The system had to be adaptable to the different requirements and functionalities of the individual devices, as well as to those of individual user groups, and at the same time follow a self-contained operating concept.



Flexibility



Optimal presentation through responsive and adaptive design

The interface has been developed with Web technology to ensure consistent presentation across all output devices. The interface adapts responsively to the monitor size of the end device. The information units react adaptively in number and form to the available space. The result is always an optimal representation of the key figures and functions. The layout is modular and scalable from compact devices to plant operation.



Grid and column logic



Screen sizes

21"

15"

7"

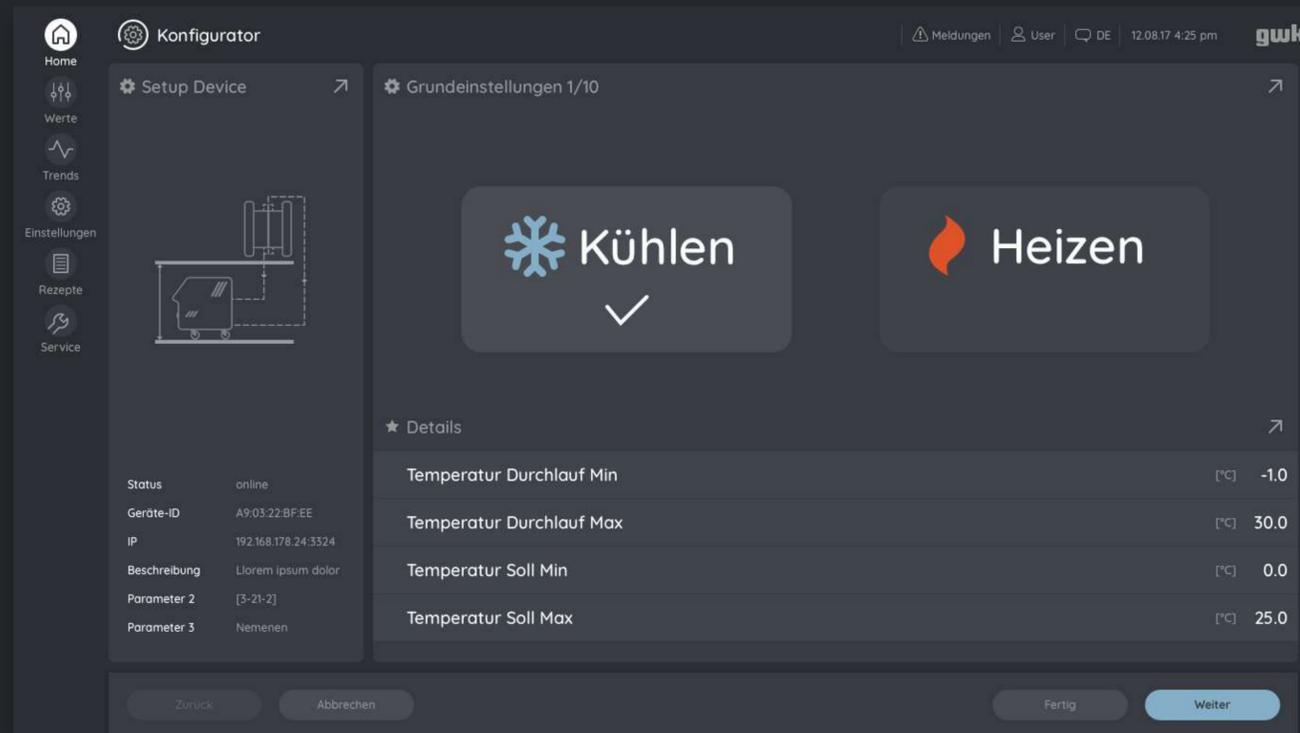
9.7"

4.7"

Configuration

Help with the configuration

In order to be able to prepare the interface for the various areas of application, a commissioning wizard has been developed. This guides the administrator on the PC step-by-step through the configuration process. This speeds up the configuration and reduces incorrect entries for complex settings.

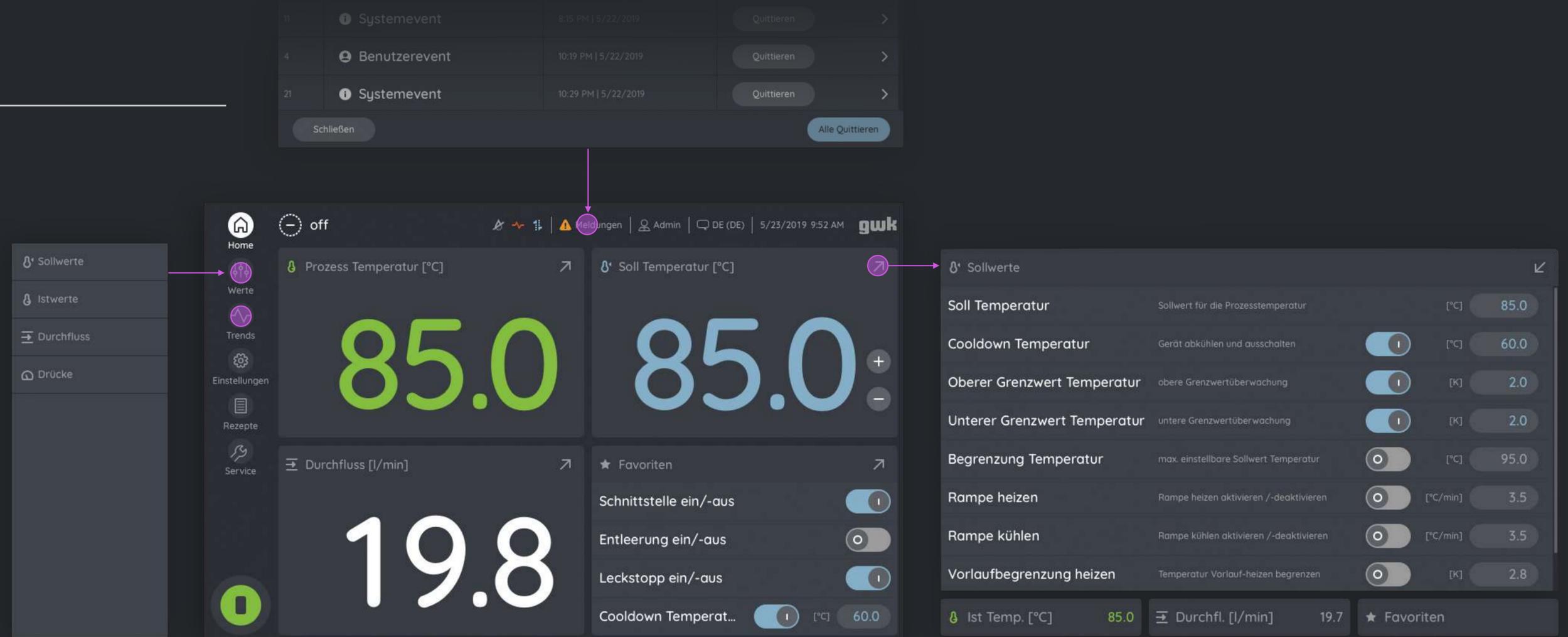


Commissioning wizard



Modular structure

User Experience



Intuitive Operation

The aim was to achieve the most intuitive operation of the interface. This is made possible by flat hierarchies and the use of simple navigation metaphors. Meaningful Transitions help the user to orient themselves in the information architecture. The flexible tiles allow the user to easily dive into the information and navigate back comfortably.

Design

User interface design

The interface is optimized for use in poorly lit work situations. The dark theme is easy on the eyes and at the same time ensures good legibility. The reduced design of all displays and controls simplifies orientation. Signal colors guide the user and alert them to critical usage situations. The typographical approach to the representation of the key figures is the key to the straightforward appearance of the entire system.

Customizable branding

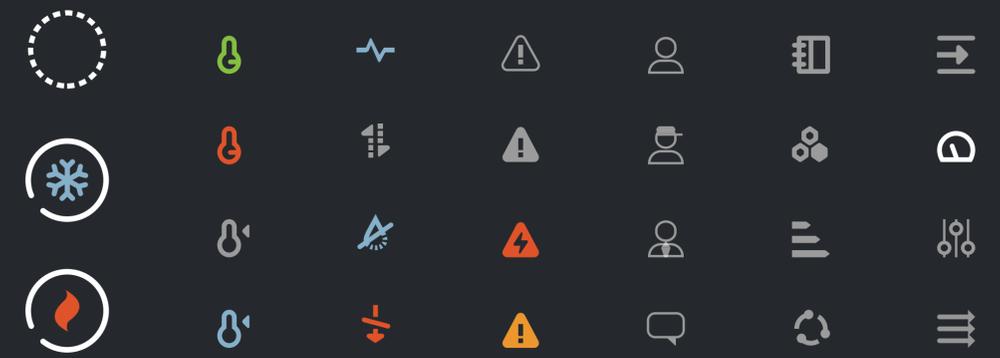
The manufacturer optionally adapts the housing color of the devices to the corporate design of its end customers. The interface design follows the color theme harmoniously at the initial startup and thus allows the integration of branding, without negatively influencing the rest of the design and thus the user guidance.



Housing and software customizable to customer CI



Icon and control style / derived from drop shape



Icon selection



Control selection

 Ist Temperatur [°C]

84.0

 Soll Temperatur [°C]

85.0

 Durchfluss [l/min]



 Favoriten

-  Werte
-  Trends
-  Einstellungen
-  Rezepte

Features

Optimized Usability

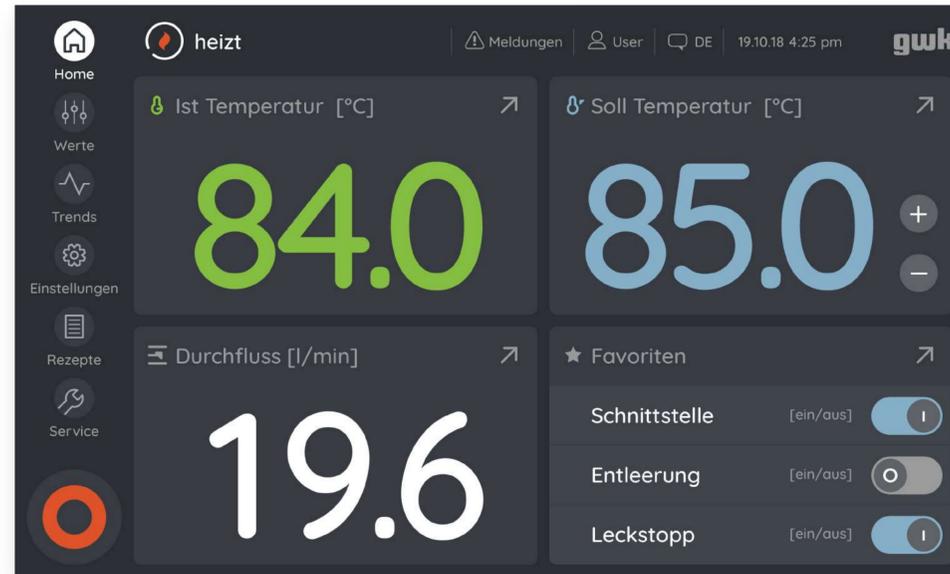
User-centered structure / Flat hierarchy / Reduced information density / Help and assistance systems / Favorite functions / Remote screensaver / Uniform message system / Fast language and user switching / Multi-touch gestures / Consistent recipe management / Clear color codes / Harmonized with industrial design

Product Video

<https://vimeo.com/295809428>



Screensaver with the most important key figure and with long distance effect



Dashboard with typographic information units and favorite functions



Clear data visualization for diagnostic purposes



Attention-grabbing error message

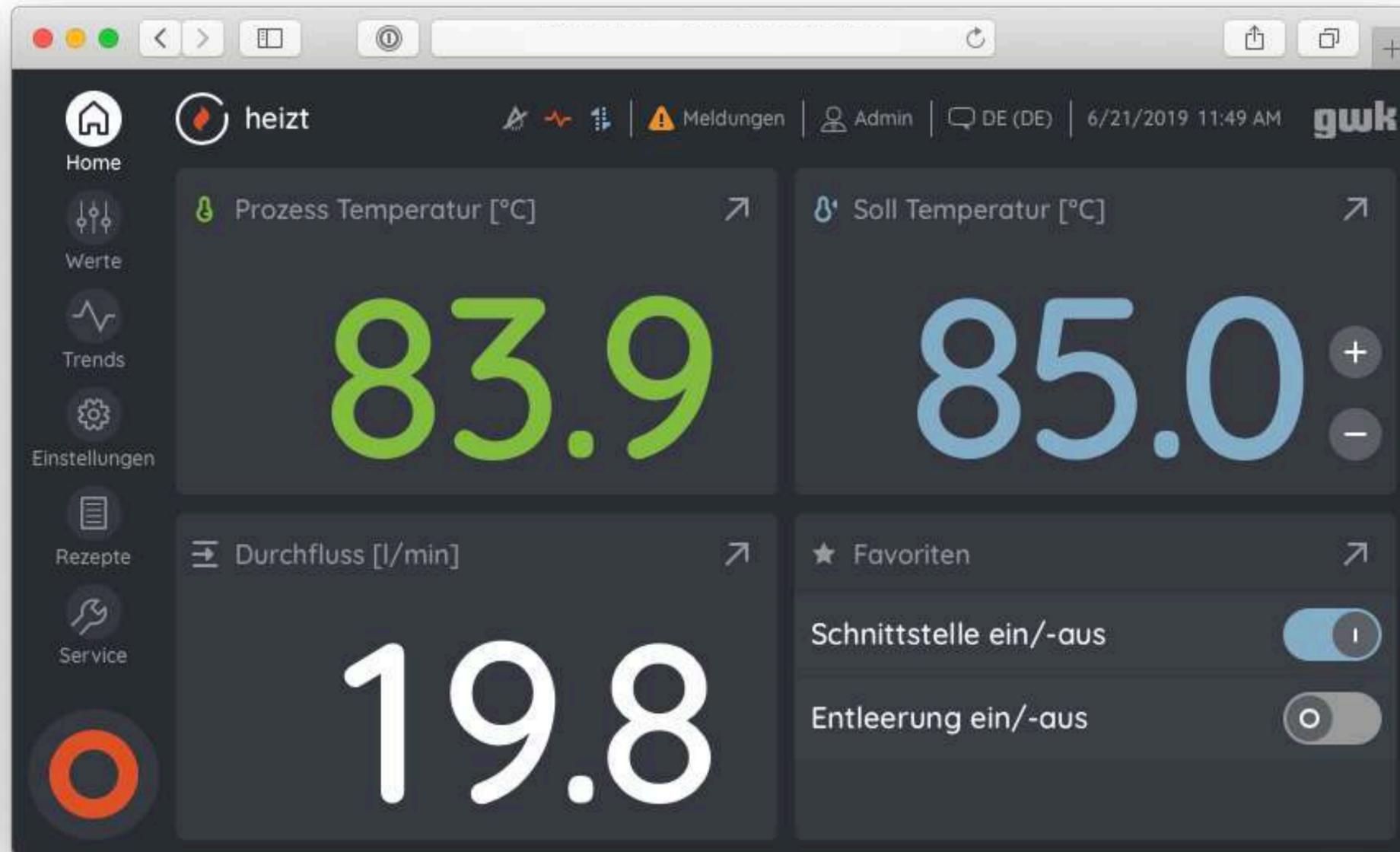


Ergonomic on-screen keyboard in recipe management



Expectant integration of multi-touch gestures

Interactive Prototype



For more information please also see the interactive Prototype online

This prototype is early beta and only features reduced functionality. For correct display and functionality please use Chrome or Chromium Browser with a monitor resolution of 800x480px.

<http://demo.hmi-project.com/gk/>

user: demo

password: dEmo17