HMI Check · Sample report

Pumping Station North, overview display WA-2

Fictional example. We built the screen, plant and values ourselves so you can see what you get. No client, no real plant.

REVIEWED	CONTEXT FROM SENDER
1 screen (overview display), 1600 x 1000 px	Water treatment control room, 24" monitor, distance 60 cm to 2 m, shift operation
METHOD	**DATE**
Heuristic review by a UX designer with industrial experience	11 Nov 2026

The essentials in three sentences

1. In normal operation the display is readable. In an upset it is not: 17 alarms of equal rank, pump state shown only in red and green, and STOP, OFF and Acknowledge 4 px apart.
2. Most findings can be fixed without touching the control logic, with colour, text, grouping and spacing.
3. Start with alarm prioritisation (1), making state readable without colour (3) and spreading out the P3 controls (9).

Severity levels

Critical	Can cause a wrong action or a missed alarm in an upset. Fix now.
High	Costs time or causes errors every day. Next release.
Medium	Slows down and confuses, workaround exists. Plan it.
Low	Cosmetic or onboarding. When the area is touched anyway.

Score by area

Overall **40** / 100

Nielsen's 10 heuristics **42**

9 of 10 heuristics with at least one finding

Accessibility (WCAG 2.2 AA) **31**

Contrast 1.35:1 to 1.6:1 on values, state shown by colour only

UX laws **48**

Fitts, Hick, Miller, Jakob, Gestalt

ISO 9241-110 dialogue principles **45**

Weak on self-descriptiveness and error tolerance

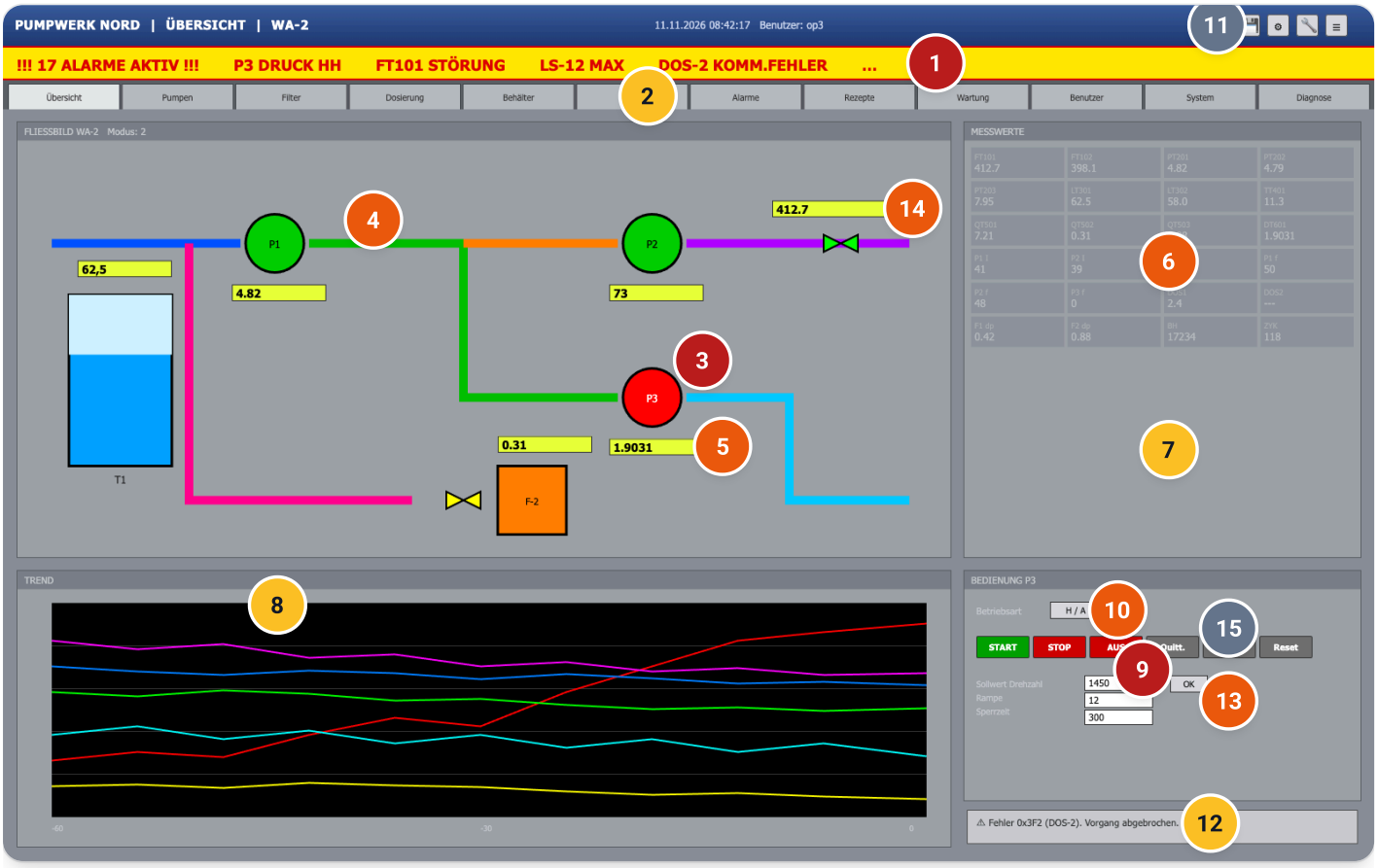
Industrial (ISA-101, gloves, distance) **34**

Full colour in normal operation, small targets, values unreadable from 2 m

0 to 100 points. From 80 an area is good; below 50 it costs time every day and raises the risk of operating errors.

Annotated screenshot

Numbers match the findings below.



15 findings

1

Critical Alarms

Alarm banner without priority

OBSERVATION

17 alarms scroll by in red on yellow, all of equal rank. The first-out alarm (P3 pressure HH) and consequential alarms look the same. The banner flashes constantly, also for alarms already seen.

REFERENCE

Nielsen #1 Visibility of system status · ISA-18.2 / EEMUA 191 (prioritisation, alarm floods) · ISA-101 (alarm display) · WCAG 2.2.2 (stop blinking)

FIX

Three priorities coded by colour, shape and number at once. Banner shows only the highest open alarm and the count per priority. Group or suppress consequential alarms. Flash only unacknowledged alarms.

2

Medium Navigation

12 tabs of equal weight

OBSERVATION

Overview, diagnostics and user management sit side by side at the same size, 10 px text. Operators search every time.

REFERENCE

Hick's law · Nielsen #8 Aesthetic and minimalist design · ISA-101 (display hierarchy levels 1 to 4)

FIX

Five to six areas based on shift tasks, the rest under "More". Hierarchy overview, unit, detail. Tabs with 16 px text and at least 44 px height.

3

Critical States

Pump state only in red and green

OBSERVATION

Whether P1 to P3 are running, stopped or faulted is shown only by fill colour. With red-green colour deficiency (about 8% of men) P2 and P3 are hard to tell apart. Red means both "stopped" and "fault".

REFERENCE

WCAG 2.2 1.4.1 Use of colour · Nielsen #1 · ISA-101 (reserve colour for abnormal states)

FIX

State as text below the symbol ("running", "stopped", "fault") plus shape or outline. Normal operation in grey, red only for alarms.

4

High Colour

Full colour in normal operation

OBSERVATION

Six pipes in six saturated colours, yellow value fields, orange filter. When everything is colourful, the one deviation no longer stands out.

REFERENCE

ISA-101 (muted base colours, colour with meaning) · Gestalt: similarity · Nielsen #8

FIX

Grey background, pipes in neutral grey, medium shown by label or line style. Fix the colour palette and meanings in an HMI style guide.

5

High Values

Values without units, mixed formats

OBSERVATION

"1.9031", "73", "62,5": no unit, point and comma mixed, zero to four decimals. Only someone who knows the plant knows what "73" is.

REFERENCE

Nielsen #2 Match with the real world · Nielsen #4 Consistency · ISO 9241-110 Self-descriptiveness

FIX

Every value with unit and plain-language label. Decimals set by measurement resolution. One decimal separator throughout.

6

High Legibility

Value grid barely readable

OBSERVATION

Grey text on grey with contrast of 1.35:1 (label) and 1.6:1 (value), text size 9 to 12 px.

REFERENCE

WCAG 2.2 1.4.3 Contrast (at least 4.5:1) · WCAG 1.4.11 Non-text contrast

FIX

Dark text on light grey, at least 4.5:1 (target 7:1). Values from 16 px, labels from 14 px.

7

Medium Structure

24 values without grouping

OBSERVATION

Flow, pressure, level, current, frequency and operating hours sit in one uniform grid, labelled only with tag numbers.

REFERENCE

Miller: chunking · Gestalt: proximity · Nielsen #8

FIX

Group by function (inlet, pumps, treatment, outlet). Four to five key figures large at the top, the rest in the detail display. Tag number small below the plain name.

8

Medium Trends

Trend without legend or units

OBSERVATION

Six coloured lines on black, no legend, no unit on the axis, time axis "-60 / -30 / 0" without unit.

REFERENCE

Nielsen #6 Recognition rather than recall · ISO 9241-110 Self-descriptiveness · ISA-101 (trends with limits)

FIX

At most three lines per trend, legend with unit, limit line, time axis "-60 min". Distinguish lines by dash style as well.

9 Critical Controls

STOP, OFF and Acknowledge packed together

OBSERVATION

Six buttons of the same size (62 x 26 px) with 4 px gaps. OFF looks like STOP, sits next to "Quitt." and runs without confirmation. With gloves it is easy to hit the neighbour.

REFERENCE

Fitts's law · Nielsen #5 Error prevention · ISO 9241-110 Error tolerance · Glove operation (practical guide value 15 to 20 mm target size)

FIX

Separate frequent and critical actions. Targets at least 15 mm, better 20 mm, gap at least 5 mm. Consequential commands with confirmation and preconditions. Emergency stop stays hardware (EN ISO 13850); no soft key may look like one.

10 High States

Operating mode unclear

OBSERVATION

"H / A" does not show which mode is active. The process display says "Modus: 2". Mode changes without a clear indication are a common cause of operating errors.

REFERENCE

Nielsen #1 · Nielsen #2 · ISO 9241-110 Conformity with user expectations and self-descriptiveness

FIX

"Mode: AUTOMATIC" as text, fixed in the header. Switch through a dedicated dialog that names the consequences.

11 Low Navigation

Icon-only toolbar

OBSERVATION

Floppy disk, gear, wrench and menu without labels. Gear and wrench cannot be told apart.

REFERENCE

Nielsen #6 Recognition rather than recall · Jakob's law

FIX

Icon with text ("Save", "Settings", "Maintenance") or text only.

12 Medium Messages

Error message as a code

OBSERVATION

"Fehler 0x3F2 (DOS-2). Vorgang abgebrochen." says neither what happened nor what to do.

REFERENCE

Nielsen #9 Help users recognise, diagnose and recover from errors · ISO 9241-110 Error tolerance

FIX

Plain language: what happened, what it means for the process, what to do. Code only as extra detail for maintenance.

13 High Inputs

Setpoints without unit or limits

OBSERVATION

Speed 1450, ramp 12, lockout 300: no unit, no allowed range. One "OK" applies to all three fields, with no before and after.

REFERENCE

Nielsen #5 Error prevention · ISO 9241-110 Self-descriptiveness and error tolerance

FIX

Unit and range at the field (e.g. "rpm, 0 to 1500"). Confirm changes showing old and new value. Reject values out of range.

14 High Distance

Key values unreadable from 2 m

OBSERVATION

Outlet flow, network pressure and tank level have the same size as every minor value (13 px, about 3.5 mm on the 24" monitor). From 2 m, text needs about 12 mm character height.

REFERENCE

ISO 9241-303 (character height approx. 20 arc minutes) · ISA-101 (level 1 overview) · Gestalt: figure and ground

FIX

Four key figures large (40 px and up) with unit in a fixed area. Tone everything else down.

15 Low Language

Inconsistent terms

OBSERVATION

"Quitt." and "Ack" sit side by side, "Reset" is unclear. The banner says "KOMM.FEHLER", the message says "Fehler".

REFERENCE

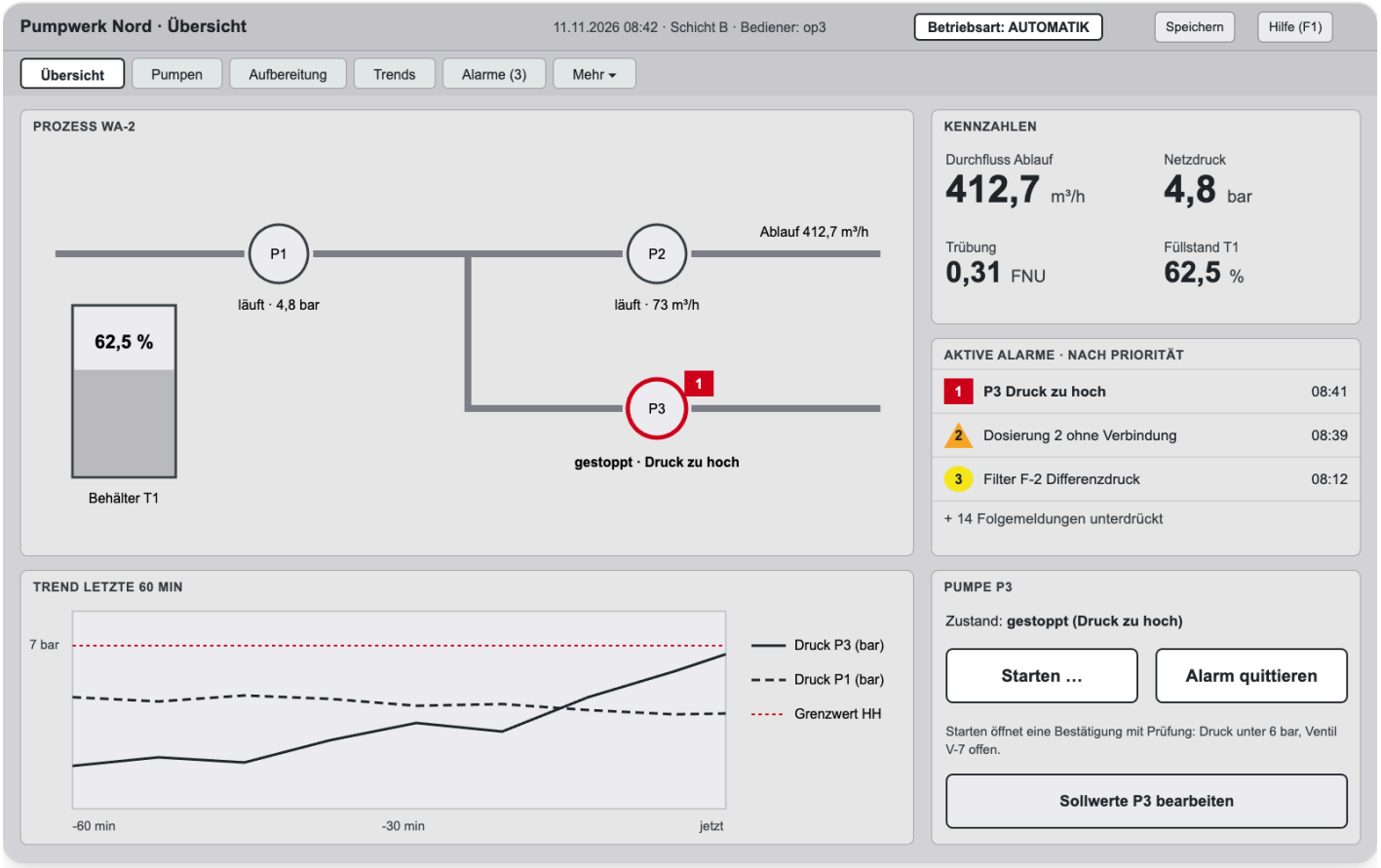
Nielsen #4 Consistency and standards · Jakob's law

FIX

One term per action ("Acknowledge"), glossary in the HMI style guide, abbreviations only where the shift uses them.

What it could look like

Sketch of the same fictional plant with the main fixes: grey as base, colour only for deviations, alarms by priority, key figures large with units, large separated controls. A sketch does not replace a test with operators.



Recommended order

Now

- Prioritise the alarm banner and bundle consequential alarms (1)
- State as text at every unit (3, 10)
- Separate OFF from Acknowledge, add confirmation (9)

Next release

- Greyscale base display and colour rules in the style guide (4)
- Units, formats, contrast (5, 6, 13)
- Key figure area readable from a distance (14)

After that

- Task-based navigation (2)
- Trends, message texts, terms (8, 12, 15)
- Usability test with 5 to 8 operators in an upset scenario

How we review

A UX designer with industrial experience reviews the screen against five frameworks: Nielsen's 10 heuristics, WCAG 2.2 AA (contrast, target size, text size, colour-only signals), UX laws (Fitts, Hick, Miller, Jakob, Gestalt), ISO 9241-110 dialogue principles and industrial specifics (ISA-101, glove operation, reading from a distance).

Every finding gets a severity, its location in the screenshot, a reference and a concrete fix. We measure contrast and convert sizes using your monitor and viewing distance.

Limits: a heuristic review of one screen does not replace a test with your operators and does not see flows across several displays. We use the standards as a reference for good practice, not as certification.

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