

DelfinNet User Operation Manual

Semiconductor Coating, Developing & Baking System Control Software

Version: 3.0

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Version History

Version	Date	Changes
3.0	2026-02-11	Major UI redesign, flip-card service mode, performance optimizations, recipe auto-scroll.
2.1	2025-10-15	Added user/group management, message filtering.
2.0	2025-09-30	Initial release with station grid and terminal.

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1. Introduction

DelfinNet is a human-machine interface (HMI) software designed for the control and monitoring of semiconductor wafer/substrat coating, developing and baking systems. It provides real-time station status, recipe downloading and monitoring, service mode, message logging, and a built-in terminal for PLC communication.

This manual describes the operation of DelfinNet.

2. Safety

- **Intended Use:** Only for controlling authorized coating/developing/baking equipment.
- **User Responsibility:** Operators must be trained and understand all safety-related messages.
- **Emergency Stop:** Always use the hardware emergency stop button if equipped. Software stop commands are not safety-rated.

INFO

For more safety-related information, please refer to the machine operation manual.

3. System Requirements

Component	Minimum Requirement
Operating System	Windows 10/11 64-bit
CPU	x86 CPU, 1.5 GHz
RAM	4 GB
Display	1024×768, touch-optimized optional
Network	Ethernet for PLC communication
Storage	500 MB free space
Additional	Configuration file (System.config) must be accessible

4. Installation and Startup

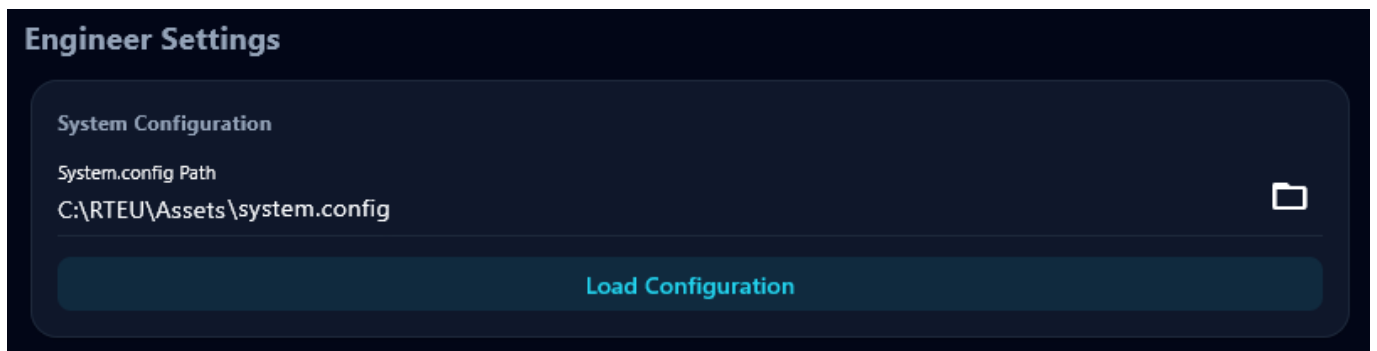
WARNING

Only authorized Robotechnik engineers may change these software settings.

TIP

It is highly recommended that you back up the C:\RTEU folder as soon as you receive the machine.

1. The software application `delfin_net.exe` is pre-installed on the IPC delivered with the machine. The default installation path is `C:\RTEU\DeIphinNet\delfin_net.exe`.
2. DelfinNet can be directly launched from the desktop shortcut.
3. On first start, go to **Settings** → **Engineer Settings** → **System Configuration** to select a valid `System.config` file.
4. Click **Load Configuration** – stations will appear on the Home page.
5. Robotechnik engineers have done the last two steps during machine commissioning.

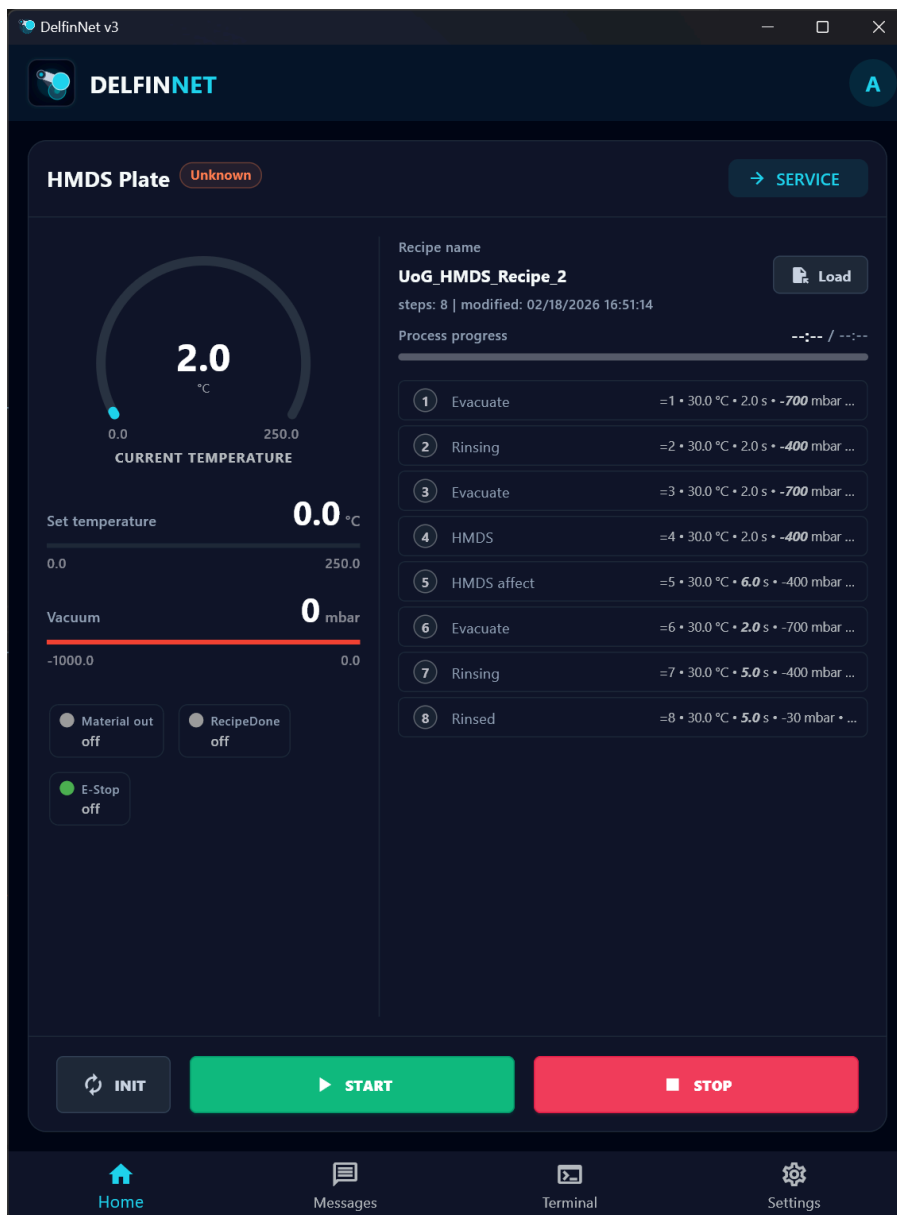


5. User Interface Overview

DelfinNet adapts to both **portrait** and **landscape** orientations automatically. **landscape** mode is the preferred orientation.

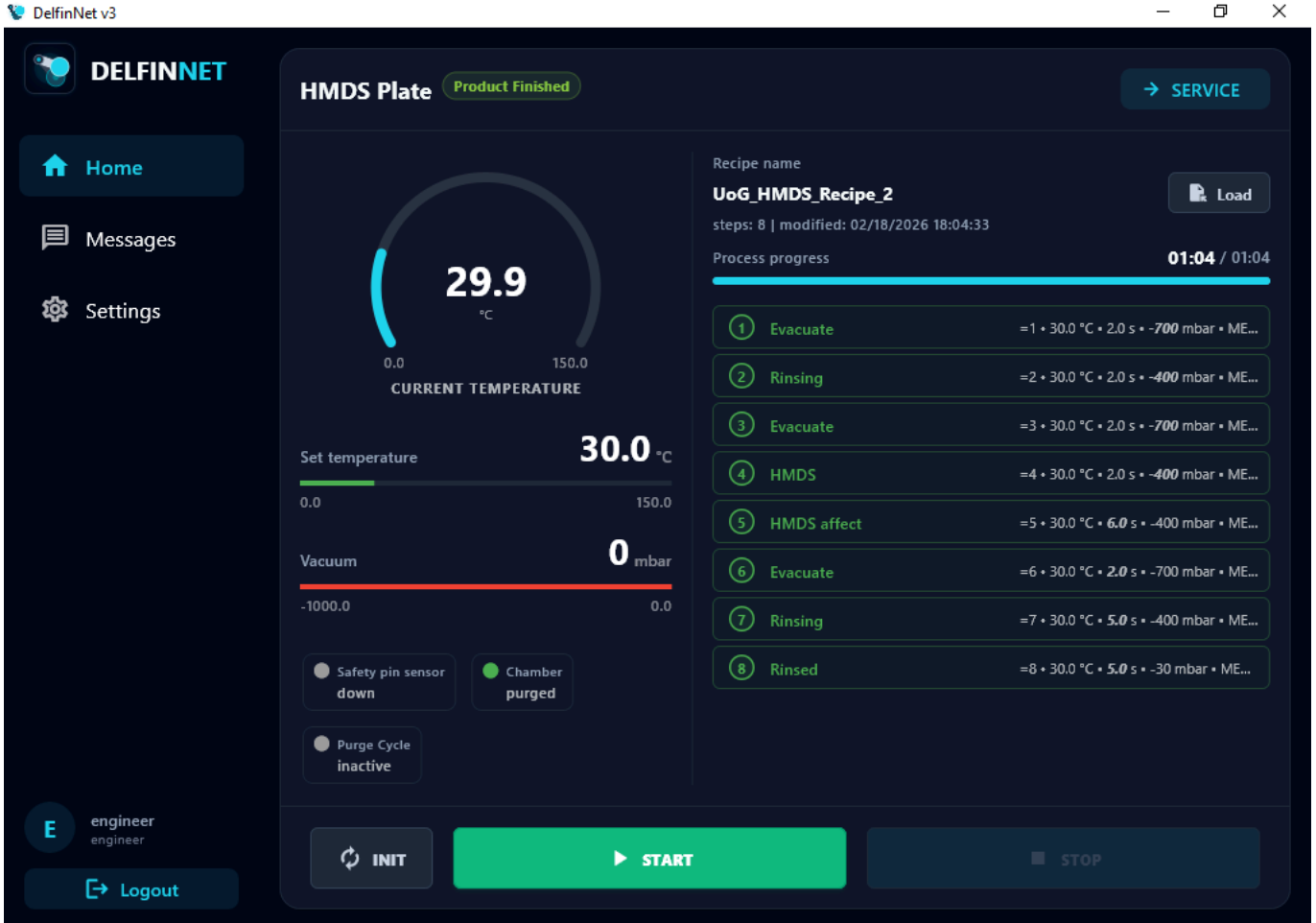
5.1 Portrait Mode

- **Top App Bar:** Application title, simulation mode indicator, and user avatar/login button.
- **Bottom Navigation Bar:** Home, Messages, Terminal (if permitted), Settings.
- **Main Area:** Content of the selected page.



5.2 Landscape Mode

- **Left Navigation Panel:** Contains app bar, vertical navigation menu, and user actions (login/logout, profile).
- **Right Content Area:** Full-width page view without an additional app bar.



DelfinNet v3

DELFINNET

HMDS Plate Product Finished [→ SERVICE](#)

Home
Messages
Settings

Recipe name
UoG_HMDS_Recipe_2 [Load](#)

steps: 8 | modified: 02/18/2026 18:04:33

Process progress **01:04 / 01:04**

29.9 °C
CURRENT TEMPERATURE

Set temperature **30.0** °C

Vacuum **0** mbar

Safety pin sensor down Chamber purged
 Purge Cycle inactive

1 Evacuate =1 • 30.0 °C • 2.0 s • -700 mbar • ME...
2 Rinsing =2 • 30.0 °C • 2.0 s • -400 mbar • ME...
3 Evacuate =3 • 30.0 °C • 2.0 s • -700 mbar • ME...
4 HMDS =4 • 30.0 °C • 2.0 s • -400 mbar • ME...
5 HMDS affect =5 • 30.0 °C • 6.0 s • -400 mbar • ME...
6 Evacuate =6 • 30.0 °C • 2.0 s • -700 mbar • ME...
7 Rinsing =7 • 30.0 °C • 5.0 s • -400 mbar • ME...
8 Rinsed =8 • 30.0 °C • 5.0 s • -30 mbar • ME...

E engineer
[Logout](#)

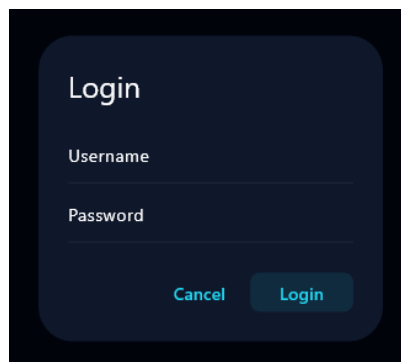
[INIT](#) [▶ START](#) [■ STOP](#)

6. User Login and Session Management

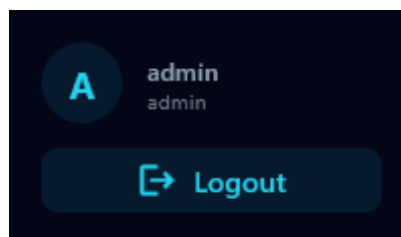
- Click **Login** (app bar or navigation panel) to open the login dialog.
- Enter username and password.
 - Built-in protected users: `admin` , `engineer` , `operator` .
 - Default passwords:
 - `admin`: 0000
 - `engineer`: 1111
 - `operator`: 2222
- The system automatically assigns the correct user group based on the user management settings.

WARNING

Please memorize your new password, especially for the admin user. Robotechnik cannot recover any password for you. To reset the password for default users, delete the database file located under: `C:\RTEU\Assets\delfin_net.db`. Deleting the database file will also delete all non-default user accounts.



- After successful login, your username and group are displayed.
- Click the avatar → **Logout** to end the session.



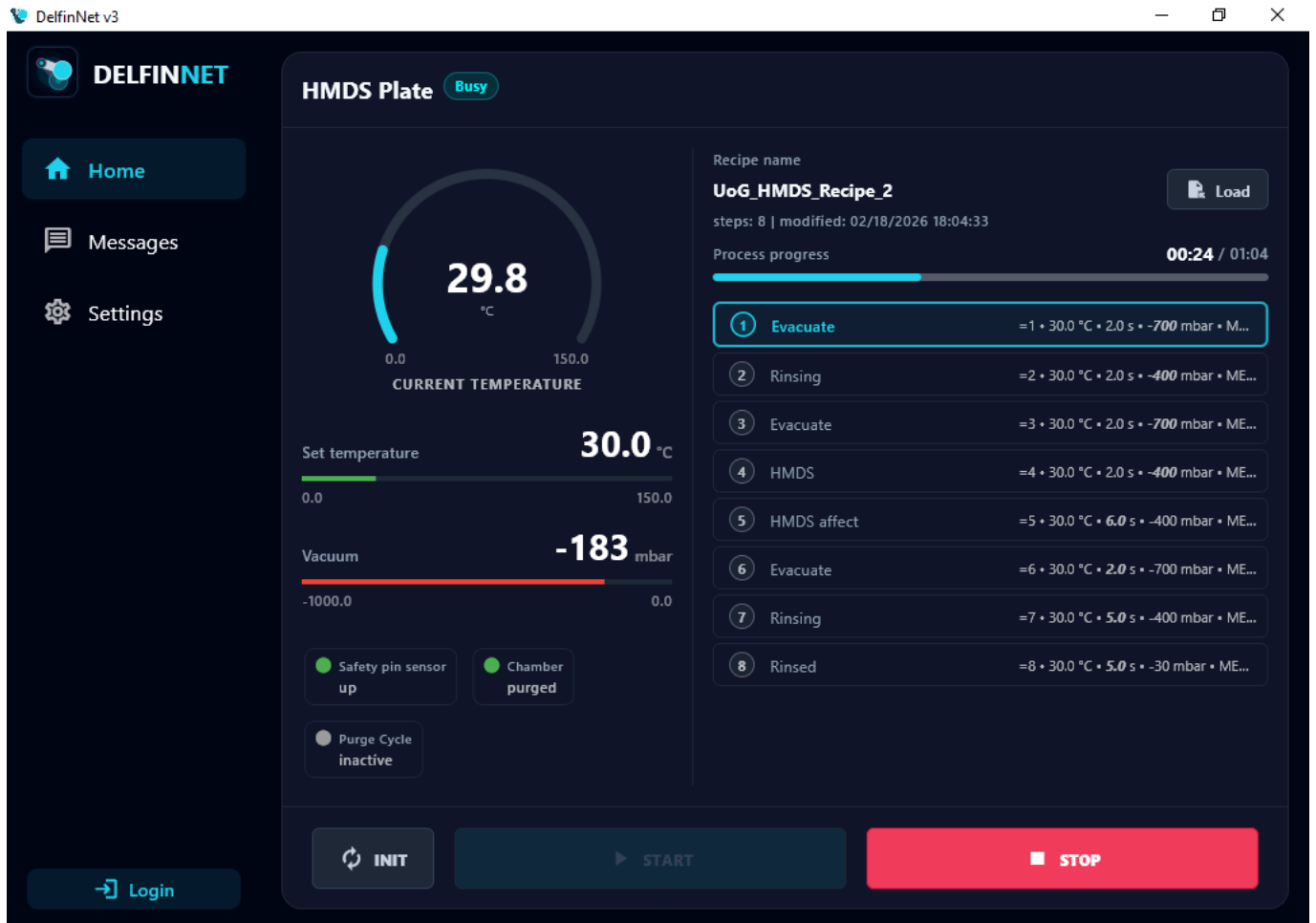
Permission Overview:

Group	Basic Access	Service Ops	Terminal	System Config	Manage Users
Admin	✓	✓	✓	✓	✓
Engineer	✓	✓	X	✓	X
Operator	✓	X	X	X	X
Unauthorized	✓	X	X	X	X

7. Station Monitoring and Operation (Home)

The Home page shows a responsive grid of stations. Each station is represented by a card.

7.1 Station Card – Production Mode



A. Station Header

- Station name + current status (Ready/Busy/Heatup/Cooldown/Product Finished/.../Error/).
- **SERVICE** button (visible if user has service permissions) – flips the card to service mode.

B. Process Parameters

- Left column: circular gauge for the first analog parameter (e.g., spin speed, current temperature, ...).
- Other parameters displayed as cards with value, unit, and range represented by a linear indicator.

C. Recipe Information

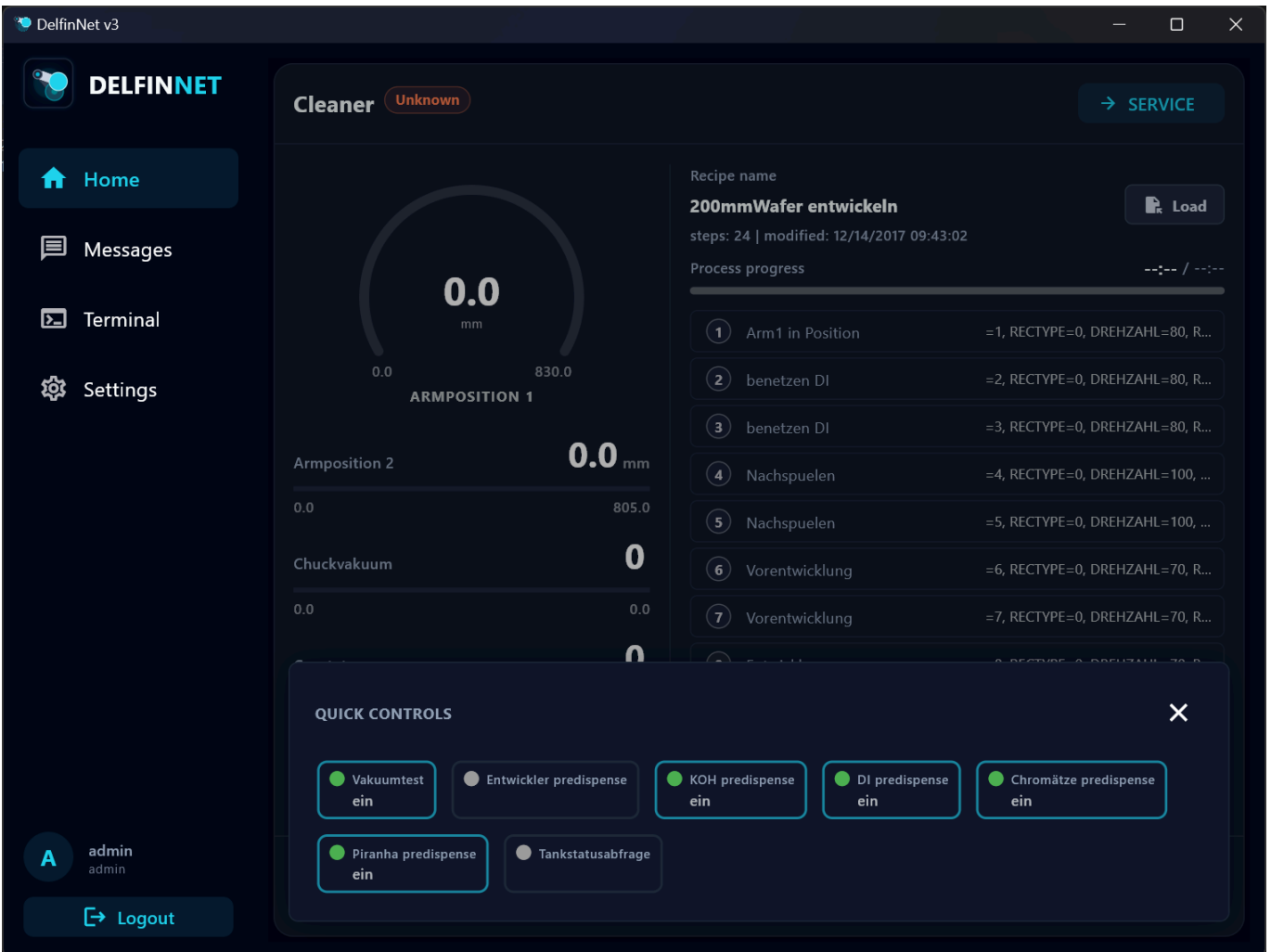
- If no recipe is loaded: a dashed-border area prompts “**Click to load recipe**”.
- If a recipe is loaded: shows recipe name, step count, last modified date, and a **LOAD** button to reload.
- Process time and step list:
 - Current step is highlighted with the theme color.
 - Completed steps are marked green.
 - Step info card shows the useful recipe step information.
 - left column states the step name
 - right column states the important step parameters summary. Step end conditions are labeled as bold texts.
 - The list automatically scrolls to keep the current step at the bottom.

D. Control Buttons

- **INIT**: Initialize the station and recover the system from any error state.
- **FUNC**: Opens a drawer with quick-control digital signals (if configured).
- **START**: Starts the process (enabled only when a recipe is loaded and PLC permits).
- **STOP**: Aborts the running process (enabled when PLC permits).

7.2 FUNC Drawer

- Not a standard function for all machines.
- Displays toggle-able quick-control signals.
- Each signal shows its current state (ON/OFF).
- Click a button to toggle the signal; the drawer closes automatically.



The screenshot displays the DelfinNet v3 control interface for a 'Cleaner' machine. The main panel shows a large gauge for 'ARMPOSITION 1' at 0.0 mm, with a range from 0.0 to 830.0. Below it, 'Armposition 2' is at 0.0 mm (range 0.0 to 805.0) and 'Chuckvakuum' is at 0.0 (range 0.0 to 0.0). A 'QUICK CONTROLS' drawer is open, showing several toggle buttons:

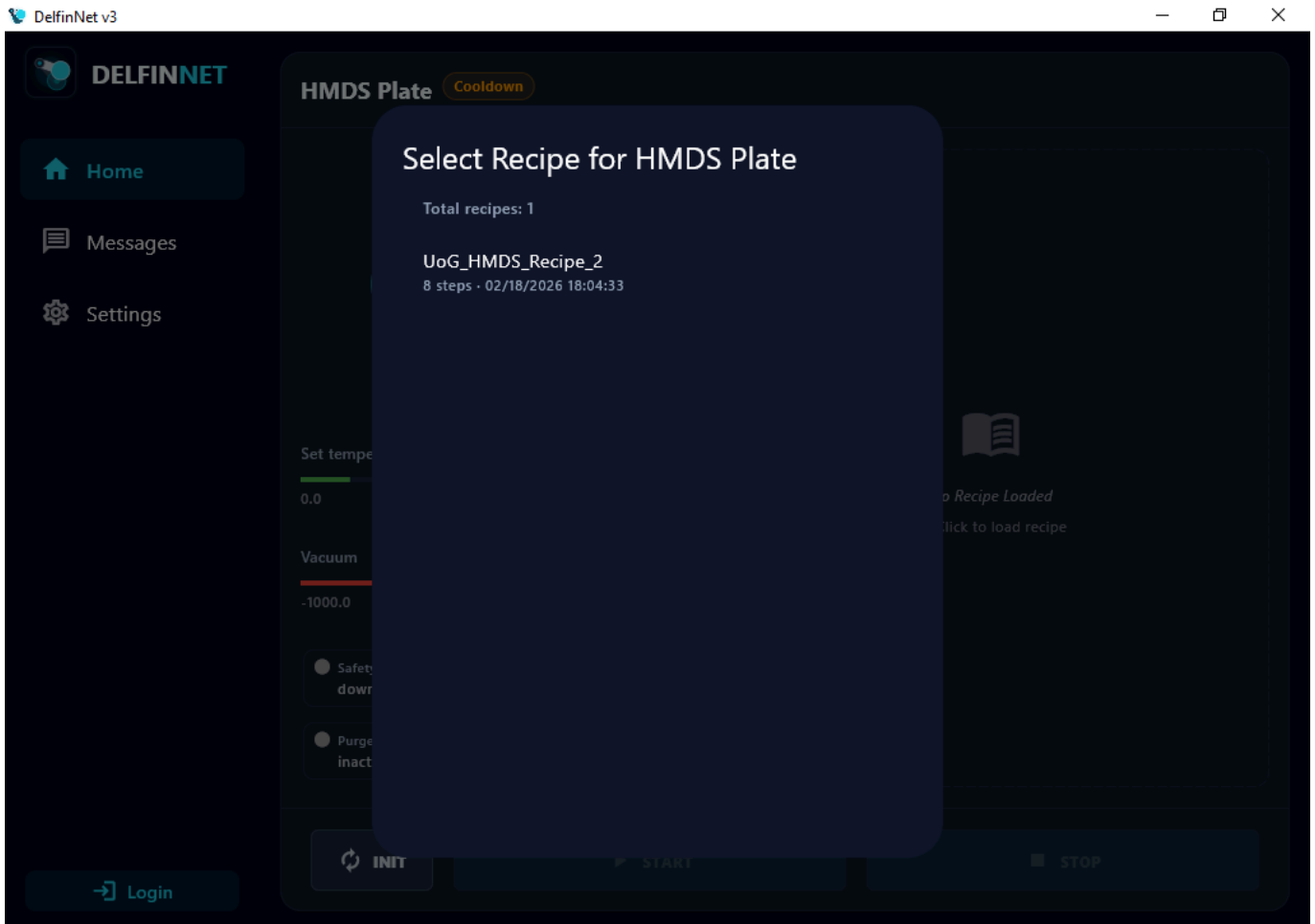
- Vakuumentest ein (checked)
- Entwickler predisense (unchecked)
- KOH predisense ein (checked)
- DI predisense ein (checked)
- Chromätze predisense ein (checked)
- Piranha predisense ein (checked)
- Tankstatusabfrage (unchecked)

The background interface includes a 'Recipe name' section for '200mmWafer entwickeln' (steps: 24, modified: 12/14/2017 09:43:02) and a 'Process progress' list with 7 steps. The left sidebar contains navigation options: Home, Messages, Terminal, and Settings. The user is logged in as 'admin'.

8. Recipe Management

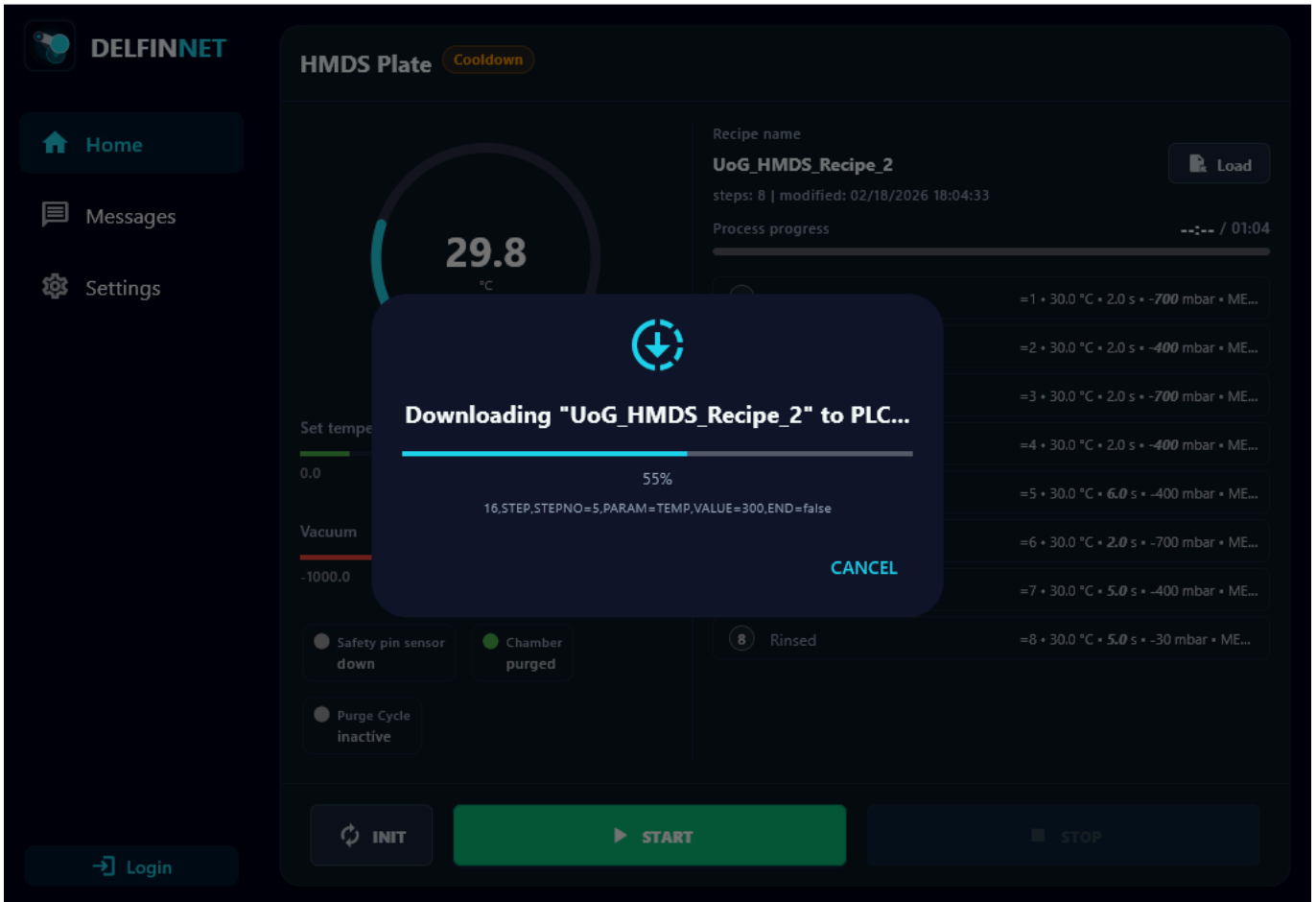
8.1 Loading a Recipe

- In the station card, click the **empty recipe area** or the **LOAD** button.
- A progress dialog appears while the system scans for available recipes.
- Select a recipe from the list.



8.2 Downloading a Recipe to PLC

- After selection, the **Recipe Download Dialog** opens automatically.
- The download starts immediately. Progress is shown via a linear indicator.
- On success, the dialog auto-closes after 1 second and a green snackbar confirms.



The screenshot displays the DelfinNet v3 interface for the HMDS Plate. A modal dialog is centered on the screen, titled "Downloading 'UoG_HMDS_Recipe_2' to PLC...". The dialog features a progress bar at 55% and a "CANCEL" button. The background interface shows a temperature gauge at 29.8 °C, a recipe name "UoG_HMDS_Recipe_2", and a list of 8 process steps. The left sidebar contains navigation options: Home, Messages, and Settings. The bottom of the interface has buttons for INIT, START, and STOP.

DELFINNET

HMDS Plate **Cooldown**

Recipe name
UoG_HMDS_Recipe_2 **Load**

steps: 8 | modified: 02/18/2026 18:04:33

Process progress --:-- / 01:04

29.8 °C

Downloading "UoG_HMDS_Recipe_2" to PLC...

55%

16,STEP,STEPNO=5,PARAM=TEMP,VALUE=300,END=false

CANCEL

Set temperature 0.0

Vacuum -1000.0

Safety pin sensor down Chamber purged

Purge Cycle inactive

8 Rinsed

INIT START STOP

Login

- =1 • 30.0 °C • 2.0 s • -700 mbar • ME...
- =2 • 30.0 °C • 2.0 s • -400 mbar • ME...
- =3 • 30.0 °C • 2.0 s • -700 mbar • ME...
- =4 • 30.0 °C • 2.0 s • -400 mbar • ME...
- =5 • 30.0 °C • 6.0 s • -400 mbar • ME...
- =6 • 30.0 °C • 2.0 s • -700 mbar • ME...
- =7 • 30.0 °C • 5.0 s • -400 mbar • ME...
- =8 • 30.0 °C • 5.0 s • -30 mbar • ME...

INFO

Please refer to the software RecipeNet for more recipe management functions, i.e., recipe creation, recipe editing, recipe deleting, ...

9. Service Mode

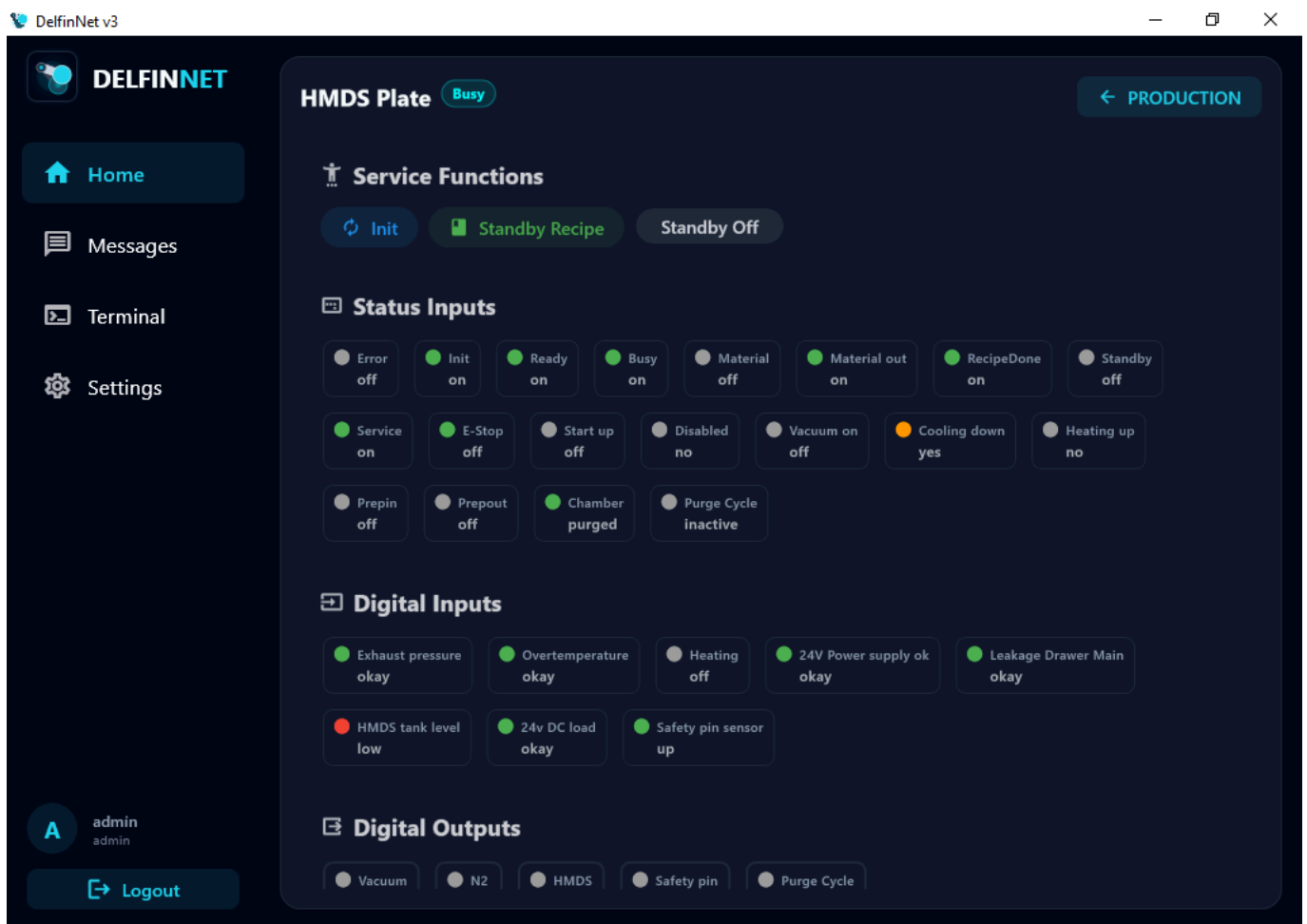
Service mode provides detailed access to I/O signals and analog parameter editing.

Entering Service Mode:

- Click the **SERVICE** button on the station header. The card flips with a 3D animation.

Exiting Service Mode:

- Click the **PRODUCTION** button on the back of the card.



9.1 Service Functions

- **Init:** Same as production INIT.
- **Standby Recipe:** Load a recipe as standby.
- **Standby On/Off:** Toggle standby state.

9.2 Status Inputs / Digital Inputs

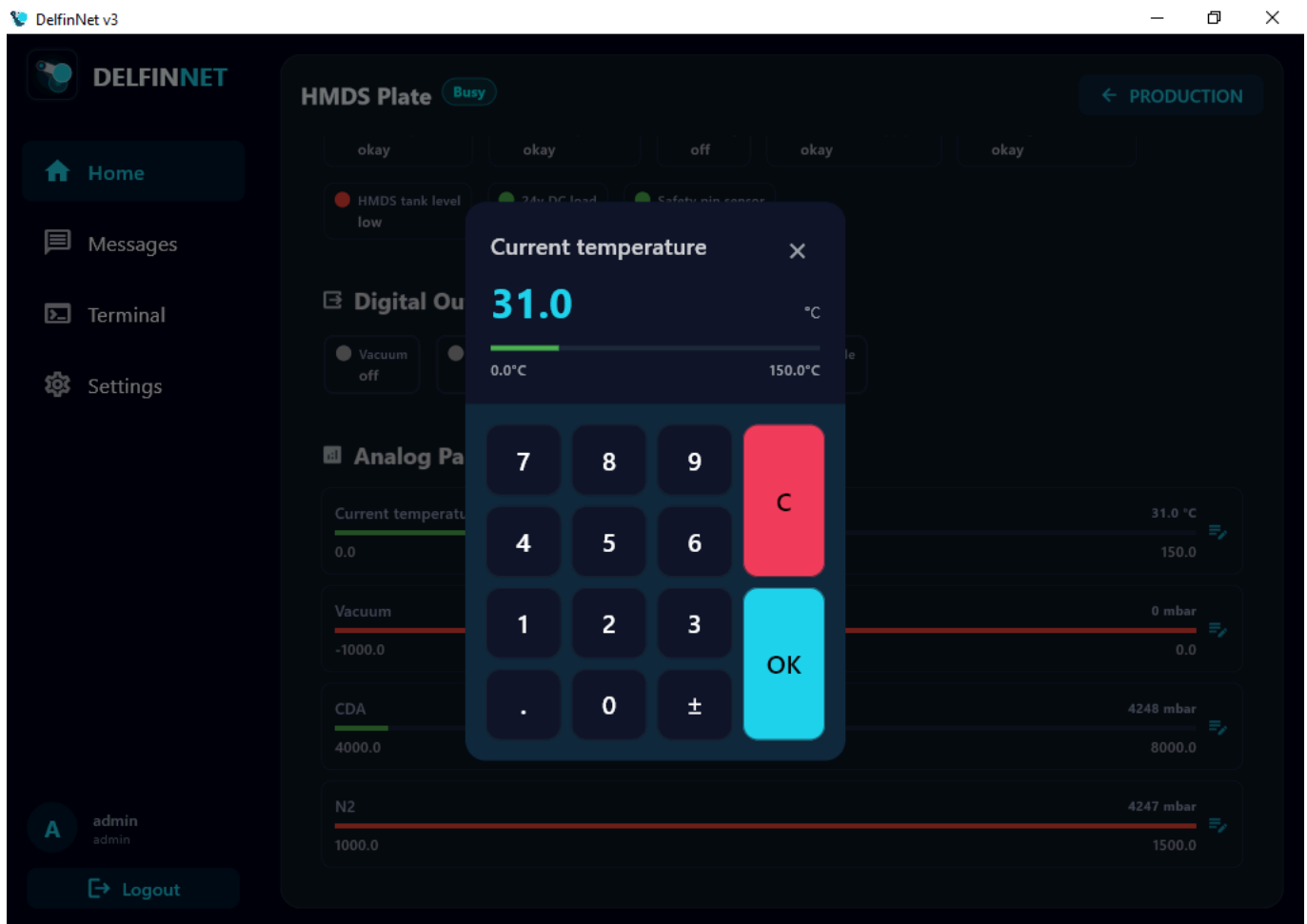
Read-only indicators showing the real-time state of configured input signals.

9.3 Digital Outputs

Clickable chips that allow manual toggling of digital outputs (hover effect, active border).

9.4 Analog Parameters

- Each analog parameter shows its current value, unit, and min/max.
- Click the parameter row to open the **Numpad Dialog** for editing.
- The entered value is validated against the allowed range before being sent to the PLC.



10. Message System

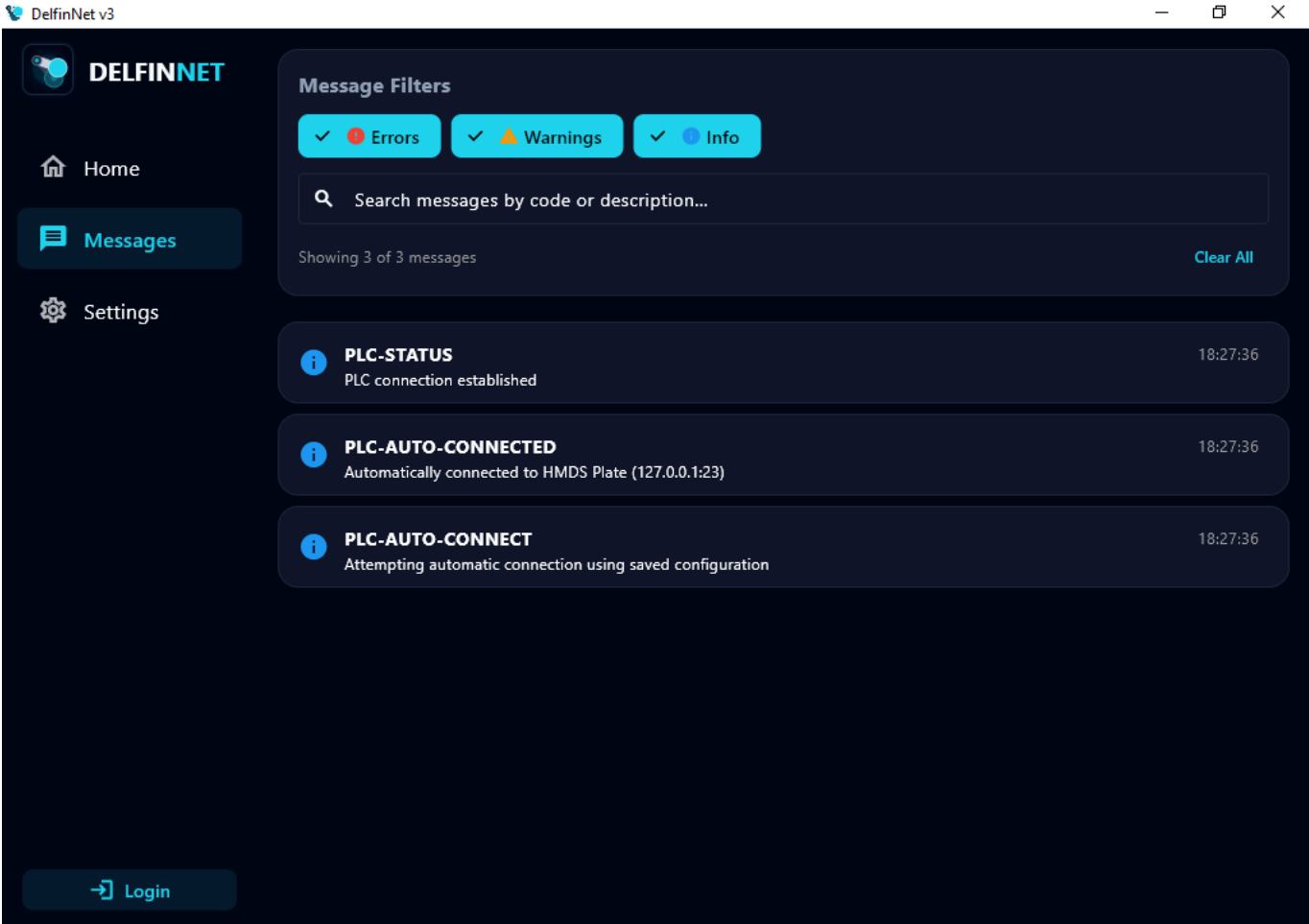
The **Messages** page displays system messages, alarms, warnings, and info events.

Filter Bar:

- Filter chips for Errors, Warnings, Info.
- Search field for message code or description.
- **Clear All** button removes all messages.
- Message count is shown.

Message List:

- Each entry includes an icon, code, timestamp, and description.
- Colour coding: red = error, orange = warning, blue = info.



The screenshot shows the DelfinNet v3 interface. At the top left, the window title is 'DelfinNet v3'. The main header area includes the 'DELFINNET' logo and a navigation sidebar with 'Home', 'Messages' (highlighted), and 'Settings'. The 'Messages' section features a 'Message Filters' bar with three active filters: 'Errors' (red), 'Warnings' (orange), and 'Info' (blue). Below the filters is a search input field with the placeholder text 'Search messages by code or description...'. A status indicator shows 'Showing 3 of 3 messages' and a 'Clear All' button. The message list contains three entries, all with an information icon (i) and a timestamp of 18:27:36:

- PLC-STATUS**: PLC connection established
- PLC-AUTO-CONNECTED**: Automatically connected to HMDS Plate (127.0.0.1:23)
- PLC-AUTO-CONNECT**: Attempting automatic connection using saved configuration

At the bottom left, there is a 'Login' button with a right-pointing arrow.

11. Terminal

DANGER

Sending commands directly to the PLC can be dangerous. Do not send any commands manually while the process is running. This function should only be used by experienced engineers during machine commissioning.

The **Terminal** page enables direct PLC command communication.

Connection Status Banner:

- Shows connected/disconnected state with auto-reconnect option.

Station Filter:

- Dropdown to filter terminal output by station ID.
- Commands are disabled when "All Stations" is selected (prevents unintended broadcasts).

Command Input:


- **Send Command:** Enter a command string (e.g., `STAT , START , 1 , 100`). Station ID is automatically prefixed based on the filter.
- **Receive Command:** Define the expected response to verify communication.

PLC Command Testing Panel:

- Predefined buttons (STAT, INIT, START, STOP, TIME, DOWNLOAD, STEP, MSGANSWER, SERVICE) send the corresponding command to the currently selected station.

Terminal Output:



- High-performance ListView with colour-coded lines:
 - Cyan → sent command
 - Green → successful response
- Auto-scroll toggle and manual cleanup options.



Connected to PLC

- Home
- Messages
- Terminal**
- Settings

Terminal Output

Filtered: Station 16 468/469 lines (Station 16)  
Lines: 469/2000 | Processed: 469 | Uptime: 8m

```
[2026-02-18T18:35:51.344585] <- 16,STAT,PRESSURE_CDA=4250,VACUUM=0,DRUCK=0,DISP=-750,N2=4242
[2026-02-18T18:35:53.340586] <- 16,STAT,PRESSURE_CDA=4244,VACUUM=0,DRUCK=0,DISP=-750,N2=4239
[2026-02-18T18:35:55.331585] <- 16,STAT,PRESSURE_CDA=4244,VACUUM=0,DRUCK=0,DISP=-750,N2=4243
[2026-02-18T18:35:57.337589] <- 16,STAT,PRESSURE_CDA=4241,VACUUM=0,DRUCK=0,DISP=-750,N2=4247
[2026-02-18T18:35:59.338585] <- 16,STAT,PRESSURE_CDA=4244,VACUUM=0,DRUCK=0,DISP=-750,N2=4245
[2026-02-18T18:36:01.444144] <- 16,STAT,PRESSURE_CDA=4245,VACUUM=0,DRUCK=0,DISP=-750,N2=4240
[2026-02-18T18:36:03.336146] <- 16,STAT,PRESSURE_CDA=4240,VACUUM=0,DRUCK=0,DISP=-750,N2=4253
[2026-02-18T18:36:05.335144] <- 16,STAT,PRESSURE_CDA=4246,VACUUM=0,DRUCK=0,DISP=-750,N2=4245
[2026-02-18T18:36:07.331145] <- 16,STAT,PRESSURE_CDA=4244,VACUUM=0,DRUCK=0,DISP=-750,N2=4242
[2026-02-18T18:36:09.328143] <- 16,STAT,PRESSURE_CDA=4241,VACUUM=0,DRUCK=0,DISP=-750,N2=4247
```

Station Filter: [Clear Filter](#) Showing Station 16


Send Command

Format: command,param1=value1,param2=value2
e.g., STAT, INIT, START

Receive Command

Enter expected response...

PLC Command Testing

 admin

12. Settings and Configuration

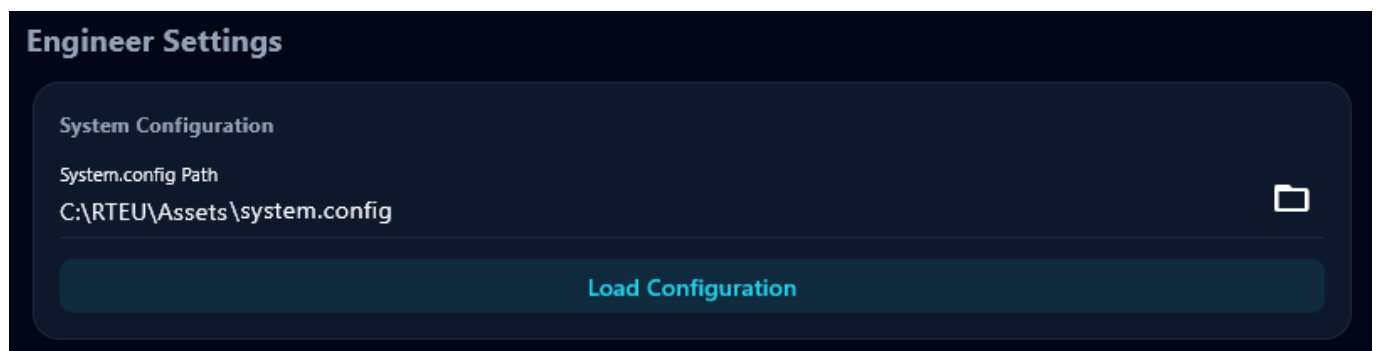
Settings are grouped by user permissions.

12.1 User Settings (All logged-in users)

- **Language:** English, German, Chinese (UI strings not yet localized – placeholder).
- **Dark Mode:** Switch between light and dark themes.
- **Change Password:** Form to update your password.

12.2 Engineer Settings (Engineer/Admin)

- **System Configuration:**
 - Browse for `System.config` file using the native file picker.
 - Selected path is displayed and saved.
 - **Load Configuration** parses the file and updates stations and message definitions.



12.3 Administration (Admin only)

- **User Management:**
 - View Users – opens the user list dialog.
 - Add User – opens the add user dialog.
- **User Group Management:**
 - View Groups – opens the group list dialog.
 - Create Group – opens the create group dialog.

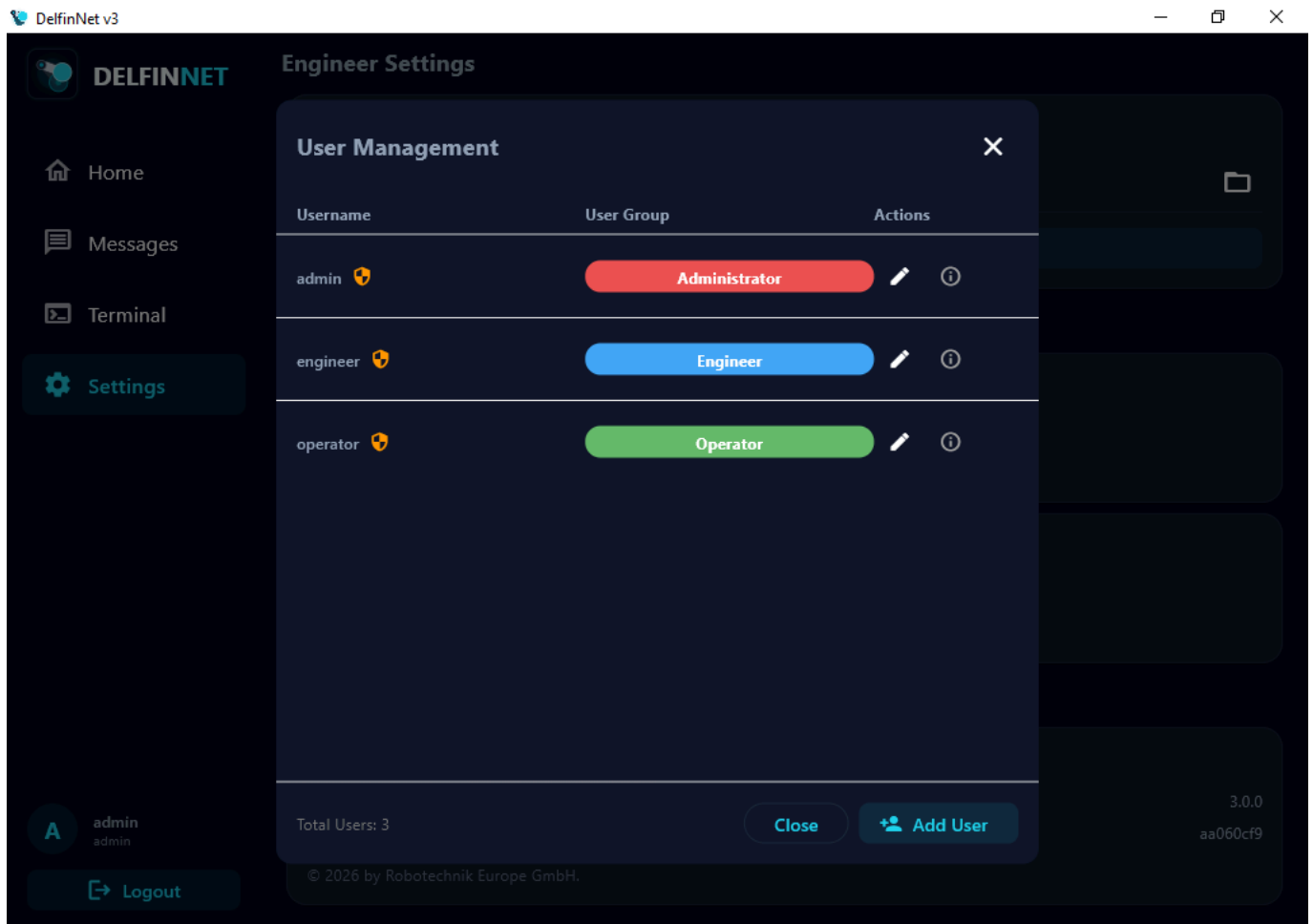
12.4 Application Information

- **About:** Shows version, build hash (Git commit), and copyright.

13. User and Group Management (Admin)

13.1 User List Dialog

- Displays all system users with their assigned group.
- **Protected Users** (`admin` , `engineer` , `operator`):
 - Cannot be deleted; an info icon provides explanation.
 - Can be edited (group change, password change).
- **Actions:**
 - Edit – opens Edit User dialog.
 - Delete – requires confirmation (not available for protected users).

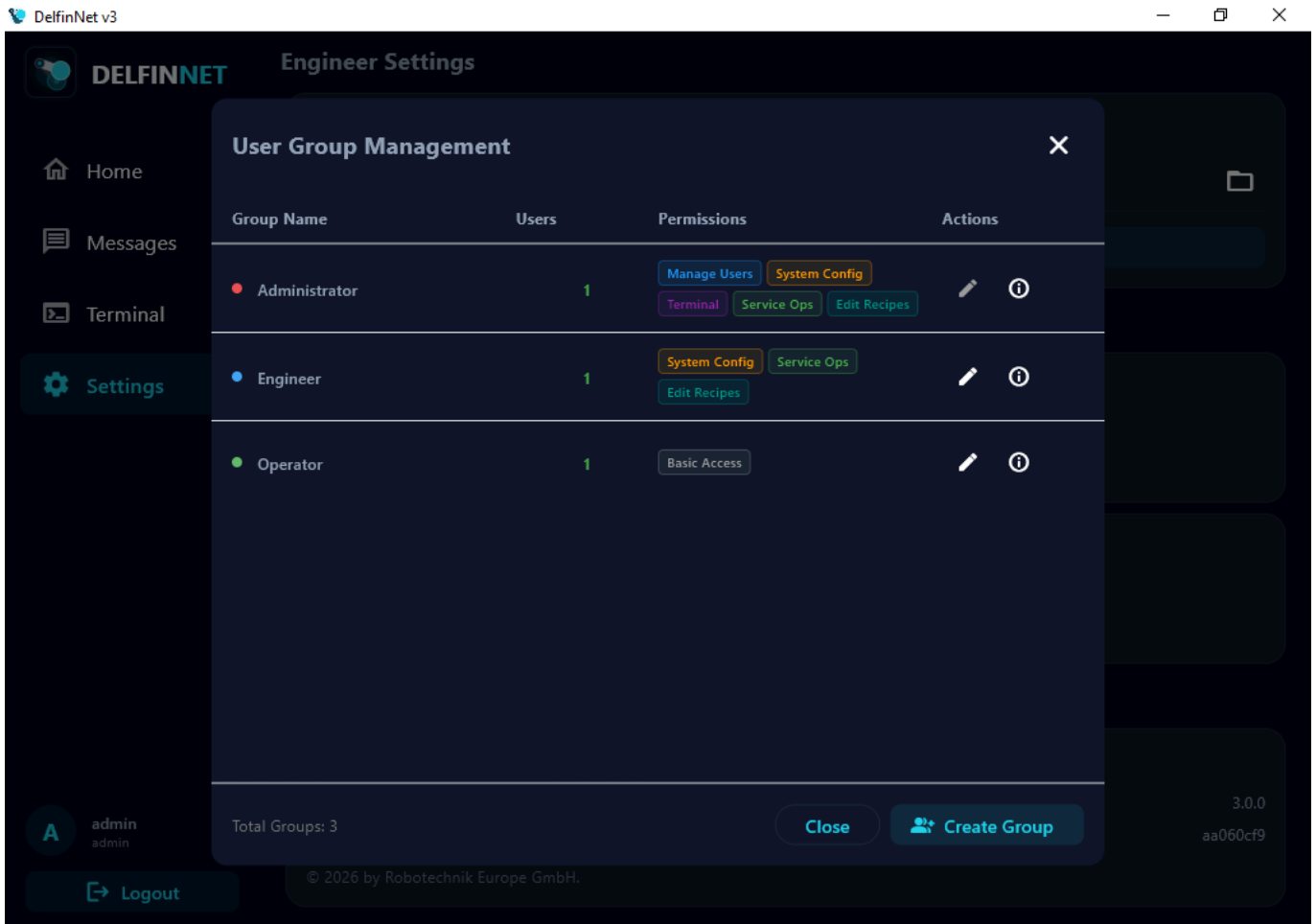


Add / Edit User:

- Username must be unique, at least 3 characters, alphanumeric/underscore.
- Password minimum 4 characters, confirmation required.
- Group selection from the three built-in groups.

13.2 User Group List Dialog

- Lists all groups with user count and permission summary chips.
- **Edit Permissions:** Click the edit icon to modify group permissions.
- **Group Info:** Shows creation date and detailed permission list.



The screenshot shows the 'User Group Management' dialog in the DelfinNet v3 Engineer Settings. The dialog contains a table with the following data:

Group Name	Users	Permissions	Actions
Administrator	1	Manage Users, System Config, Terminal, Service Ops, Edit Recipes	Edit, Info
Engineer	1	System Config, Service Ops, Edit Recipes	Edit, Info
Operator	1	Basic Access	Edit, Info

At the bottom of the dialog, it shows 'Total Groups: 3', a 'Close' button, and a 'Create Group' button. The background interface includes a sidebar with 'Home', 'Messages', 'Terminal', and 'Settings' (selected), and a footer with 'admin', 'Logout', and version information '3.0.0 aa060cf9'.

Create / Edit Group:

- Group name must be unique, minimum 3 characters.
- Four permissions:
 - Manage Users
 - System Configuration
 - Terminal Access
 - Service Operations
- A permission summary shows the effective rights.

14. Standard Operating Procedure – Semi-Automatic Process Run

This section describes the **step-by-step procedure for a semi-automatic process run** on a coating/developing/baking station.

The procedure ensures safe interaction between the operator and the equipment.

14.1 Prerequisites

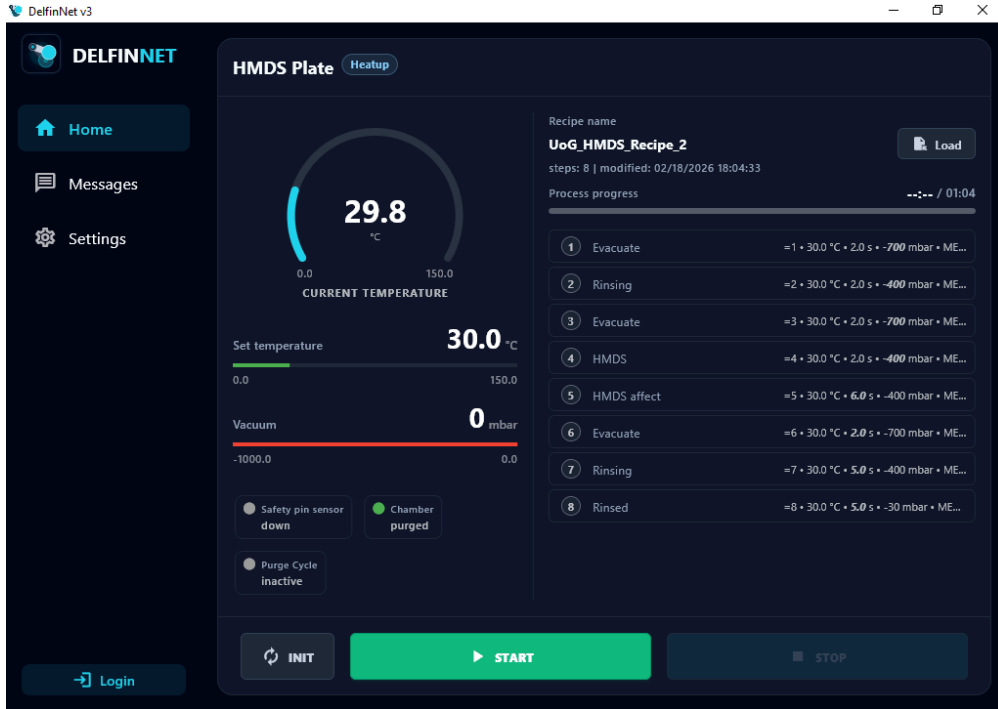
- Operator is logged in with appropriate permissions (not required, but recommended).
- Station is in **Production Mode** (not Service Mode).
- PLC is connected (station status **Ready** or green connection banner on Terminal page).
- Safety lid is open and no wafer is present inside the station.

14.2 Step-by-Step Operation

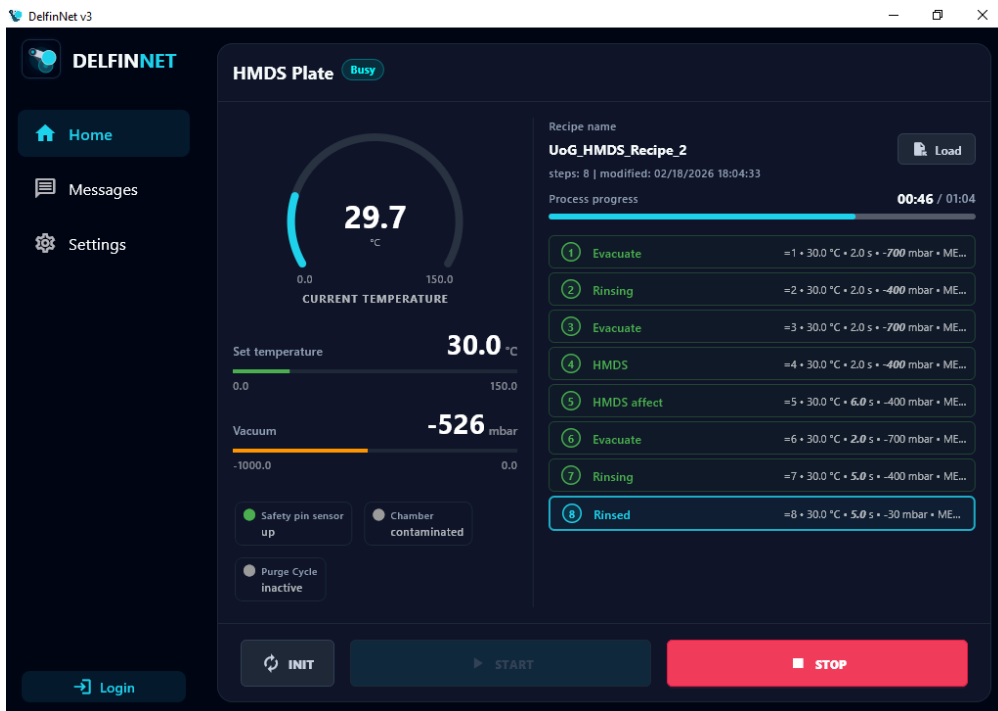
Step	Operator Action	System Response / UI Indication	Safety Note
1	Click INIT button on the station card.	Station status changes to Busy (cyan) → Ready (green) when initialization completes.	Lid will be locked automatically by PLC. Do not try to open lid during initialization.
2	open the safety lid after initialization completes.	–	Ensure lid is fully open.
3	Load the wafer onto the chuck/hotplate/coolplate manually.	–	Use tweezers or end effector; avoid touching the chuck/hotplate surface.
4	Close the safety lid completely.	–	Ensure lid is fully closed.
5	Select and download a recipe: <ul style="list-style-type: none"> • Click the empty recipe area or LOAD button. • Choose recipe from the list. 	Download dialog shows progress; after success, green snackbar appears. Recipe name and steps	Verify that the correct recipe is selected for the product.

Step	Operator Action	System Response / UI Indication	Safety Note
	<ul style="list-style-type: none"> • Wait for the download dialog to close automatically. 	appear in the station card.	
6	Click START button.	<ul style="list-style-type: none"> • Process begins. • Current step is highlighted with theme color. • Progress bar and elapsed time update. • Step list automatically scrolls to keep the active step in view. 	Never open the safety lid while the process is running.
7	<p>Observe process progress:</p> <ul style="list-style-type: none"> • Monitor step execution via the step list. • Check analog parameters on the left gauge/cards. • Wait until all steps are completed (all step indicators become green). 	System status returns to Production Done ; PLC releases the safety interlock (audible click may be heard).	If any alarm occurs, follow the message instructions.
8	Open the safety lid and manually unload the processed wafer.	–	Use appropriate handling tools; wafer may be hot.

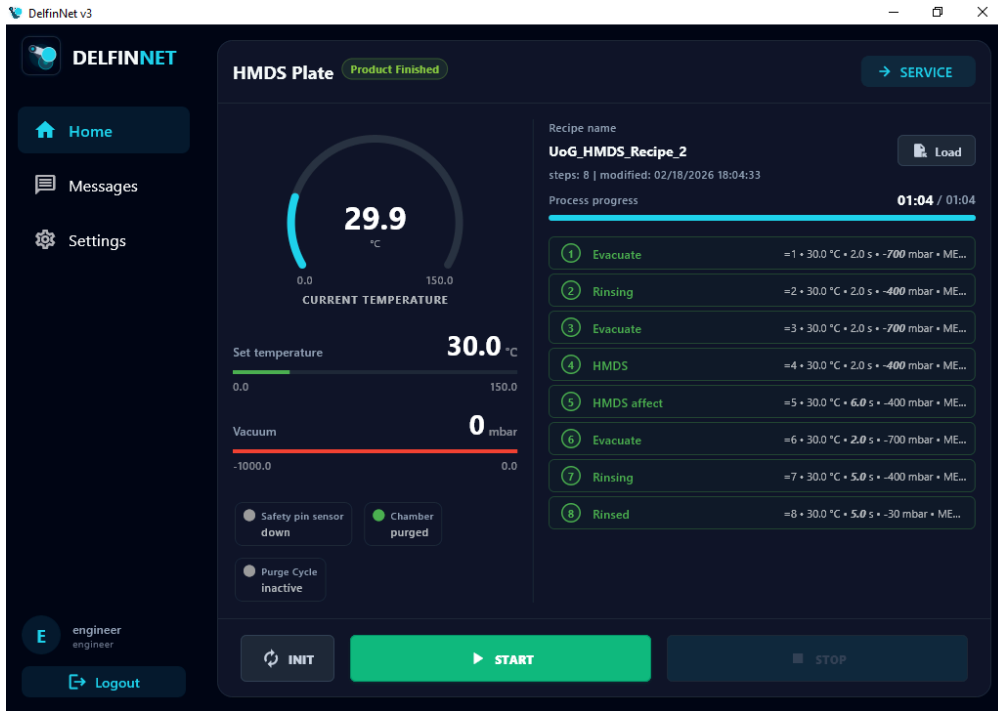
Station card after Recipe Load



Process Running with Highlighted Step



Process Completed (All Steps Green)



14.3 Important Notes

- The **START** button is only enabled when a recipe has been successfully downloaded.
- The **STOP** button can be used to abort the process at any time; the system will attempt to stop the equipment safely.
- Always confirm that the recipe download is complete before pressing **START** – the download dialog auto-closes on success.

DANGER

NEVER try to open the safety lid during processing.

This procedure applies to **all semi-automatic coating/developing/baking stations** configured in the system. For fully automatic operation (robotic loading), refer to the equipment hardware manual.

15. Troubleshooting

Problem	Possible Cause	Solution
Stations not displayed	Configuration file not loaded	Go to Settings → System Configuration, select file and click Load.
"No Stations Configured"	Empty or invalid System.config	Verify the file format and content.
Cannot connect to PLC	Network issue or PLC offline	Check Ethernet connection; click Reconnect in Terminal banner.
Download stuck at 0%	PLC not ready or command rejected	Ensure PLC is in remote/auto mode; check terminal for error responses.
User cannot be deleted	User is protected (admin/engineer/operator)	Protected users are required for system integrity.
Permission changes not applied	Edit dialog not confirmed	Always click Update Permissions after changes.
Terminal commands disabled	"All Stations" filter selected	Choose a specific station from the dropdown.
Message 502: timeout safety pin lock.	The pin is blocked or the safety lid is open.	Close the safety lid. Enter Service Mode, try to move the pin up/down several time.
Message 605: Actuator voltage missing - Please press the reset button.	Safety PLC cut off actuator voltage.	Check if the exhaust pressure is sufficient. Check if the leakage sensor in the media drawer is triggered.
Message 634: timeout chamber flushing cycle.	The required vacuum level could not be reached.	Check the vacuum connection. Check if the vacuum level is set too low. Check if the vacuum pump is defect by checking the vacuum level directly at the pump outlet.

Problem	Possible Cause	Solution
Message 635: timeout reaching requested vacuum level	The required vacuum level in the recipe process could not be reached.	Check the vacuum connection. Check if the vacuum level is set too low. Check if the vacuum pump is defect by checking the vacuum level directly at the pump outlet.
Message 636: chamber pressure too high to switch on media	HMDS or N2 media flow too high.	Turn down the N2 purge flow. Turn down the HMDS media flow.
Message 637: cannot use N2 together with HMDS	The N2 and HMDS valves were both set to open in the recipe step.	Only enable one HMDS or N2 valve per recipe step.
Message 638: process chamber vacuum level dropped - do not open without flushing cycle!	Vacuum connection lost during recipe process.	Close the safety lid. Check and re-connect the vacuum connection.
Message 639: HMDS tank level low	The level of HMDS in the pressure tank is too low.	Refill HMDS.
Message 640: recipe requested vacuum level out of allowed bounds. Use Service mode to adjust limit.	The recipe step set a too low vacuum level.	Enter Service Mode, and adjust the vacuum level limits.

WARNING

By default, the PLC limits the vacuum level to -850 mbar. You can overwrite this limit in the Service Model at your own risk.

16. Appendix

16.1 Glossary

Term	Description
Station	An individual process module (e.g., coater, developer).
Recipe	Set of parameters and steps defining a process.
PLC	Programmable Logic Controller controlling the hardware.
FUNC	Quick-control panel for frequently used digital signals.
Service Mode	Maintenance mode with full I/O access.
System.config	XML file defining stations, signals, and messages.