Operating Instructions

WeldCube Navigator

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General information

Important notes about this document

Purpose of the document

These Operating Instructions describe the functionality, installation, operation, and maintenance of the Fronius WeldCube Navigator software.

The Operating Instructions are intended exclusively for technically trained personnel who are familiar with the creation, management, and execution of sequenced welding processes.

Overview

WeldCube Navigator functional description

The WeldCube Navigator software enables the creation of digital instructions for manual welding processes, which are processed by welders. The individual manufacturing steps can include text, images, and graphics. WeldCube Navigator consists of the following two software components, which are accessible to authorized users:

Editor:
- Digital instructions for manual welding processes are created, stored, and managed in the editor.
- Individual specifications can be defined for each manufacturing step, such as the number of permitted welds, the seam number, or the welding job to be used.
- In addition, reactions to defect cases can be defined, which facilitate validation and rapid intervention by the welding supervisor during processing.

Sequencer:
- Digital instructions are displayed on a computer with a screen in the welding cell, guiding the user step by step through their tasks.
- The welding parameters are preset on the welding machine.
- For navigation, the welder uses an Up/Down or JobMaster welding torch.
- The function keys of the welding torch are used to select, navigate, and confirm instructions and manufacturing steps.
- Alternatively, operation can be performed via an external touchscreen.

Target group

WeldCube Navigator is aimed at all customers who want to improve manufacturing quality and standardize processes through interactive and visualized guidance for welders in manual welding cells. The software was developed for the following user groups:

Welding supervisors:
- Welding supervisors create, store, and edit digital instructions for manual welding processes in WeldCube Navigator. They define individual specifications (number of permitted welds, seam number, weld job to be used) and release processes in the event of errors.

Welders:
- The welder is guided safely and specifically through the welding instructions by WeldCube Navigator. Preset parameters and the ability to select and confirm tasks directly on the welding torch simplify workflows.

Extension options

The following Fronius software products interact with WeldCube Navigator and support its functions:

WeldCube Premium:
- Intelligent management, statistics, and analysis functions enable centralized welding data documentation to be created with WeldCube Premium.
- If both software products are implemented, a direct link to WeldCube Premium will appear in WeldCube Navigator.
- For example, the welding jobs for the instructions can be edited in this setup.
- When a welding instruction has been completed, the corresponding documentation can be displayed in WeldCube Premium.

WeldCube Air:
- Cloud-based centralized collection of welding data, process metrics, and other functionalities.

Central User Management:
- Central management of users and authorizations for Fronius welding systems.

The following option packages can be enabled on the welding machine, which enable additional functionality in the software:

OPT/i Limit Monitoring:
- The welding supervisor can set permitted limit values for each job on the welding machine via „Limit Monitoring".
- If these are not adhered to, WeldCube Navigator triggers a status code.

OPT/i Documentation:
- The welding machine records the actual values of each weld for the weld data documentation.

OPT/i Jobs:
- When a welding instruction is created in WeldCube Navigator, the job can be edited in the SmartManager for the welding machine or in WeldCube Premium.

OPT/i Custom NFC:
- With this option, the welder can use their own key cards instead of the supplied NFC card for logging in to the welding machine and thus also WeldCube Navigator.

OPT/i GunTrigger:
- In conjunction with a JobMaster welding torch and with the special 4-step mode selected, this function enables the torch trigger to be used to switch between jobs during welding within defined job groups.
- WeldCube Navigator adopts this behavior. When executing instructions, the system ensures the user cannot leave the linked job group when selecting a job.

Data communication between WeldCube Navigator and external systems
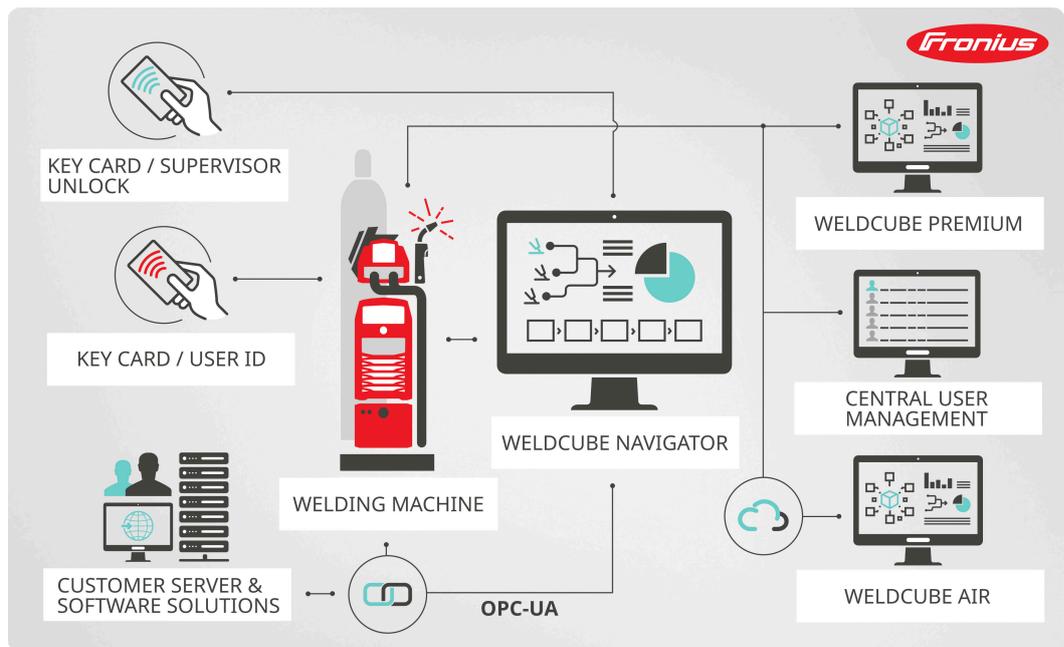
Overview of data communication, symbolic representation

The software communicates with the following components via the LAN or WLAN interface of the computer on which WeldCube Navigator is installed:
- Connected welding machine
- Fronius software products (if present)
- External customer systems and devices (if present)

Users and roles

The following users and roles are defined in WeldCube Navigator:

Administrator:
- The Administrator manages and creates the instructions as a welding supervisor.
- They have access to all administrative functions.
- As a welding machine user, they can also actively perform welding manufacturing steps and execute instructions.

User:
- The User's role is limited to production, i.e., working through the instructions displayed in WeldCube Navigator.

Local Administrator:
- The Local Administrator is responsible for setting up the software and connecting it to the welding machine and any other systems that may be present.
- They have access to all administrative functions.
- A separate password is set for this role
  (default value: Admin123!!), which all administrators can change.
- Unlike the welding machine administrator, they cannot manufacture components.

Connection to Windows user management.
WeldCube Navigator is displayed on the Windows operating system on the nor-
mal user interface.

▶   The software can be minimized or closed at any time.

▶   The rights of the logged-in user are not changed.

**User administra-
tion**

IMPORTANT!
User data must be managed on the welding system when using WeldCube Navig-
ator.

WeldCube Navigator takes over the user data of the welding system. By logging in
to the connected welding machine with an NFC card, the user is logged into
WeldCube Navigator.

There are several ways to manage users:
-   on the welding machine itself (device display)
-   the welding machine SmartManager
-   Fronius Central User Management software

An Administrator has the additional option of configuring the authorized NFC
cards for the users via an external NFC reader on the computer.

Safety

> ⚠ **WARNING!**

Danger from incorrect operation and work that is not carried out properly.
This can result in serious personal injury and damage to property.
- ▶ All the work and functions described in this document must only be carried out by technically trained and qualified personnel.
- ▶ Read and understand this document in full.
- ▶ Read and understand all safety rules and user documentation for this software and all system components.

> ⚠ **WARNING!**

Danger from operating the software during welding.
Serious personal injury and damage to property may result
- ▶ Do not operate the software during welding.
- ▶ During welding, pay full attention to the welding torch and the component.

> *NOTE!*

Risk when using the default password.
The default password does not provide sufficient protection for the software and the data managed in it.
- ▶ Replace the default password of the local administrator with a secure password to prevent unauthorized access and tampering.

> *NOTE!*

Risk of tampering due to insecure connection.
When connecting to external systems, tampering such as data loss may occur.
- ▶ When connecting WeldCube Navigator to external systems (for example, production planning systems, order processing systems, PLCs, via OPC-UA), secure the connection through signing and encryption (policy: Basic256Sha256).
- ▶ Use client certificates and user certificates.
- ▶ Alternatively, use encryption with access data (username and password).

> *NOTE!*

Risk of unauthorized access to exported welding instructions.
Exported welding instructions are transmitted as an unencrypted file and are not protected by a password.
- ▶ Make exported instructions accessible to authorized persons only.

> *NOTE!*

Risk due to the use of an incorrect job number.
Incorrect welding parameters are set due to an incorrect job number. A faulty welding process can be the result.
- ▶ Ensure that the job stored on the welding machine is valid for the selected instruction.

Data storage All data resulting from the installation, operation, and update of WeldCube Navigator is stored locally on the control unit.

Data on welding processes are stored on the welding machine.

The user management data are taken over by the welding system and stored on the welding machine or, if available, in Central User Management. Only the user's name and language as well as the preferred system of units are queried and adopted.

Data Privacy Statement The provisions of the EU General Data Protection Regulation apply. Personal data is processed in WeldCube Navigator exclusively in the form of the name of the creator or modifier of a manufacturing instruction. More detailed information can be found in the license terms of the software, which are provided to the customer by the manufacturer.

Installation

Prerequisites for the installation

Welding system
A Fronius welding system with the following components is required for processing welding instructions in WeldCube Navigator:
- Fronius welding machine in the TPS/i series (TPS 320i or higher)
- Fronius welding machine in the iWave series (190-500i)
- WF25i Dual wirefeeder
- OPT/i WeldCube Navigator option enabled (item number 4,067,029)

The welding machine and the control unit must have a stable network connection and be on the same network.

Compatible software and firmware
Be aware that the following compatibilities apply when operating WeldCube Navigator in a welding system.

Welding machine/wirefeeder	WeldCube Navigator software version	Welding machine/ wirefeeder firmware version
TPS/i (320i and above)	≤ 2.2	≤ 3.5.10
TPS/i (320i and above)	≥ 2.3	≥ 4.4.0
iWave (190-230i)	≥ 2.4	≥ 2.2
iWave (300 - 500i)	≥ 2.3	≥ 4.1
WF25i Dual	≥ 2.3	≥ 4.1

Recommended welding torches
The use of Fronius welding torches with the **JobMaster-** and Up/Down Function is recommended. WeldCube Navigator is controlled directly via the function keys on these welding torches (see **Welding torch navigation**).

In the case of third-party devices, an alternative control option is required for the software.

Requirements for the control unit
WeldCube Navigator can be operated with the following configurations:
- **Office setup:** PC with mouse and keyboard
- **Production setup:** Industrial PC or tablet controlled by touch sensor or directly by the welding torch. Authentication is performed by the NFC card reader on the welding machine.

The welding machine and the control unit must have a stable network connection and be on the same network.

For use in production, control by the Fronius welding torch is recommended. Installation is only possible on devices with a Windows operating system.

The control unit must meet the following system requirements:

- **Processor:** Intel Core i5 or equivalent
- **Memory:** 8 GB
- **Network:** Data transfer rate of 1 Gbit/s, IPv4 protocol
- **Display:** Screen with Full HD resolution (1920x1080 pixels) or higher
- **Operating system:** Microsoft Windows 10 (64bit) or higher

Installation

Installing Weld-Cube Navigator

WeldCube Navigator is ordered and delivered via the Fronius sales network.

To install the software, perform the following steps:

1 Download the installation file from the download area of the Fronius website.

2 Execute the file via Windows Explorer.

3 Follow the instructions of the installation wizard.

The customer can configure the software themselves at the respective welding workstation. Configuration will only be provided by Fronius if this has been expressly agreed with the customer.
Fronius will provide the customer with the detailed license conditions in the form of a separate document.

Logging in and out

The login process in WeldCube Navigator is performed differently depending on the user group and the status of the system:
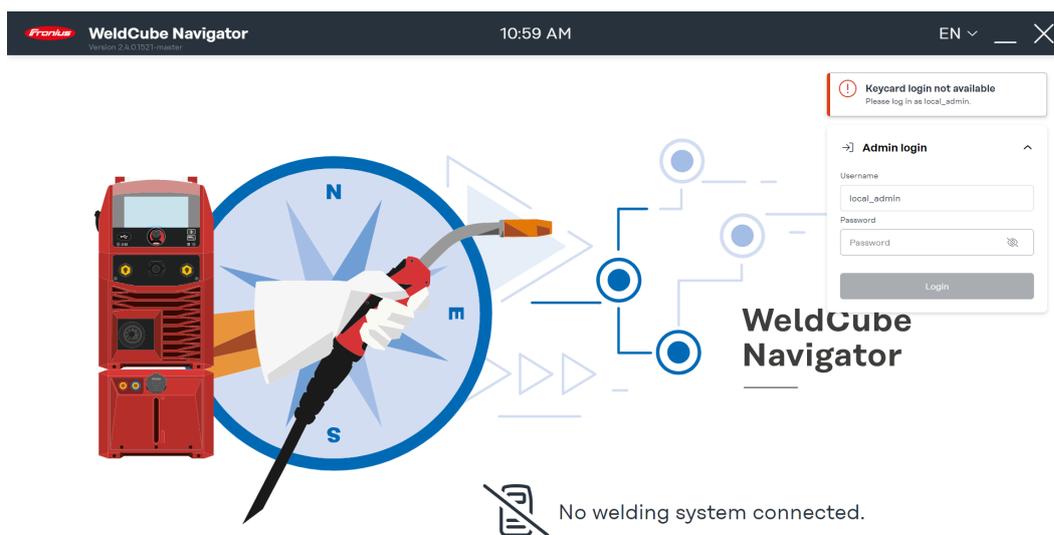
Immediately after software installation without a connected welding machine:
- **Local Administrator:** Open the software on the PC and enter the one-time password **(Admin123!!)** in the **login dialog**. The user is logged into the software only. The **Manufacturing** area is not accessible for this user. The one-time password must be changed after logging in for the first time.
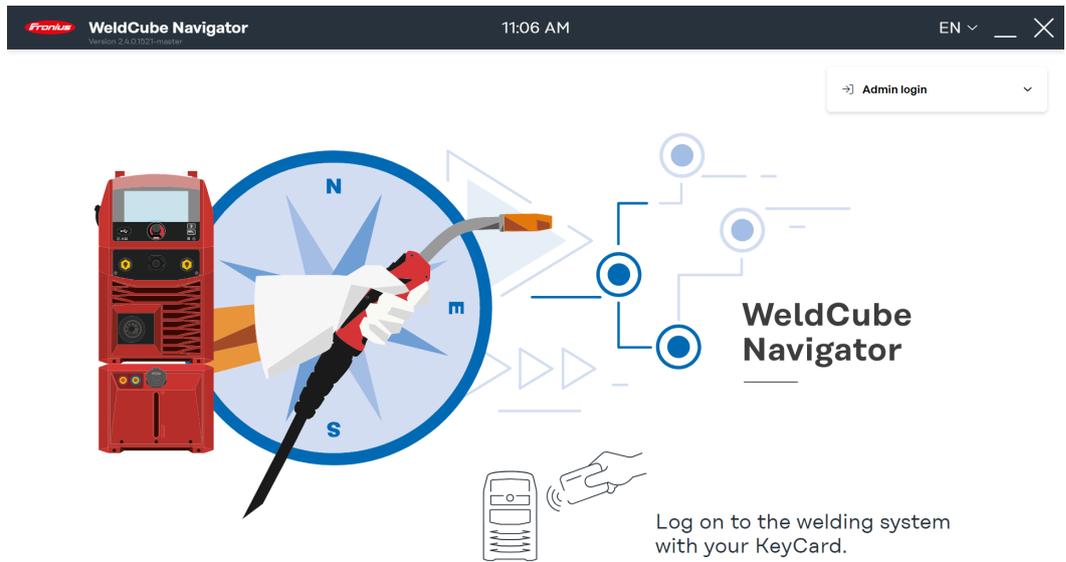
When there is a stable connection with a welding machine (see**Establishing a connection to the welding machine**:
- **User:** Hold the NFC card in front of the card reader on the welding machine. The user is logged in to the welding machine and into the software, and can start **manufacturing**.
- **Administrator:** Hold the NFC card in front of the card reader on the welding machine. The user is logged in to the welding machine and into the software. The areas **Manufacturing**, **Manage instructions** and the user administration are enabled for this user.

There are also several options for logging out:

- **Logout with NFC card ("User" and "Administrator"):** Hold the NFC card in front of the card reader on the welding machine again. The user is logged out.
- **Logout via the user interface (all user groups):** All user groups can also log out directly from the user interface. In the top menu bar, click on the **user name** and then the **Logout** button.

Resetting password	Proceed as follows to reset the password for the local administrator:

1	Close WeldCube Navigator.
2	Open the Microsoft **Services** application as an administrator.
3	Exit the **WeldCube Navigator** service.
4	In the **C:\ProgramData\Fronius\WeldCube Navigator\Service\database** folder, delete the **User.db** and Users-log.db files

> **NOTE!**
>
> **Program files**
> Risk of data loss
> ▶ Only ever delete data in the **ProgramData** folder.
> ▶ Do not change or delete data in the **Programs** folder.

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5 Start the **WeldCube Navigator** service.

6 Open WeldCube Navigator.

Activating the OPT/i WeldCube Navigator option

The customer receives a license file with the purchase of WeldCube Navigator. This can be used to activate the OPT/i WeldCube Navigator (item number 4,067,029) option on the welding machine.

To do this, proceed as follows:

1 Open the SmartManager for the welding machine.

2 Open the **overview of available function packages**.

3 **Search for the function package** and upload the license file.

For new welding machines, this option is already enabled at the factory.

OPT/i WeldCube Navigator can also be activated using the trial license. The trial license allows you to use and test all currently available function packages free of charge on the welding machine. After activating the trial license, all function packages and extensions are available for a limited arc time.

Proceed as follows to install the trial license:

1 Defaults / Administration / Trial License

2 Press the selection dial

　　The information for activating the trial license is displayed.

3 Select "Next"

4 Register via WeldConnect

5 Select "Next"

6 Start trial license by selecting "Next"

7 Confirm prompt

　　The confirmation that the trial license has been started is displayed.

8 Select "End"

　　The remaining time until the trial license expires is displayed under Adminis-
　　tration.

Establishing a connection to the welding machine

The main functions of WeldCube Navigator are not displayed to the user until the software is connected to a compatible welding system (see **Welding system**).

To establish a connection to the welding machine:

1 Open the **System settings**.

2 Enter the IP address of the device in the **General** menu.

3 | Click **Save**.

- ✓ *A green check mark is displayed next to the* **welding machine icon** *when the connection is established.*

As of WeldCube Navigator version 2.3, a secure client connection must be established to the welding machine once only. To do this, proceed as follows:

1 | Open the **System settings**.

2 | Click the **Request secure connection** button in the **General** menu (see**System settings**.

3 | Confirm the secure connection request on the welding machine.

- ✓ *The secure client connection has been established.*

These steps only have to be carried out once. The settings are saved. The connection is automatically restored, e.g., after a network failure.

Settings in WeldCube Navigator

System information

This menu area is visible to all users. The system information provides an overview of the active system components:

- **Active welding machine:**
    - Name
    - Device type
    - IP address of the device
    - Installed firmware version
    - Active option packages on the welding machine
- **Display device:**
    - Device type of the PC / tablet on which WeldCube Navigator is installed
    - Installed operating system
    - Storage space...
- **Software version:**
    - Installed software version
    - Links to terms and conditions of use
    - Link to log files
- **Third-party software licenses:**
    - Name
    - Version
    - License texts
    - Copyright texts

System settings

For the "Administrator" and "Local Administrator" users, the following settings are available in this menu area:

1. Connect to a welding machine (see section **Establishing a connection to the welding machine**) via the IP address.
   - Enable the **Prevent welding in case of loss of connection** function in order to block the welding process on the welding machine if the network connection is lost.
   IMPORTANT!
   Reconnect the welding machine to WeldCube Navigator once the network connection is active again. Without a connection, welding instructions cannot be processed and data exchange is not possible.
2. Establish a connection to WeldCube Premium
3. Enable processing exclusively via the API
4. Activate Suspend Mode via torch control (see section **Pausing and skipping processing**)
5. OPC-UA-Server connection
6. Password and user language of the local administrator

Some of the settings are described in the following paragraphs. Each change to the system settings must be confirmed as follows:

1 Click **Save** to save the settings for all tabs.

2 Click the **house icon** to return to the main menu.

Establishing a connection to WeldCube Premium

Connect to WeldCube Premium to enable centralized welding data documentation:

1 Select the **General** tab.

2 Enter the URL of the existing WeldCube Premium installation.

3 Activate the **Use WCP** button.

Establishing a connection to an OPC UA server
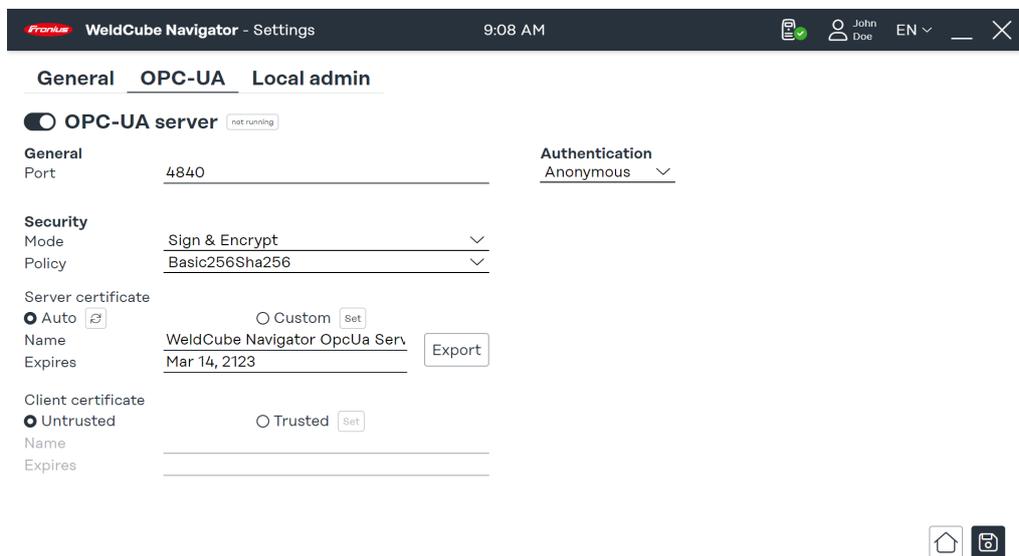
Establish a connection to an OPC-UA server to enable WeldCube Navigator to communicate with an external customer system:

1 Select the **OPC-UA** tab.

2 Configure the server connection.

3 Select the type of authentication.

Risk of tampering due to insecure connection.

When connecting to external systems, tampering such as data loss may occur.

▶ When connecting WeldCube Navigator to external systems (for example, production planning systems, order processing systems, PLCs, via OPC-UA), secure the connection through signing and encryption (policy: Basic256Sha256).

▶ Use client certificates and user certificates.

▶ Alternatively, use encryption with access data (username and password).

OPC-UA server functions

WeldCube Navigator is equipped with an **OPC-UA server**. Software and the connected welding machine can be connected to external systems via OPC-UA to enable automatic welding applications.

The **OPC-UA server** supports the following Methods (functions):

Method	Description
Load Instruction via ID	**GUID (Global Unique Identifier)** is the unique identification number of each welding instruction. The **GUID** is displayed in the **Manufacturing** menu. External systems call up instructions via the OPC-UA server directly on the basis of the **GUID**. The welder is shown the welding instruction to be processed. A list selection is not necessary.

Method	Description
Load Instruction via Part Item Number	External systems call up instructions via the OPC-UA server directly on the basis of the part item number. The welder is directly shown the instruction to be processed. A list selection is not necessary.
Set Instruction Search Text	In the **Select instruction** menu area, the external system performs searches using predefined search terms to display specific instructions. There is no need for manual input by the welder.
Set Part Serial Number	A serial number is entered in the overview of the selected instruction. This replaces the automatically generated serial number of the software. All data are linked to the set serial number and documented.
Cancel Manufacturing	The external system interrupts processing. WeldCube Navigator switches to the **Select instruction** menu area. This makes it easier to rework and repair defective components.
Logout User	All users are automatically logged out of the software and the welding machine. The system is thus protected against unauthorized access.

Method	Description
Unlock Current Manufacturing Step	The welding supervisor resets a pending error via the external system. Processing of the current work step is released again.

Via the following data nodes, the OPC-UA server transmits signals from the production control, the welding machine, and the PC to an external system:

Manufacturing status data nodes

Data node	Description	Value
Current Manufacturing Status	Describes the current status of the software: - Idle: Default status, manufacturing not in progress - Ready for Manufacturing: Software is ready for production, instructions can be selected - Manufacturing: Displayed during production - Suspended: Suspend mode is active - Finished: Production finished, summary is displayed - Locked: Current work step is blocked by an error	- 0 (Idle) - 1 (Ready for Manufacturing) - 2 (Manufacturing) - 3 (Suspended) - 4 (Finished) - 5 (Locked) - 6 (Inactive) The values can be used to synchronize the status with a PLC controller.
Current Manufacturing step	The number of the current work step	Int32 (example)
Current Part - Instruction Id	GUID of the currently selected instruction	GUID
Current Part - Instruction Name	Name of the currently selected instruction	String
Current Part - Manufacturing steps	Number of work steps in the selected instruction	Int32 (example)
Current Part - Part Item Number	Part item number of the selected instruction	String
Current Part - Part Serial Number	Serial number of the processed part	String

Welding machine data nodes

Data node	Description	Value
IP Address	Assigned IP address of the welding system	String
Location	Location of the welding system	String
Name	Name of the welding system	String
OPT/i	List of active function packages for the welding machine	LicenseOption Array
Serial Number	Serial number of the welding system	String

System information data nodes

Data node	Description	Value
Disk Drives	List of hard disks installed on the PC	Strings list
Installed Memory	Installed RAM memory	String
Network Adapters	List of installed network adapters	Strings list
Operating System	Name of the installed operating system	String
Processor	Name of the installed processor	String
System Manufacturer	Device manufacturer	String
System Model	Device type designation	String
System Name	Host name of the system	String

Enabling processing exclusively via the API

Enable processing exclusively via the API:

1 Check the **Enter part manufacturing via API only** checkbox in the **System settings** menu.

2 Establish connection to the **OPC-UA server** (see previous paragraph).

3 Call the OPC-UA API in the external customer system.

In this way, the processing of the instructions is controlled via the customer system. WeldCube Navigator is started with these settings, but the **Manufacturing** area is locked.

Changing settings of the local administrator

Change the settings for the local administrator:

1 Open the **Local admin** tab.

2 Customize password and user language.

The password must meet 4 of the 5 defined criteria:
- Minimum length 10 characters, maximum 16 characters
- Contains a capital letter
- Contains a lowercase letter
- Contains a number (0-9)
- Contains a special character (@, #, etc.)

Language set-tings

The user has several options to set the language of the user interface:
- In the upper menu bar the currently used language is indicated as an abbreviation (for example **EN**). Here you can select one of the available languages for each session.
- Change stored user language permanently:

1 Click on the **username**.

2 Set the language in the user settings.

Applications

Editor

User interface editor
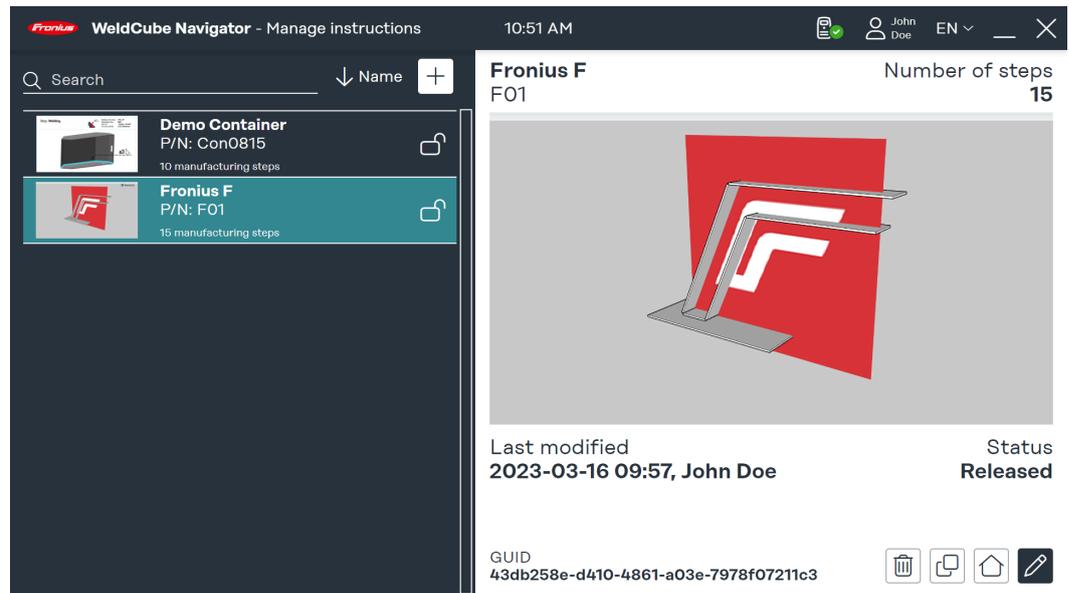
This user interface is visible to the **"Administrator"** and **"Local Administrator"** users and provides the following functions:
- Create instructions
- Manage instructions
- Software configuration
- System settings

The general **"User"** is authorized exclusively to work through instructions and therefore has no access to the editor.

Types of manufacturing steps

In the editor, three different types of steps can be created when creating instructions:
- **Generic:** This general manufacturing step is selected if pre- or post-processing activities (preparation of the weld seam, clamping, or repositioning of the workpiece) are to be performed.
- **Welding:** Refers to a simple weld, for example the bead of a seam, which must be welded through without interruption.
- **Multiple welds:** Used when several similar welds are to be performed with the same job for one manufacturing step. A specified / permitted number of seams can be defined for each manufacturing step (e.g., for tack welds or filling runs or multirun welds).

Creating instructions

Create a manufacturing instruction as follows:

1   Click **Manage instructions**. An overview of the available instructions appears.

2   Click the **+** button. The **New instruction** dialog appears.

3   In the **Instruction name** input field, enter the name of the instruction.

4   Enter the part number of the workpiece to be processed in the **Part item number** field.

5   Upload an overview image (optional).

6   Click **Edit instruction** to edit the created instruction.
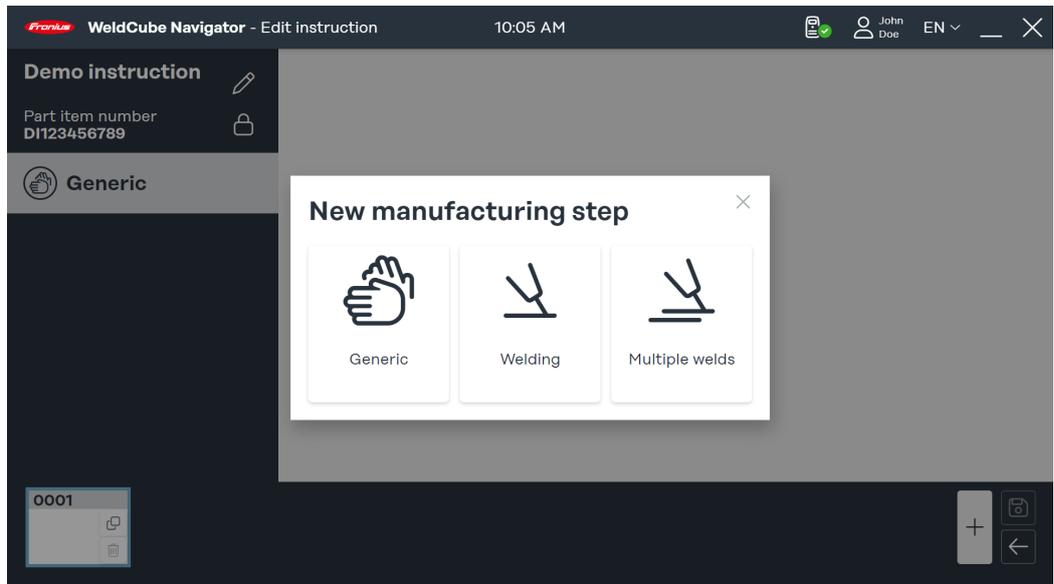
7 Click **+** in the menu area of the created instruction. The **New manufacturing step** dialog opens.

8 Select the type of manufacturing step.

9 An image must be uploaded for each manufacturing step. Click **Upload image** and select an image from a computer location.

The following image formats are allowed:
- png
- jpeg
- bmp
- gif

10 Set parameters for the manufacturing steps:
- **Seam number**: Weld number.
- **Job number:** Number of the welding job.
  - The job can be edited if necessary by clicking the **Edit job** link in the SmartManager for the welding machine.
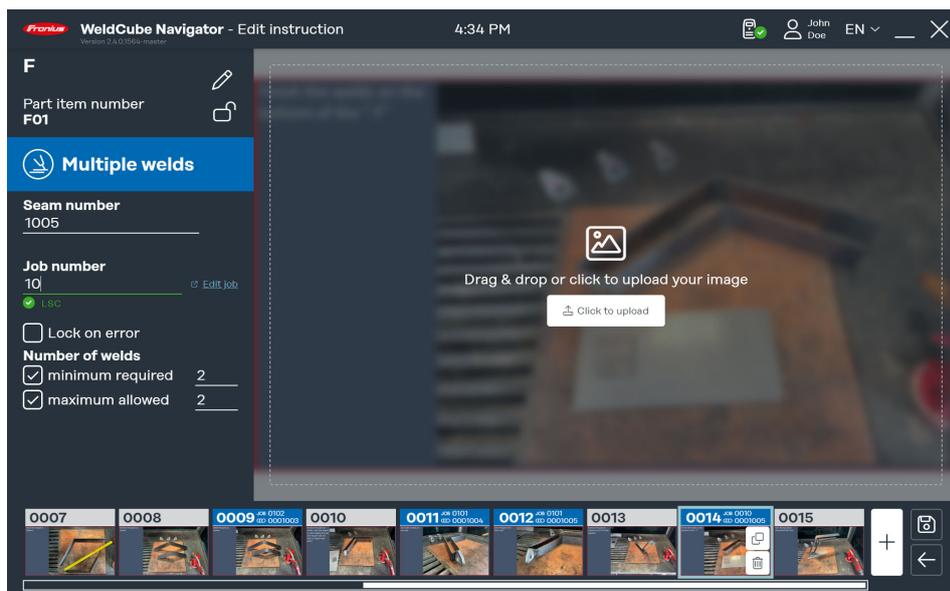
Additional parameters can be added for multiple welds:

- **Number of welds**: The minimum required and maximum allowed number of welds is defined and monitored by WeldCube Navigator during processing.
- **Lock on error**: WeldCube Navigator stops processing as soon as the maximum permitted number of welds is exceeded or the welding machine transmits a Limit Monitoring error. The welding supervisor must acknowledge the error so that processing can continue.

11 Click **Save** when the creation and editing of the instruction and manufacturing steps are complete.

Managing instructions
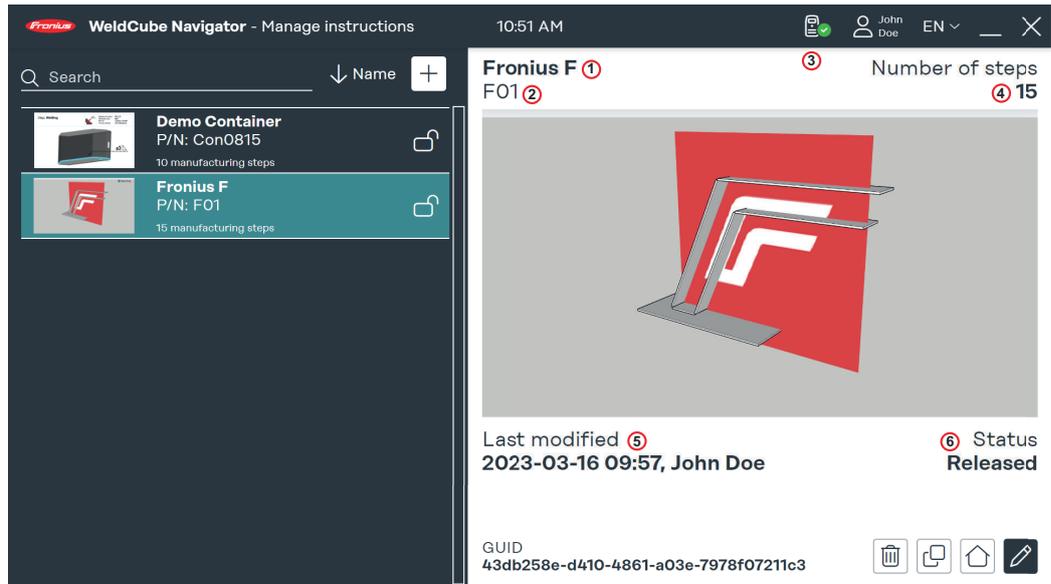
In the overview of available manufacturing instructions, they can be edited, copied, and deleted. In the search box, you can search for a specific instruction and sort the selection by criteria. The following parameters are displayed in the right-hand preview area of the user interface:
1. Name
2. Part item number
3. Creator or modifier
4. Number of manufacturing steps
5. Modification date
6. Status

Instructions with the status **Locked** can be edited in the editor. They are not released for processing by a welder. The status **Released** unlocks the instructions for processing in the sequencer.

Sequencer

Sequencer user interface

The "Sequencer" shows the available welding instructions and guides the user through the individual manufacturing steps.

The general **"User"** can only access the **Manufacturing** and **System information** buttons. **"Administrator"** users can also access the editor functions in addition to manufacturing.

Welding torch navigation

The welding torch navigation function is only available for Fronius welding torches with the **Up/Down** and **JobMaster function**. To begin **manufacturing** using the welding torch, perform the following steps:
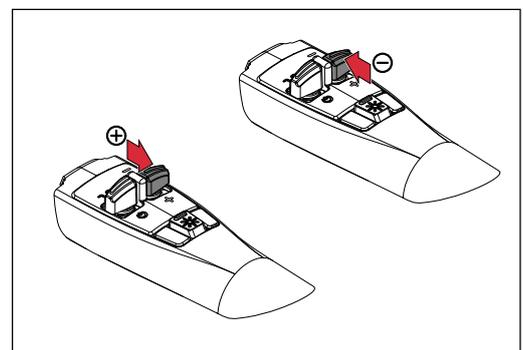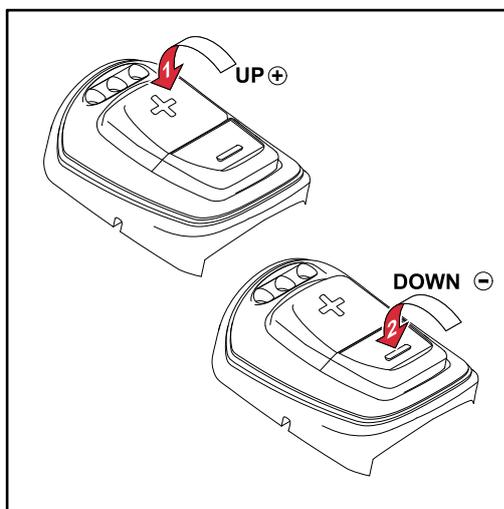
Up/Down torch:

[1] Press the **+** function key on the welding torch in the main menu of the software.
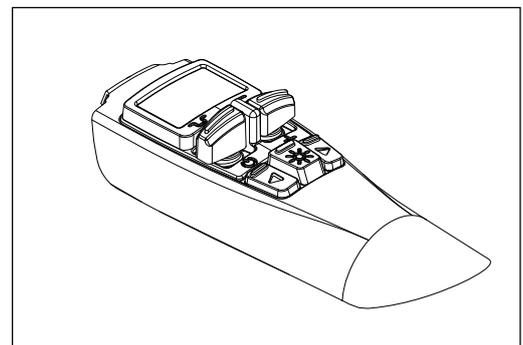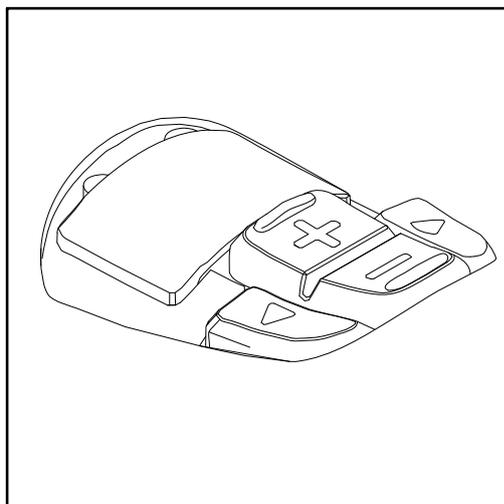
JobMaster welding torch:

[1] Select WeldCube Navigator mode on the welding torch display. The **+/-** function keys are now enabled for WeldCube Navigator.

| 2 | Press the **+** function key on the welding torch in the main menu of the software. |

The following navigation steps and actions are controlled via the function keys:

| Program area	Key	Function
Main menu	**+**	Opens the selection of available welding instructions
Overview of welding instructions	**+**	Go to the previous list item
	-	Go to the next list item
	+	Press and hold to open the selected instruction
	-	Press and hold to enter the main menu
Welding instruction start page	**+**	Start execution of the welding instruction
	-	Press and hold to switch back to the welding instructions overview
Processing	**-**	Activate/deactivate Suspend Mode (see **Pausing and skipping processing**)
	+	Switch to the next manufacturing step
Processing summary	**+**	Repeat the processing with a new serial number (if the function **Enabling processing exclusively via the API** is not activated).

Processing instructions

⚠ **WARNING!**

Danger from operating the software during welding.
Serious personal injury and damage to property may result
▶ Do not operate the software during welding.
▶ During welding, pay full attention to the welding torch and the component.

Perform the following steps before executing a welding instruction:

1	Log in to the welding machine with the NFC card.
2	Open WeldCube Navigator on the control unit.
3	Click the **Manufacturing** button to go to the overview of released instructions.
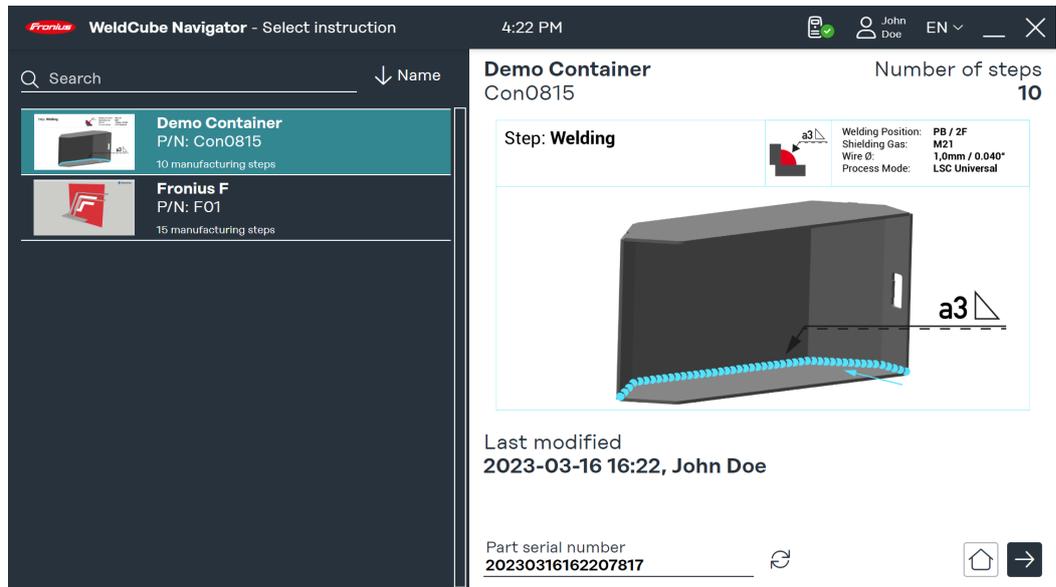
You can search for individual instructions in the search field. Sorting, for example by instruction number, is also possible.

4 Press the function key on the welding torch (see section **Welding torch navigation**) or the **right arrow** on the screen to call up the overview of the selected instruction.
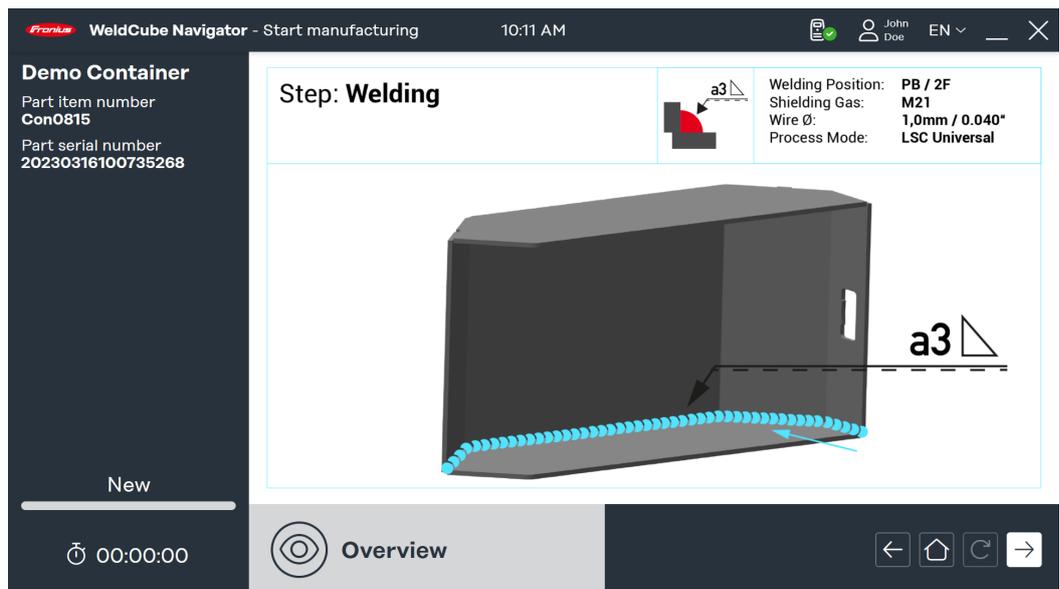
5 Press the function key on the welding torch (see section **Welding torch navigation**) again or click the **right arrow** on the screen to display the first manufacturing step.

From this point on, the production time is recorded and the welder can start work:

6 Press the function key of the welding torch (see **Welding torch navigation**) or click the **right arrow** on the screen to start welding or the generic manufacturing step.

7 After the last manufacturing step, press the function key again (see **Welding torch navigation**) or click the **right arrow** on the screen.

The summary of the instruction is displayed. The summary contains the following parameters:
- Instruction name
- Part item number
- Part serial number
- User (multiple users can be recorded, see **Re-registration**)
- Start and end time
- Number of manufacturing steps with the status "OK", "not OK", "skipped"
- Number of performed welds in normal mode and in **Suspend Mode**

8 Click the **house icon** to go to the main menu.

9 Click **Documentation** to view a detailed report in WeldCube Premium (optional).

10 Click the **arrow key** and process the same part again with a new serial number (optional).

Example of multiple welds
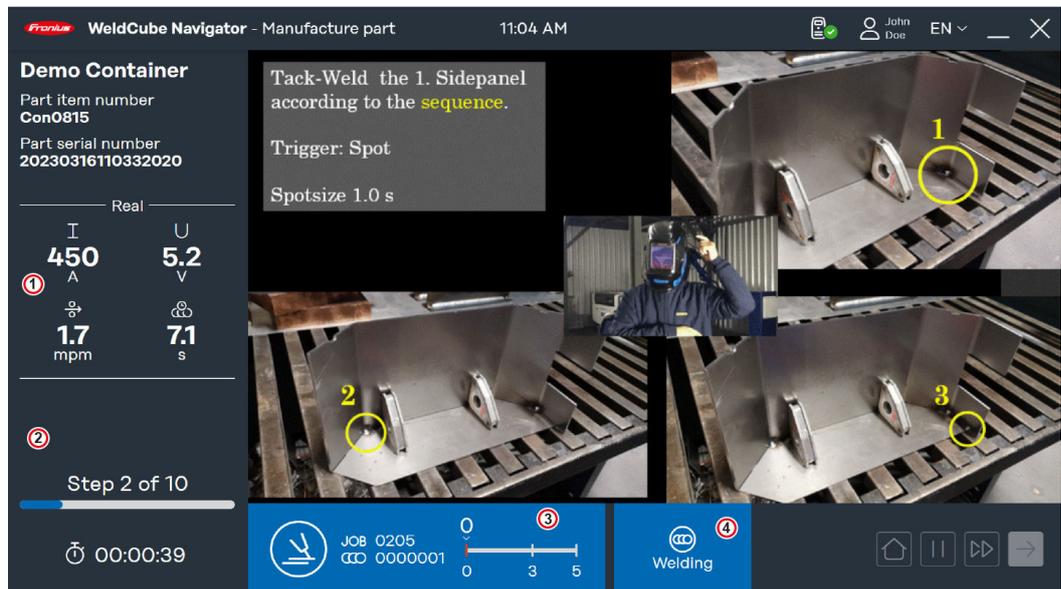
In this example, a multiple weld manufacturing step is displayed with the following information:

1. **Welding parameters**: Preset parameters transmitted from the welding machine and shown in 4 displays:
   - **Command**: Set values before welding
   - **Real**: Real-time values during welding
   - **Hold**: Last value recorded at the end of the operation
   - **Mean**: Mean values over the weld

2. **Status of manufacturing instruction**
   - Result of the last weld, either a **green check mark** (status: OK) or a **red exclamation mark** (Status: not OK) appears
   - Current number and total number of manufacturing steps
   - Production time already elapsed

3. **Blue bar**
   - Symbol for category of the manufacturing step
   - Job number
   - Weld number
   - Progress and allowed number of welds (here it is minimum 2 and maximum 6 welds)

4. **Status of manufacturing step**
   - **Ready to weld**: The Sequencer is ready for welding.
   - **Welding**: Welding is being performed.
   - **Locked**: Further processing is blocked.
   - **Error**: An error has occurred.

Examples of limit violation
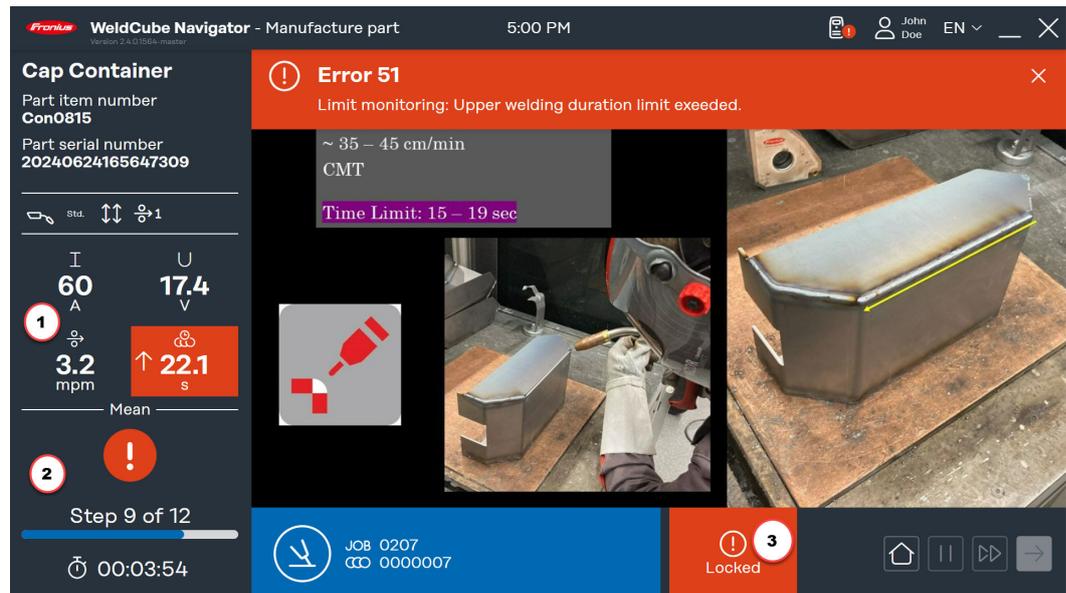
WeldCube Navigator stops processing as soon as an error occurs in the welding process. If the **Lock on error** function is active, the display changes in the event of an error:

1. The display of the **welding parameters** is set to **Hold**. The parameters are highlighted in red. The arrows symbolize deviations from the parameters that trigger an error:
   - **Up arrow**: Value too high
   - **Down arrow**: Value too low
   - **Double arrow**: Value in interval too high and too low
2. **Status of manufacturing instruction**: The result of the last weld is highlighted with a **red exclamation mark**.
3. **Manufacturing step system status** is **Locked**
4. **Error bar**: Errors that occur on the welding machine are displayed here.
   - Type of error
   - Error number
   - Short description of the error

In order for the error bar to be displayed in WeldCube Navigator, apply the following settings on the welding machine:

1. Activate the function **"limit reaction: error"**.

2. Alternatively, activate the option **"limit reaction: warning"** to display warnings.

The **"limit reaction: warning"** option results in changes to the display:
- Affected **welding parameter** is highlighted in yellow.
- Warning is displayed as a yellow exclamation mark for the **manufacturing instruction status**.
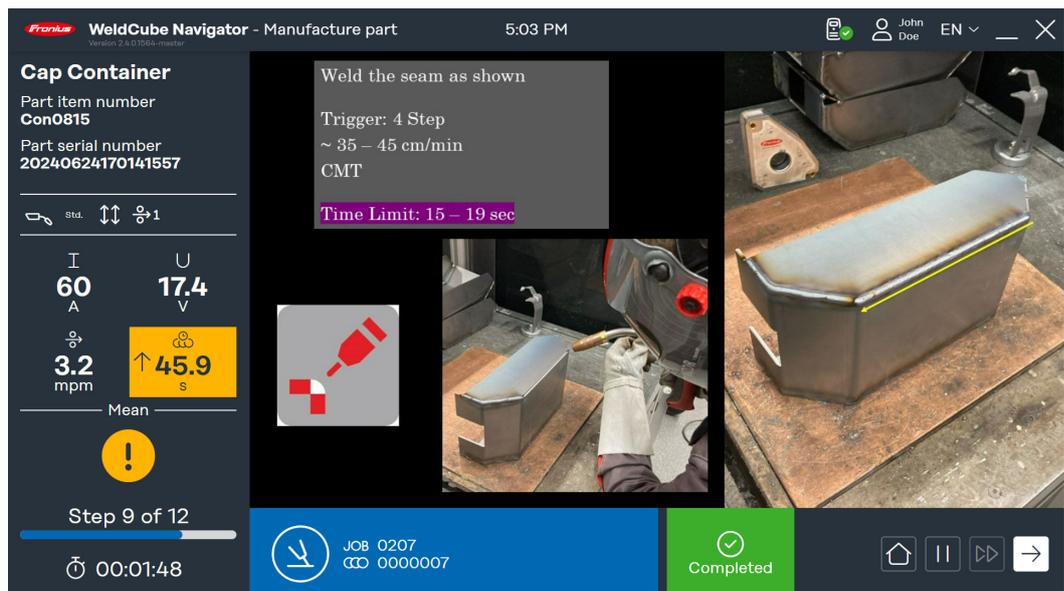
Another scenario for a limit violation is a general error:
- **Manufacturing step system status** is **Error**
- **Error bar** shows the error number and the description of the error
- Unlike the **Locked** status, **Error** allows you to navigate to the next step and pause the instruction.
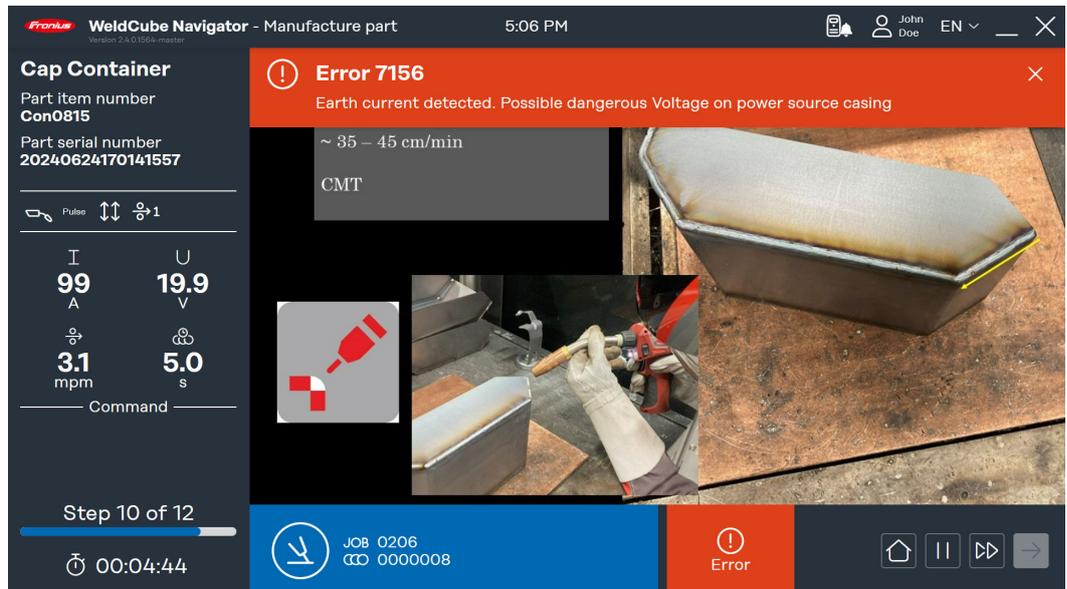
Pausing and skipping processing

WeldCube Navigator offers two additional functions to increase the flexibility of the welding process and to facilitate the handling of defects:

Suspend Mode:
- Click the **Pause button** to perform a step that is not part of the instruction.
- The current processing is paused.
- The preselected job remains activated.
- This function is required when, for example, the repair of a weld is necessary.
- In the **System settings**, a limit for the number of permitted welds can be set for Suspend mode.

Skip manufacturing step:
- **Click the double arrow button** to skip a manufacturing step.
- This function is only available if no error is being displayed for the current instruction.

More functions

# Importing and exporting instructions

Importing in-structions

In order to distribute instructions to different welding workstations and manu-facturing sites, WeldCube Navigator offers the possibility to import and export instructions.
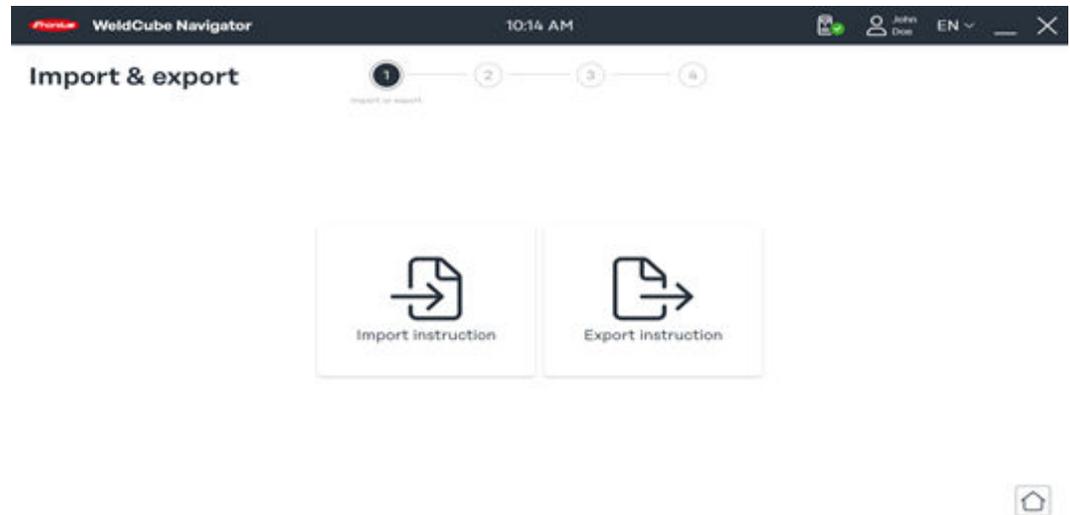

1 Click **Import instruction**.
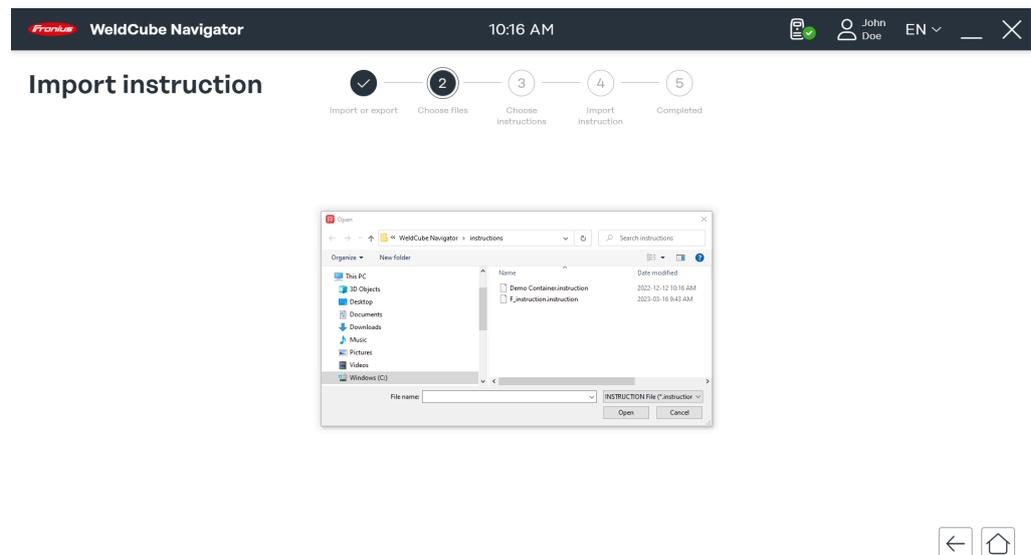
2 Select an instruction from a location on the computer and click **Open**.
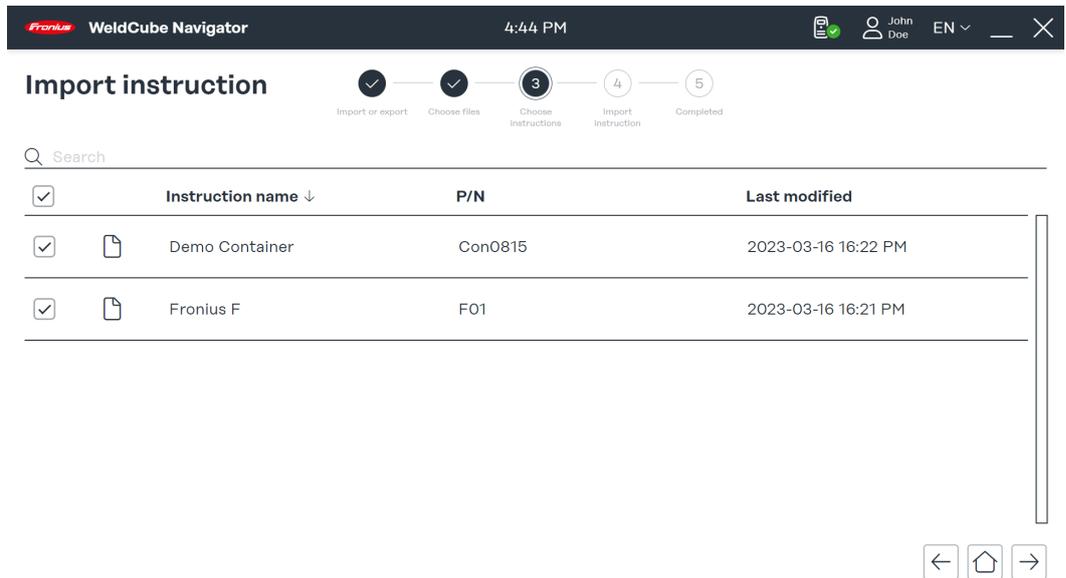
The instructions available in the file are displayed.

3 Select one or more instructions and click the **right arrow**.
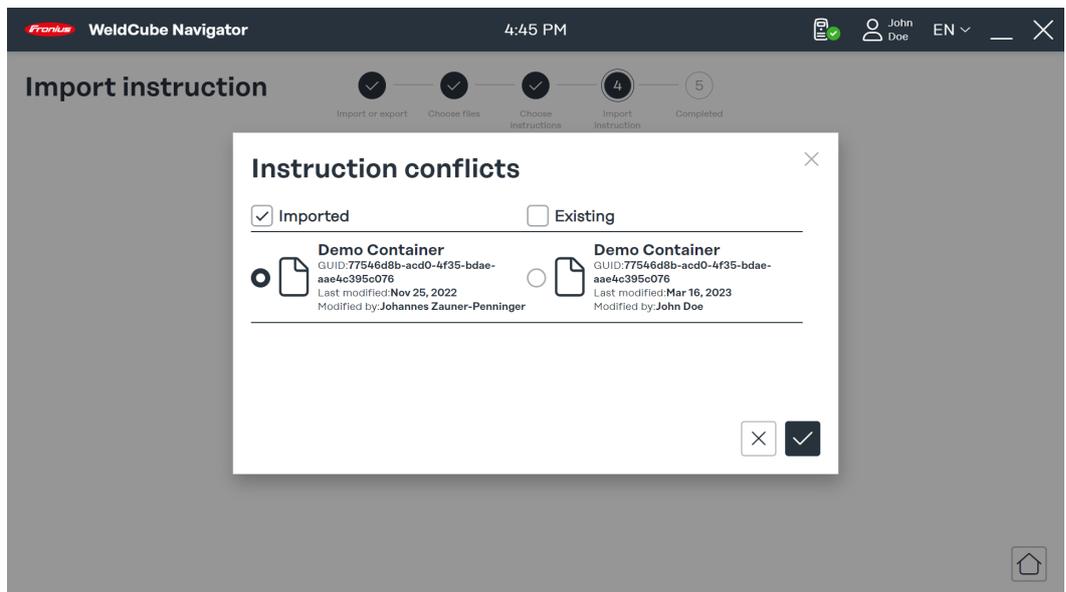
WeldCube Navigator detects when an instruction has already been previously uploaded.

4 Select the instruction and choose whether to save the imported data record or the existing data record.

5 Confirm selection with the **check mark**.

The import of the instruction(s) is started
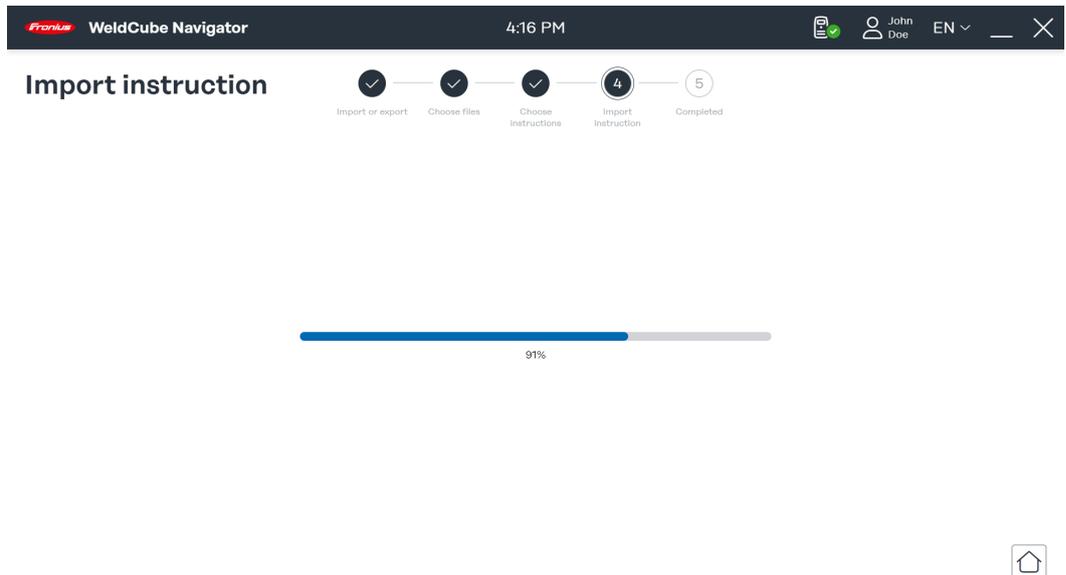
Import status, symbolic representation

The progress of the import process is displayed.
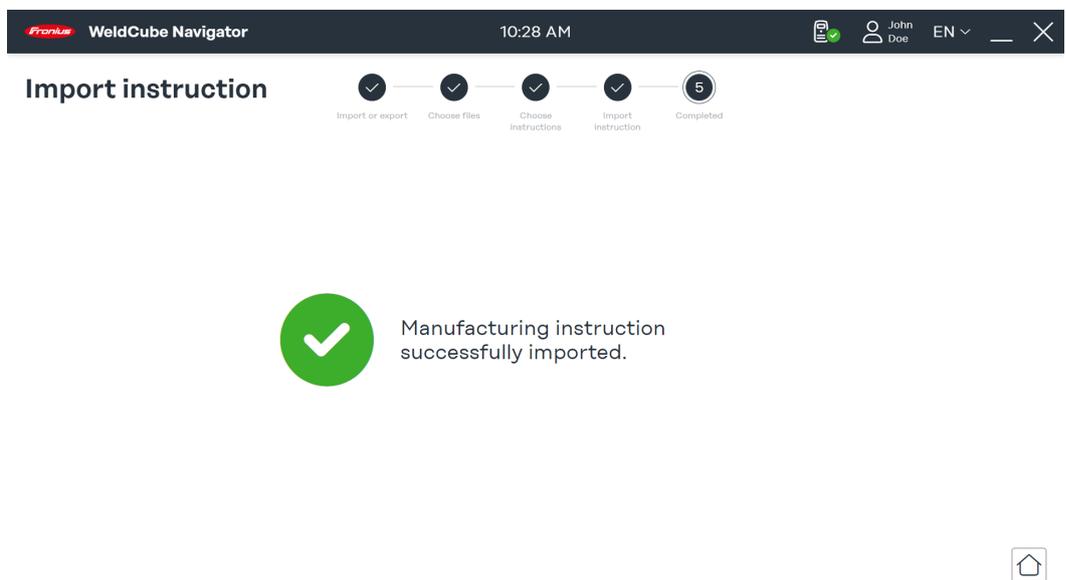
The import process has been completed. The following status codes are displayed:
- **Green check mark**: Instruction was imported successfully.
- **Red exclamation mark**: Import could not be performed.

6 Click on the **house icon** to go to the main menu.

Exporting instructions


1 Click on **Export instruction**.
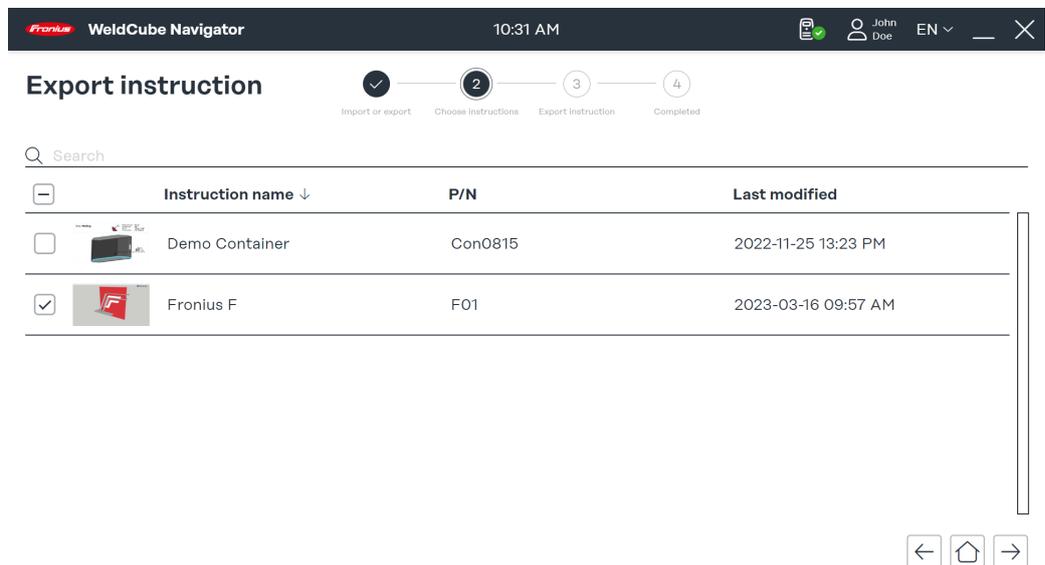
2 Select one or more instructions from the overview.
3 Click the **right arrow**.
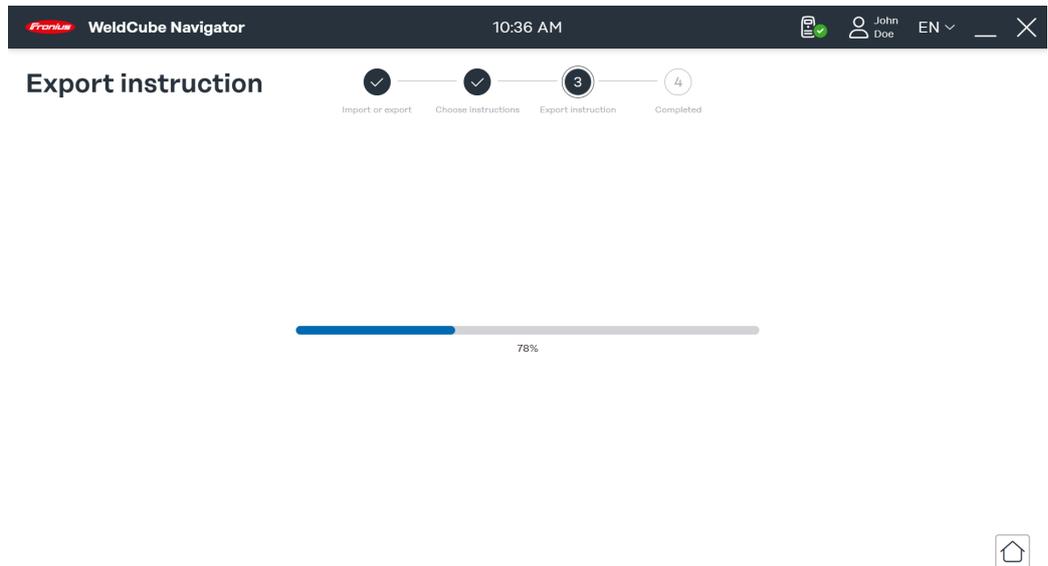
WeldCube Navigator now compiles the file for export. The progress of the process is displayed.
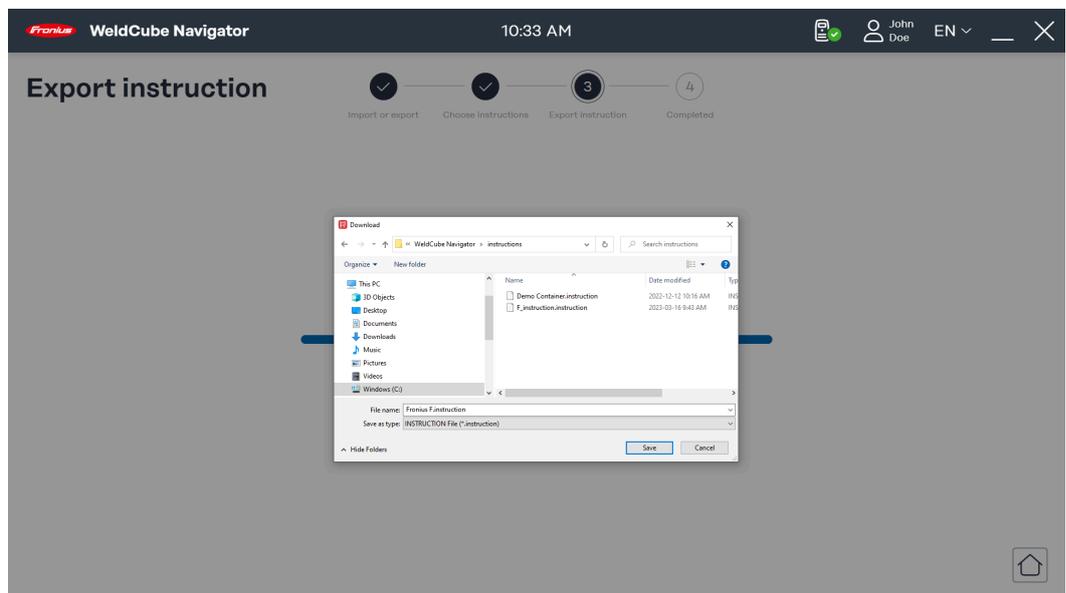
4   Select a location for the file and click **Save**.

Export instruction

✓ ——— ✓ ——— ✓ ——— ④

Import or export   Choose instructions   Export instruction   Completed

✓   Manufacturing instruction successfully exported.

⌂

The export process has been completed. The following status codes are displayed:

- **Green check mark**: Instruction was exported successfully.
- **Red exclamation mark**: The exported instruction could not be saved.

5   Click on the **house icon** to go to the main menu.

Welding settings

Selecting job per weld

- When working through the welding instructions, the welding parameters for each manufacturing step are automatically preset in WeldCube Navigator.
- The basis for this are the jobs that are created in the **SmartManager** for the welding machine.
- When creating an instruction in the editor, a job number is assigned to a manufacturing step.
- The selected job can be edited.

To do this, proceed as follows:

1 Enable the **OPT/i Jobs** option on the welding machine.

2 Click on **Edit job**. The **SmartManager** for the welding machine opens.

3 Make changes in the **SmartManager** and save them.

4 Close **SmartManager** and return to WeldCube Navigator.

Alternatively, it is also possible to edit the job in the WeldCube Premium software:

1 Connect to WeldCube Premium via the **System settings** menu.

2 Click on **Edit job**. WeldCube Premium opens.

3 Make changes and save them.

4 Close WeldCube Premium and return to WeldCube Navigator.

Defining error behavior

The aim of active monitoring of the instructions that are processed in the sequencer is to detect errors and deviations and to react accordingly. With the **Lock on error** function, a lock in the event of an error can be set individually for each manufacturing step.

The following actions are triggered when the function is active:
1. WeldCube Navigator blocks further processing in the sequencer if errors such as limit violations occur.
2. The welding supervisor must acknowledge the error using an NFC card on an external NFC reader or alternatively via the API.

When all errors have been acknowledged, processing can be continued.

Software settings

Re-registration Re-registration allows, for example, multiple users to edit a welding instruction. In doing so, note the following:
- If another user logs on to the system using the NFC card, the previously logged in user is logged out.
- This re-registration can be seen in the documentation for a welding instruction.
- The data of both users are recorded.

User group permissions for re-registration:
- The function is available for the user groups **"User"** and **"Administrator"**.
- **"Local Administrators"** cannot be logged out of the software by re-registering other users.

Backing up and restoring data It is recommended to back up the WeldCube Navigator application data stored on the computer at regular intervals. To perform a backup, the logged-in user must have administrator rights. Data backup is required for the following scenarios:

1. New installation, for example after hardware or software changes to the control unit.
    - If the database path is changed during a new installation, copy the **Database.db** file separately and save it in a safe location.
2. Restore application data with the same system configurations, for example after a system crash.
    - Restoration of application data can be performed only on the software version for which a backup is available.
    - Therefore, when backing up, always back up the current installation file as well.
    - If the software version has changed, run the backed up installation file and reinstall WeldCube Navigator.

Backing up data:

1 Open the **Services** program in Windows.

2 Select the **WeldCube Navigator Service** process from the list and terminate it.

3 In the Explorer, call up the path **C:\ProgramData\Fronius\WeldCube Navigator**.

4 Copy and paste the **Service\CertificateStore** and **Service\database** folders as well as the current installation file to a secure location.

5 Select the **WeldCube Navigator Service** process in the **Services** program and click **Start**.

6 Check the process status in the list. This must be set to **Running**.

Restoring data:

1 Open the Windows program **Services** with administrator rights

2 Select the **WeldCube Navigator Service** process from the list and terminate it.

3	In the Explorer, call up the path **C:\ProgramData\Fronius\WeldCube Navigator**.
4	Copy the **Service\CertificateStore** and **Service\database** folders from the secure location and paste them in the path.
5	Select the **WeldCube Navigator Service** process in the **Services** program and click **Start**.
6	Check the process status in the list. This must be set to **Running**.

NOTE!

Restoration of application data can be performed only on the software version for which a backup is available.

▶ Run the saved installation file and reinstall WeldCube Navigator if the software version has changed.

Maintenance

Updating and troubleshooting

Updating Weld-Cube Navigator

Fronius releases regular updates for WeldCube Navigator to improve functionality and fix any errors that occur. These are available on the Fronius website in the DownloadCenter.

Fronius Support team

For WeldCube Navigator, Fronius offers remote support to help customers install, commission, and configure the software. Remote support is the first point of contact for faults and errors that may occur in the software.

IMPORTANT!
To assist in resolving queries, please include the following information in any support requests to Fronius:
- Current log files for the software that are available for download via the **System information** menu (see**System information**)
- Firmware versions of the connected welding system

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