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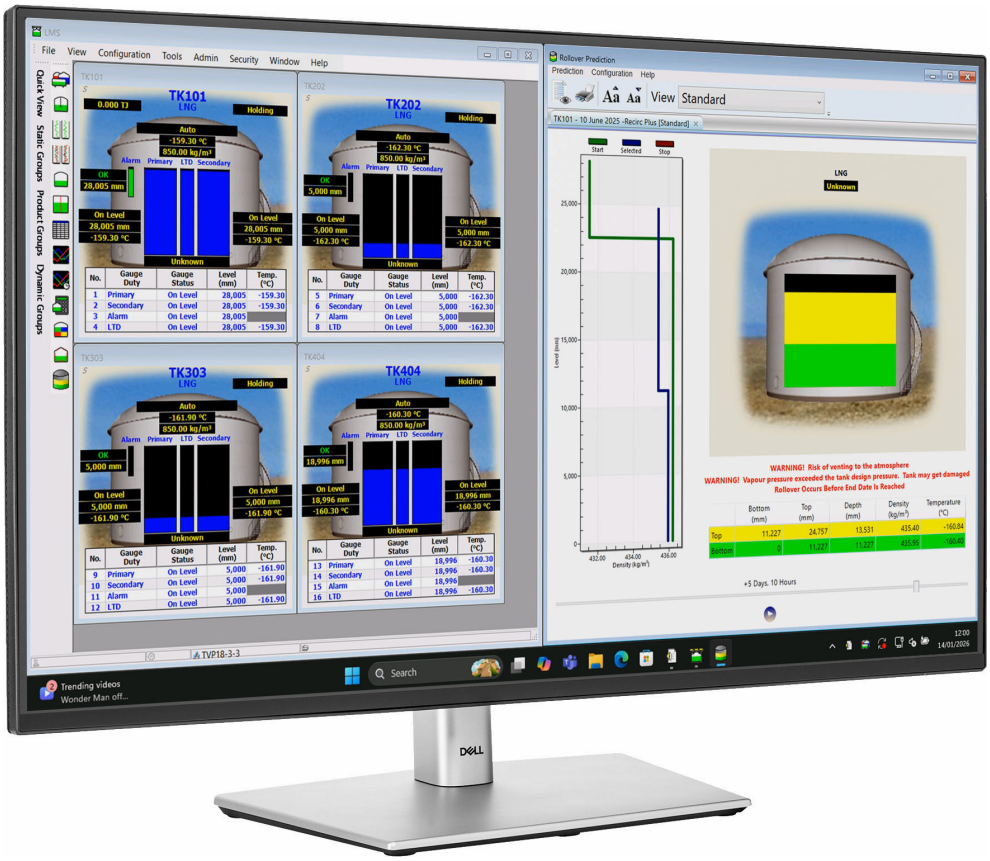
2026-03-11

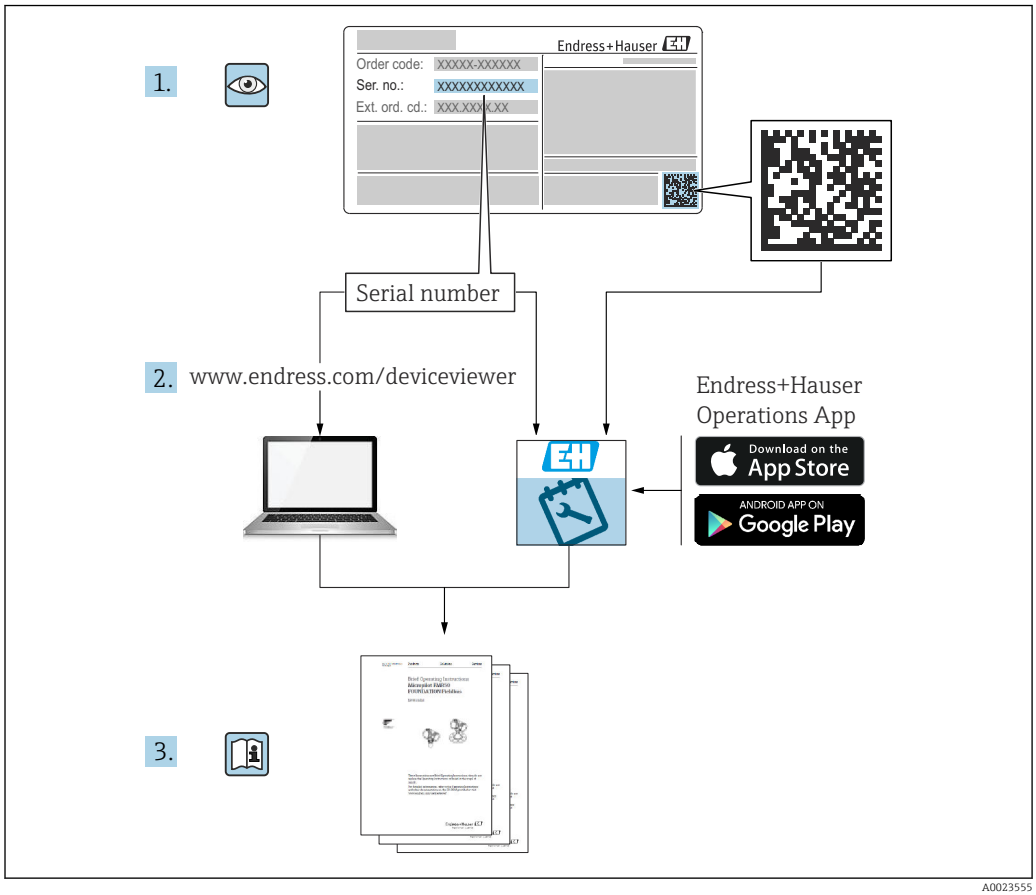
Valid as of version
18.3.4

Operating Instructions
Tankvision LMS NXA86B

Tank Gauging
Installation



Endress+Hauser
People for Process Automation



- Make sure the document is stored in a safe place such that it is always available when working on or with the device
- Avoid danger to individuals or the facility: read the "Basic safety instructions" section carefully, as well as all other safety instructions in the document that are specific to working procedures

The manufacturer reserves the right to modify technical data without prior notice. The Endress+Hauser sales organization will supply you with current information and updates to these instructions.

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1 About this document

1.1 Document function

This manual should support during the installation of Tankvision LMS NXA86B.

1.2 Target audience

Beside basic PC operating knowledge no special training is needed to perform the Tank Gauging System operations. Nevertheless it is recommended receiving a training on the system by Endress+Hauser.

1.3 Software versions and certification

Due to the certification process with weights and measures agencies, the latest software version might only be certified at a later stage. Also some features might be incompatible with the weights and measures regulations and can therefore not be combined.

1.4 Symbols

1.4.1 Safety symbols

DANGER
This symbol alerts you to a dangerous situation. Failure to avoid this situation will result in serious or fatal injury.

WARNING
This symbol alerts you to a potentially dangerous situation. Failure to avoid this situation can result in serious or fatal injury.

CAUTION
This symbol alerts you to a potentially dangerous situation. Failure to avoid this situation can result in minor or medium injury.

NOTICE
This symbol alerts you to a potentially harmful situation. Failure to avoid this situation can result in damage to the product or something in its vicinity.

1.4.2 Symbols for certain types of information

Tip
Indicates additional information

Reference to documentation

▶
Notice or individual step to be observed

1., 2., 3.
Series of steps

Result of a step

1.4.3 Symbols in graphics

1, 2, 3, ...
Item numbers

1., 2., 3.
Series of steps

A, B, C, ...
Views

1.5 Documentation

For an overview of the scope of the associated Technical Documentation, refer to the following:
- *Device Viewer* (www.endress.com/deviceviewer): Enter the serial number from the nameplate
- *Endress+Hauser Operations app*: Enter serial number from nameplate or scan matrix code on nameplate.

The following document types are available in the Downloads area of the Endress+Hauser website (www.endress.com/downloads), depending on the device version:

Document type	Purpose and content of the document
Technical Information (TI)	**Planning aid for your device** The document contains all the technical data on the device and provides an overview of the accessories and other products that can be ordered for the device.
Brief Operating Instructions (KA)	**Guide that takes you quickly to the 1st measured value** The Brief Operating Instructions contain all the essential information from incoming acceptance to initial commissioning.
Operating Instructions (BA)	**Your reference document** The Operating Instructions contain all the information that is required in various phases of the life cycle of the device: from product identification, incoming acceptance and storage, to mounting, connection, operation and commissioning through to troubleshooting, maintenance and disposal.
Description of Device Parameters (GP)	**Reference for your parameters** The document provides a detailed explanation of each individual parameter. The description is aimed at those who work with the device over the entire life cycle and perform specific configurations.
Safety instructions (XA)	Depending on the approval, safety instructions for electrical equipment in hazardous areas are also supplied with the device. These are an integral part of the Operating Instructions. The nameplate indicates which Safety Instructions (XA) apply to the device.
Supplementary device-dependent documentation (SD/FY)	Always comply strictly with the instructions in the relevant supplementary documentation. The supplementary documentation is a constituent part of the device documentation.

1.6 Change history

BA01700G_01.17
- 18.0.2 and 18.0.3
- Initial version

BA01700G_02.18
- 18.1.1
- Compatibility with Windows 10 and Windows Server 2016

BA01700G_03.22
- 18.3.2
- SQL Server connection details updated. Server configuration details updated.

BA01700G_04.26
- 18.3.4
- Content added: Register the Product
- Minor changes to document structure

1.7 Registered trademarks

Microsoft®, Windows® and Edge®
Microsoft®, Windows®, Edge® and the Microsoft logo are registered trademarks of the Microsoft Corporation.

Modbus®
Registered trademark of SCHNEIDER AUTOMATION, INC.

Java®
Registered trademark of Sun Microsystems, Inc.

Mozilla® Firefox®
Registered trademark of the Mozilla Foundation

Apple®
Apple, the Apple logo, iPhone, and iPod touch are trademarks of Apple Inc., registered in the U.S. and other countries. App Store is a service mark of Apple Inc.

Android®
Android, Google Play and the Google Play logo are trademarks of Google Inc.

2 Basic safety instructions

2.1 Requirements for the personnel

The personnel for installation, commissioning, diagnostics and maintenance must fulfill the following requirements:

- Trained, qualified specialists must have a relevant qualification for this specific function and task.
- Are authorized by the plant owner/operator.
- Are familiar with federal/national regulations.
- Before starting work, read and understand the instructions in the manual and supplementary documentation as well as the certificates (depending on the application).
- Follow instructions and comply with basic conditions.

The operating personnel must fulfill the following requirements:

- Are instructed and authorized according to the requirements of the task by the facility's owner-operator.
- Follow the instructions in this manual.

2.2 Intended use

2.2.1 Intended use of Tankvision LMS NXA86B software

Tankvision LMS is a total LNG Tank Storage and Management solution for Peak Shaving, Receiving and Production LNG facilities. The LMS system has been designed to interface to all instruments commonly found on LNG storage tanks, and to collect and present the instrument data through a range of intuitive graphical user interfaces. A typical LNG Tank will have a wide range of measurement instruments to measure Liquid Level, Liquid Density, Liquid and Vapour Temperature, Liquid and Vapour Pressure, Skin Temperature and much more.

Typically each tank would be fitted with an LTD gauge, two further level gauges configured as a Primary and Secondary, and an Alarm Gauge. The LTD gauge is a servo operated unit mounted on the tank roof. The purpose of the LTD gauge is to take accurate profiles of temperature and density throughout the liquid, and whilst not profiling provide continuous liquid level, temperature and density measurement. The Primary and Secondary gauges can be either servo and or radar operated units also mounted on the tank roof. The purpose of these gauges is to provide continuous liquid level measurement, and average liquid temperature measurement. They provide redundancy on the measurement of level and temperature. The average liquid temperature is derived from a multi point temperature sensor device. The alarm gauge is often a servo or radar based gauge configured to provide volt free contact alarm status to an independent system.

An LMS system can operate in a simple standalone configuration or as a fully redundant system where security and integrity are of paramount importance. The LMS system has a flexible and scalable architecture allowing it to be tailored to a number of different applications easily.

2.3 IT security

The manufacturer warranty is valid only if the product is installed and used as described in the Operating Instructions. The product is equipped with security mechanisms to protect it against any inadvertent changes to the settings.

IT security measures, which provide additional protection for the product and associated data transfer, must be implemented by the operators themselves in line with their security standards.

3 Incoming acceptance and product identification

3.1 Incoming acceptance

On receipt of the delivery:

1. Check the packaging for damage.
   ↳ Report all damage immediately to the manufacturer.
   Do not install damaged components.
2. Check the scope of delivery using the delivery note.
3. Compare the data on the nameplate with the order specifications on the delivery note.
4. Check the technical documentation and all other necessary documents, e.g. certificates, to ensure they are complete.

If one of the conditions is not satisfied, contact the manufacturer.

3.2 Product identification

The following options are available for identification of the software:

- Nameplate specifications
- Order code with breakdown of the software features on the delivery note
- Enter serial numbers from nameplates in *Device Viewer* (www.endress.com/deviceviewer): All information about the software is displayed.

For an overview of the technical documentation provided, enter the serial number from the nameplate in the *Device Viewer* (www.endress.com/deviceviewer).

3.2.1 Nameplate

The information that is required by law and is relevant to the product is shown on the nameplate, e.g.:

- Manufacturer identification
- Product name
- Order code
- Extended order code
- Serial number
- Barcode

3.2.2 Manufacturer address

Endress+Hauser SE+Co. KG
Hauptstraße 1
79689 Maulburg, Germany

Place of manufacture: See nameplate.

3.2.3 Order code and product version

To find out the version of your software, enter the order code indicated on the nameplate in the search screen at the following address:
www.products.endress.com/order-ident

4 Installation General Guidelines

For this installation it is necessary that Microsoft Windows is installed on the C: drive of the PC. If it is not, do not attempt the installation and contact Endress+Hauser for further guidance.

Ensure that Microsoft Windows is completely up to date before proceeding with the installation. Failure to do this may prevent the software running properly.

The suite of application modules making up the Tankvision LMS system are generally provided on a USB stick.

The installation process is relatively simple and straightforward following the same procedures as almost all other Windows applications.

1. Insert the USB stick into your computer.
2. Browse to the USB folder double click the Setup.exe.
3. Follow the set-up prompts and enter the relevant data when and where requested.
4. When the installation is finally complete remove the USB stick.
   ↳ You will normally be requested to perform a system reboot before the system can be used.

On very complex systems, particularly large multi-user client server systems the installation process may be more complex requiring a separate installation for the database and other operating system components.

Furthermore, systems requiring remote access via a Remote Access Connection and/or providing a Web server will require configuration and set-up by engineers experienced in Windows Networking and related technologies.

5 Software Installation

Refer to the release notes for your version of the software before proceeding with the installation.

This procedure assumes that you are installing onto a PC without a previous version of software. If you are intending to perform an upgrade make a backup of that system's databases and uninstall it first.

5.1 Logging onto Windows

Log onto to your computer using an account with administrative privileges.

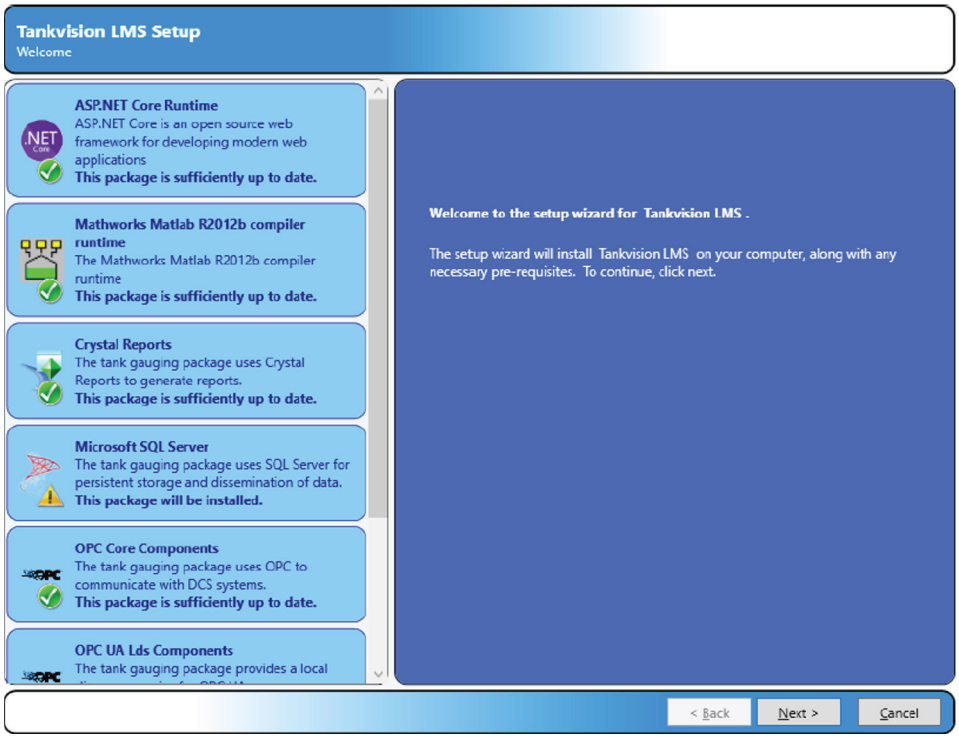
5.2 Inserting the USB stick

Insert the set-up USB stick into your USB flash drive.

Browse to the USB folder from My Computer and double click the **Setup.exe**.

5.3 Setup Welcome

Within a few seconds the main part of the application installation is started with the display of the following screen.



- Click **Next** to continue with the installation or **Cancel** to terminate the installation procedure.

5.4 Installing the Pre-requisites

The first stage of the installation process is to check for and if necessary install the pre-requisite Windows components on your computer.

The pre-requisites installed are:
- ASP.NET Core Runtime
- SAP Crystal Reports
- Microsoft SQL Server (2019)
- OPC Core Components
- OPC UA Lds Components
- Mathworks MatLab Runtime (only required if Rollover Prediction is to be used)

If your computer already has these packages installed on it, the installer will detect them and check the correct versions are present, and only perform the installation if necessary.

The icon displayed indicates whether the component is required or not.

Icon	Description
	The package is sufficiently up to date, and does not require installing.
	The package is either missing or is of an earlier version than is needed. The package will be installed.
	The installed package is incompatible with the tank gauging software, and the installation will not proceed.
	The package is an optional requirement. See section on SQL Server.

There are no user configurable options for the installation of these Windows components, meaning that they will all occupy space on the C: drive of your computer.

If your Windows installation is not located on the C: drive, do not start the installation.

If the installation of any of the pre-requisites requires Windows to restart, then the pre-requisite installer will restart the computer before starting to install the application.

5.4.1 Microsoft SQL Server

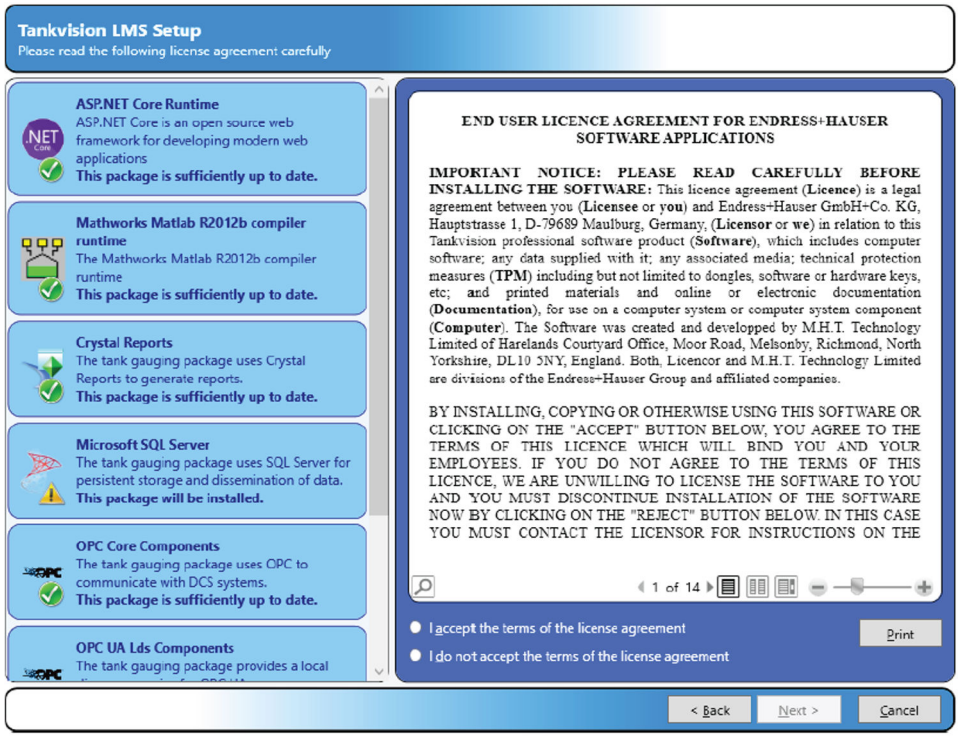
The need to install Microsoft SQL Server is determined by the type of installation you are going to perform. Every tank gauging server system must have SQL Server installed on it.

The bundled Microsoft SQL Server Express is only recommended for small single server systems. If a redundant or large system is required then you must install full Microsoft SQL Server (2016/2017/2019) prior to the tank gauging install.

If full SQL server is installed it must be configured to use the SQL_Latin1_General_CP1_CI_AS collation.

5.5 License Agreement

This screen presents the license agreement.

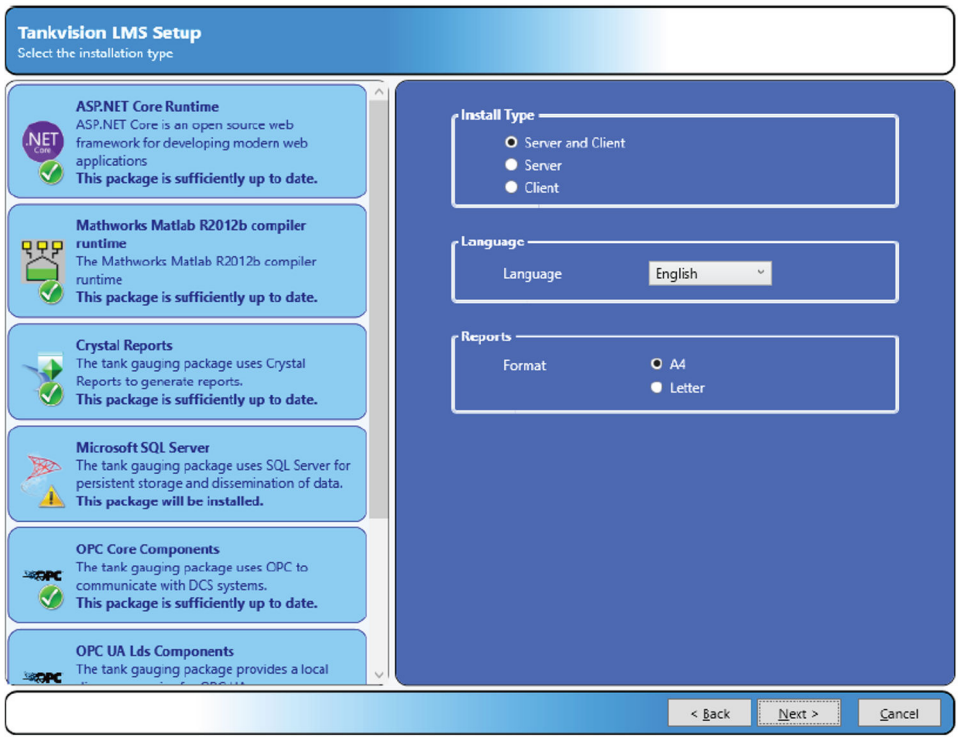


- If you agree to the terms of the license agreement select **I accept the terms of the license agreement** to continue.
- If you do not agree to the terms of the license agreement, the installer will guide you to exiting the installation.

▶ Click **Next** to continue.

5.6 Installation Type

The screen allows you to determine which parts of the system are to be installed on your computer.



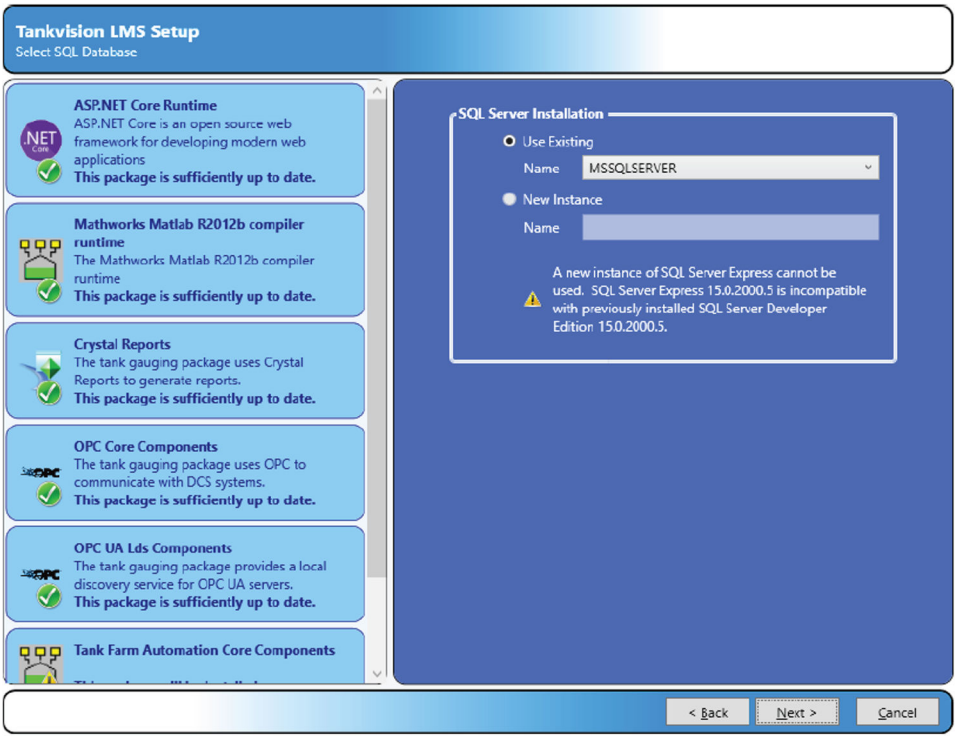
Choose:
- **Server and Client** - Installs both the GUI and the server components
- **Server** - Installs just the underlying server components
- **Client** - Installs just the graphical user interface (GUI) components

Additionally, you can select the language that will be presented in the tank gauging system user interface and the paper size used for printed reports.

▶ Press the **Next** button to continue with the installation.

5.7 SQL server connection details

The following screen allows you to choose the SQL Server installation you want to use to store the tang gauging system data.

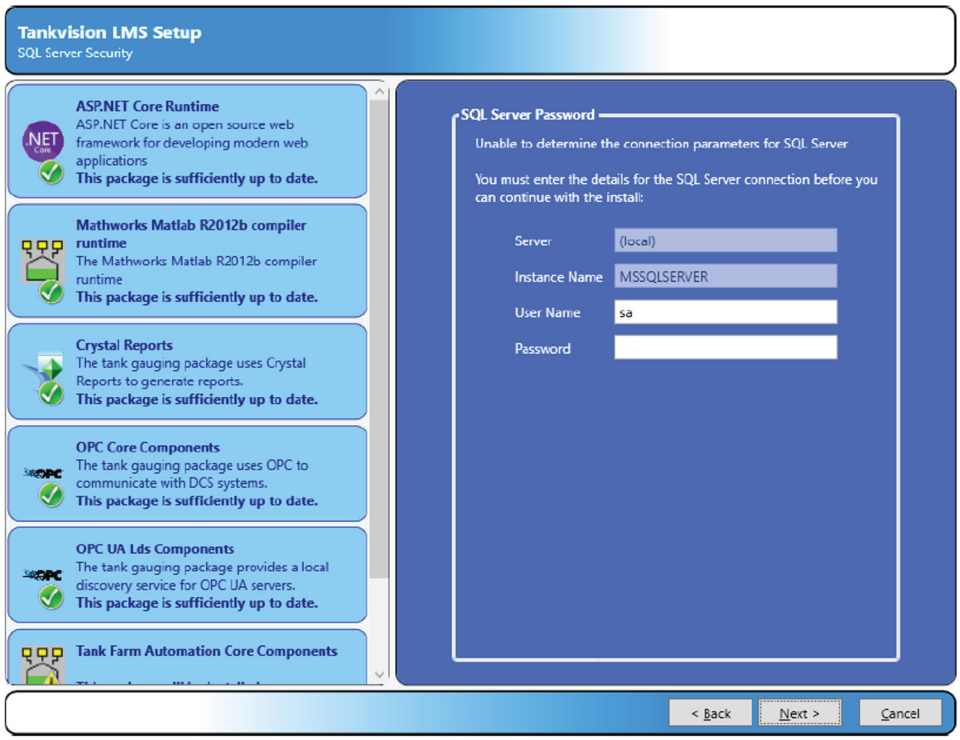


1. If a compatible version of SQL Server is already installed, then the option to **Use Existing** will be available.
   To use an existing instance of SQL Server, ensure that the **Use Existing** option is selected and then select the instance from the list.
2. To install a new instance of SQL Server, select the **New Instance** option and then enter the instance name. To install a new default instance of SQL Server, leave the **Name** field blank.

You will not be able to install a new instance of SQL Server, if you already have a version of SQL Server installed which is incompatible with SQL Server 2019 Express.

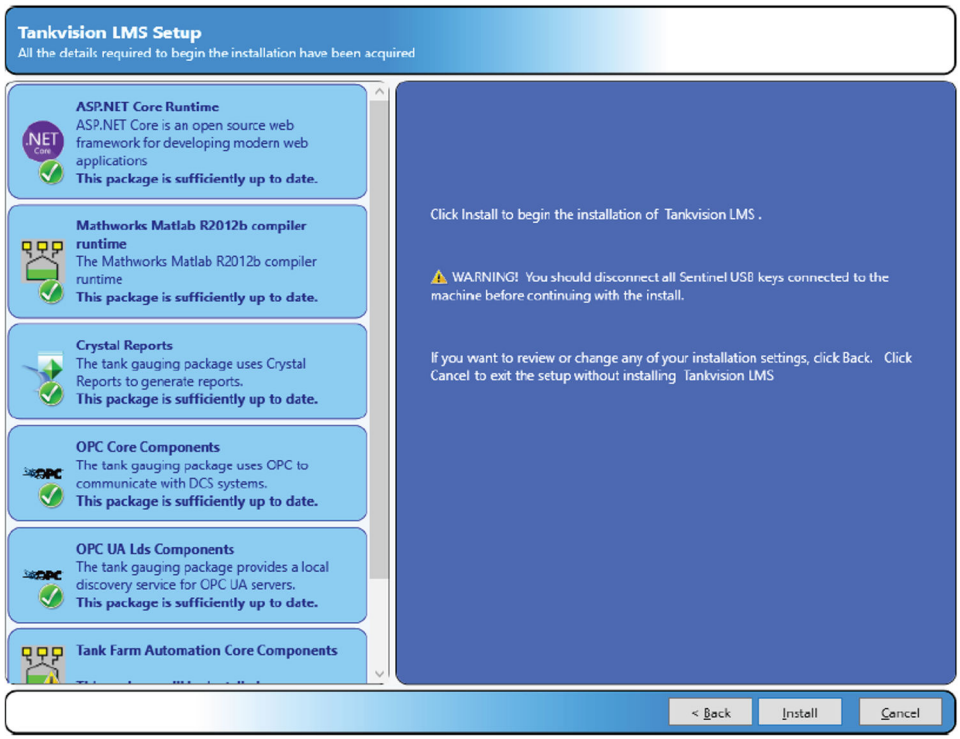
5.8 SQL Server Password

If the installer is unable to connect to an existing instance of SQL Server, then a screen will be displayed allowing the entry of the administrator user name and password.

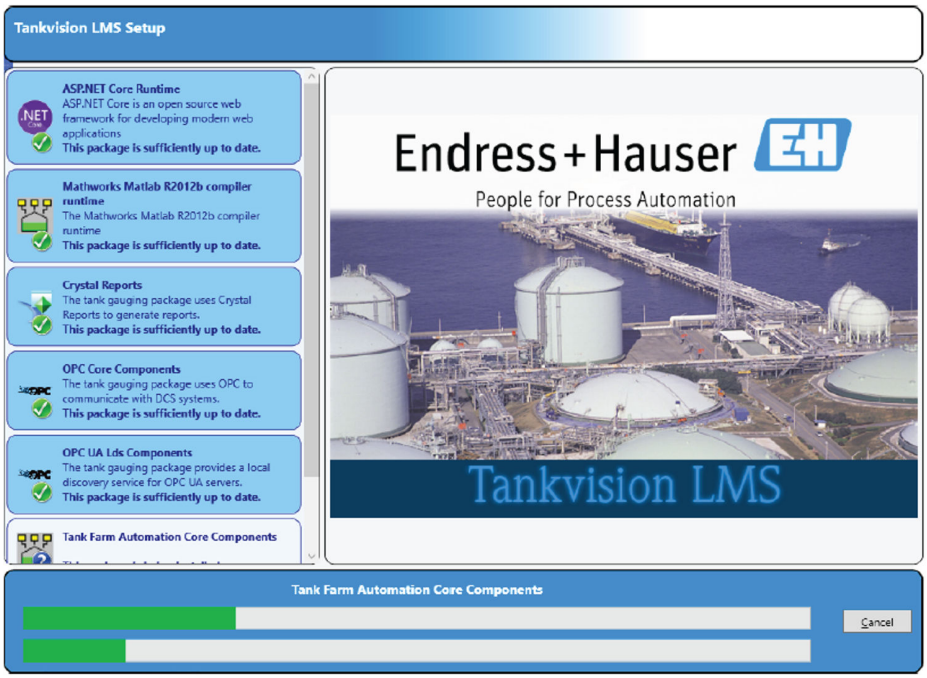


5.9 File Copying

The installation is now ready to continue.



- Click **Install** to start the file copying process.
  - The next screen displays a progress bar indicating the progress of the file copying and installation. The contents will change illustrating system features.

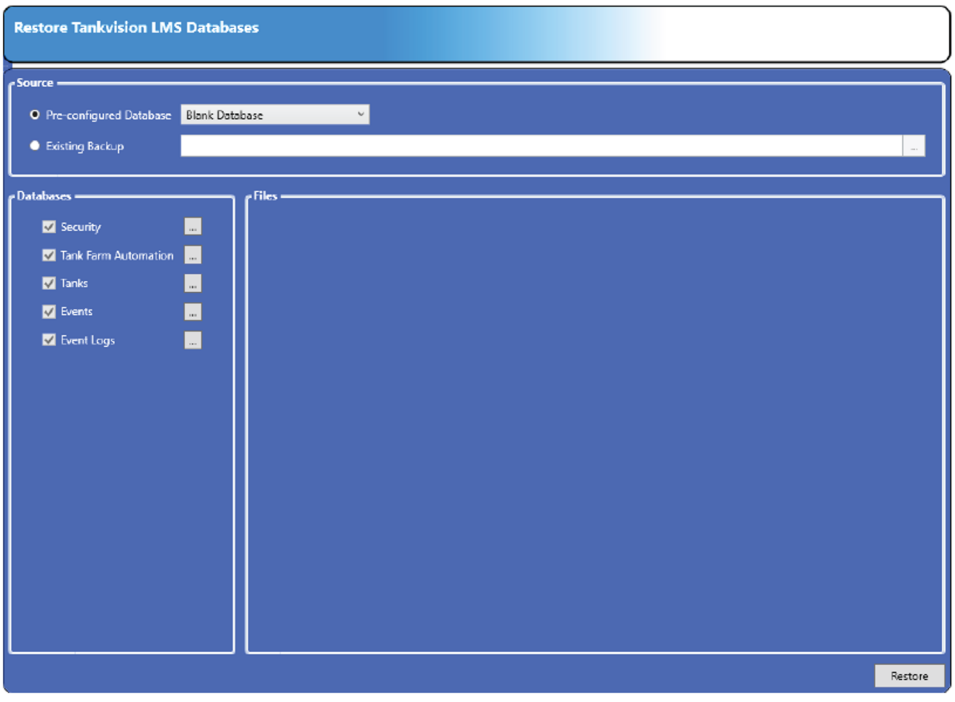


Press the **Cancel** button at any time during this process to abort the installation.

5.10 Server Configuration

5.10.1 Database Installation

You must now specify what database to restore on your computer, the choice will affect how much configuration you need to do after the installation has completed.



Preconfigured Databases

By default the installation includes sets of preconfigured databases which can be used to initialise the system.

- To use a pre-configured database, select the **Pre-configured Database** option and then choose the required database from the list.
  - Typically this list will include an option for a **Blank Database** and one demo database.

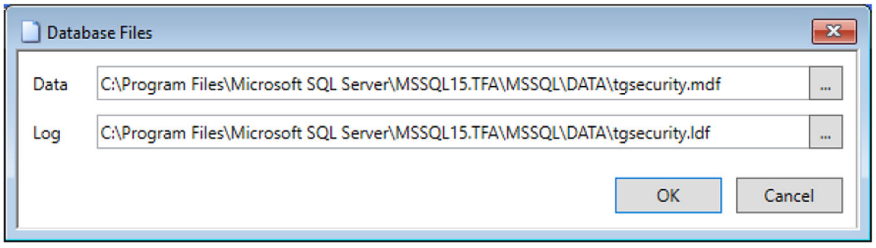
The **Blank Database** contains no initial configuration data and is suitable for starting a fresh site.

Existing Backup

1. To restore a compressed backup taken from an earlier version of the software, select the **Existing Backup** option and enter the full filename of the backup.
2. Alternatively, click the browse button ... to select the backup file.

5.10.2 Database Location

- To change the location where the files for a database are stored, click on the browse button ... to the right of the corresponding database name.
  - A screen will be displayed allowing for entry of the new file locations:

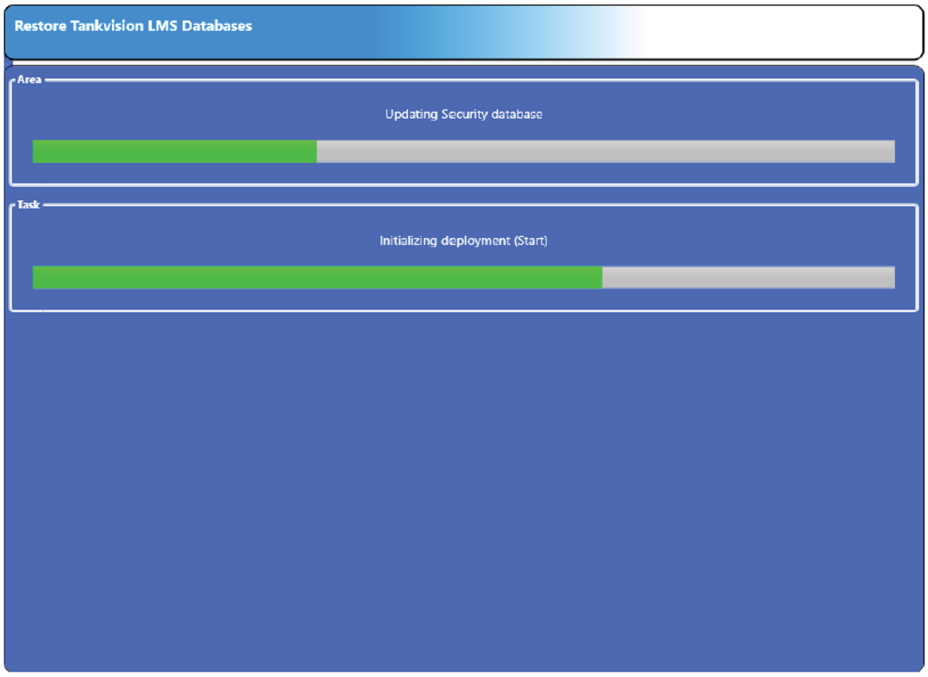


5.10.3 Configuration Files

If an existing backup has been selected, then there is also the option to restore any configuration files that are contained in the backup. To select the configuration files to be restored, ensure that there is a tick next to the relevant configuration file.

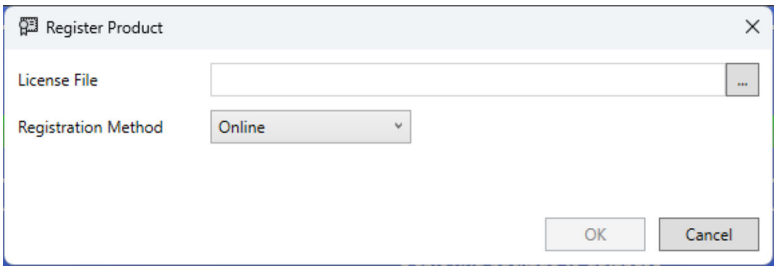
5.10.4 Restore Databases or Files

- To continue with the install, click on the **Restore** button.
  - The selected databases and configuration files will be installed on the system. Whilst this is in progress the following screen will be displayed:



5.10.5 Register the Product

Next you are prompted to register Tankvision LMS software, if this installation was a **Server and Client** or **Server** type. The product cannot be run without a valid license. The license must also be registered with your supplier within 3 days for the product to continue working.



- To select the license file for the product, click on the ... button to the right of the **License File** box.
  - A standard Windows **Open File** dialog will be shown to allow the license file to be selected.

The license.xml file is generally provided on a USB stick but can be copied to any convenient location. The file contains encrypted information that will make the file invalid if it is edited.

The license can be read from a shared network drive, a USB flash drive or a floppy disk.

There are 3 options to register the product, along with an additional choice to defer registration:
- **Online**
- **Create Request File**
- **Generate QR Code**

Online

If the machine has a connection to the internet it is possible to register the product online.

▶ Select the **Online** registration method and click the **OK** button.
  ↳ A message will be displayed indicating if registration was successful or not.

If registration fails you will need to contact your supplier.

Create Request File

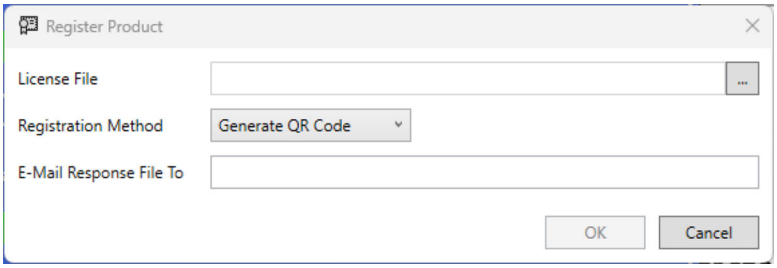
It is also possible to register the product 'offline'.

▶ Select the **Create Request File** registration method and click the **OK** button.
  ↳ A standard Windows **Save File** dialog will be shown to allow the request file to be saved.

The request file needs to be sent to your supplier for them to register your product and they will send you a response file which will need to be applied to your machine using the **Licensing Management** utility.

Generate QR Code

If the machine is not connected to the internet, but it is possible to access the internet via a handheld device with a camera (such as a mobile phone), the product can be registered using a QR code.

1. Selecting **Generate QR Code** will cause an additional field to be displayed:
   ↳ 

2. Enter the email address of the person who is to receive the response file.
3. Click the **OK** button.
   ↳ Another dialog will be displayed containing a QR code.
4. Scan the QR code using your handheld device and open the link in a browser.
   ↳ This will register the product and generate a response file which will be sent to the email address that has been entered.
   If the response file is not received, please check your junk mail and quarantine folders.

The response file must be copied to the machine on which the product has been installed and can then be applied using the Licensing Management facility.

Register Later

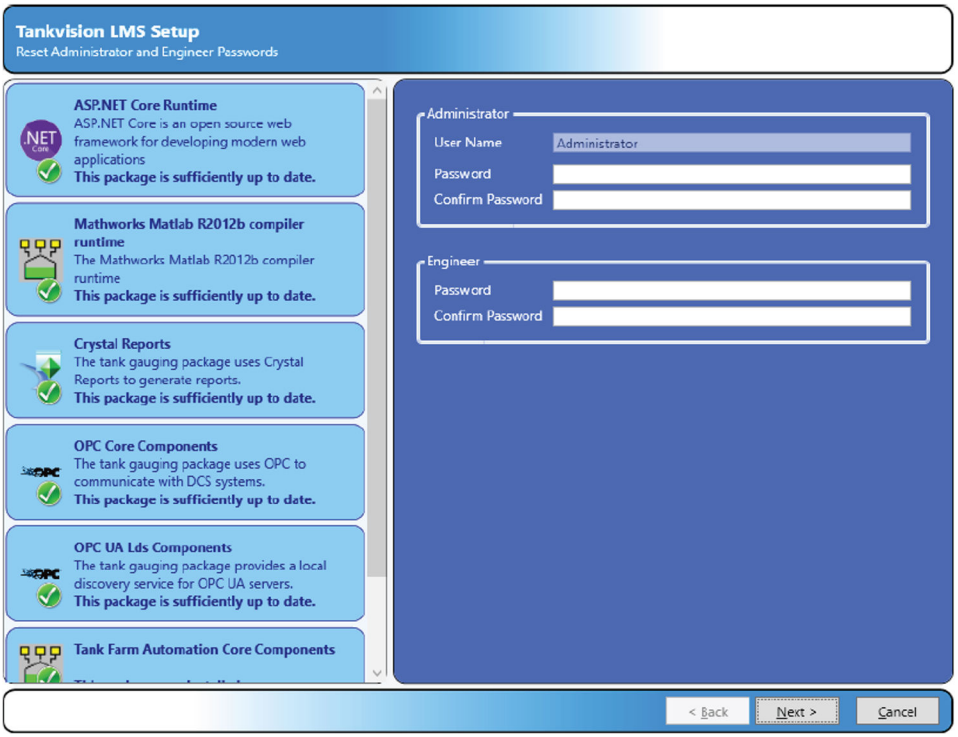
▶ Click the **OK** button.
  ↳ The license will be applied to the product but it will not be registered.

If the license is not registered using the **Licensing Management** facility within **3 days** the product will stop working.

If problems occur during registration (online or via QR code), request Endress+Hauser support via www.endress.com. Until the issue is resolved, the “Register Later” function can be used to continue operating the software.

5.10.6 Set Administrator and Engineer Passwords

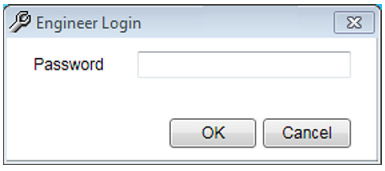
After restoring the database you must now provide a suitable password for the tank gauging administrator account. If you previously chose to install a pre-configured database, then the administrator account password will be reset by the value you enter here.



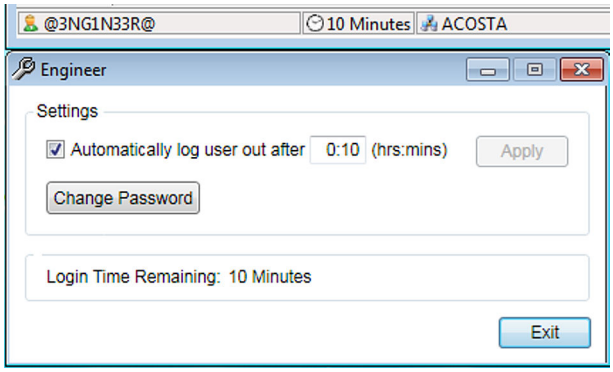
- Click **Next** to continue.

The Engineer Login feature is a response to the problems caused when the Administrator password to a system is lost or the account is deleted.

The engineer login differs from the other "normal" logins in that it can’t be removed and you use a special login application to utilise it. On the Windows Start Menu you will find an entry **Engineer Login**. When you start this application, you will first be prompted for your Engineer password as shown below.



When you login through this window a second window appears, which you should leave open all the time you wish to remain logged in as the Engineer.

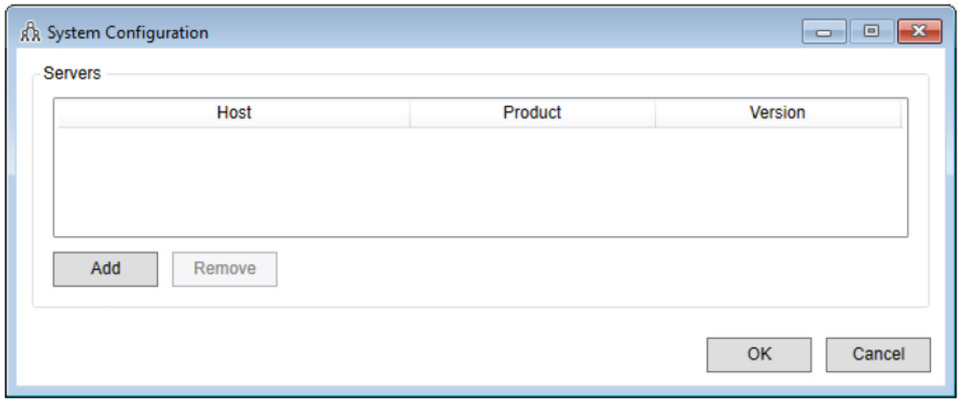


While this Window is open the security system is temporarily disabled so that you can reset the administrator account password, create new login accounts or change aspects of the system configuration. Exiting the application returns the system back to an unlogged in state.

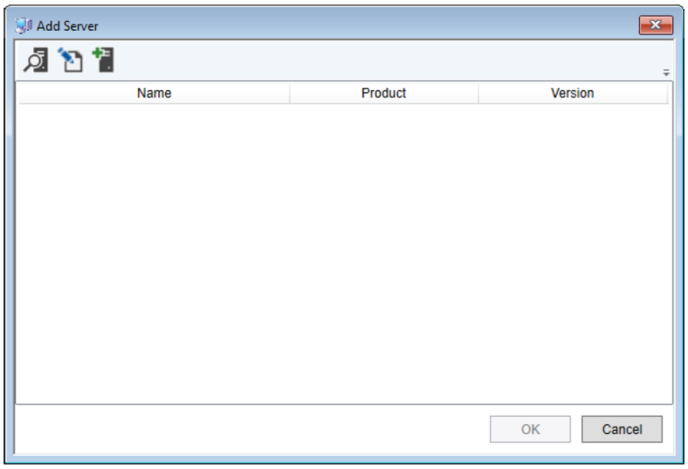
Running this application will log out the current user and log in the Engineer. The Engineer always has full access rights to everything.

5.11 Client Configuration

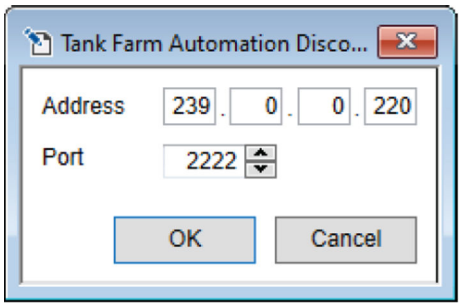
If you selected a client-only install you will be presented with the **System Configuration** application in which to configure the connection to the server(s).



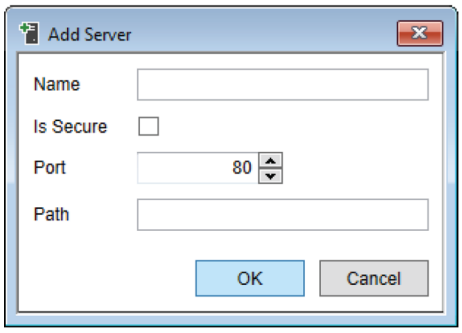
1. Upon clicking **Add** another screen will be displayed allowing you to choose the server(s) to be added:
   ↳



   All servers which have been automatically detected by the system will be listed.
2. To refresh the list, click the Refresh button.
3. If the server has been configured to use an alternative discovery address, it will be necessary to edit the search criteria used for discovery.
   To do this, click the Edit Criteria button.
   ↳ The following screen will be displayed:



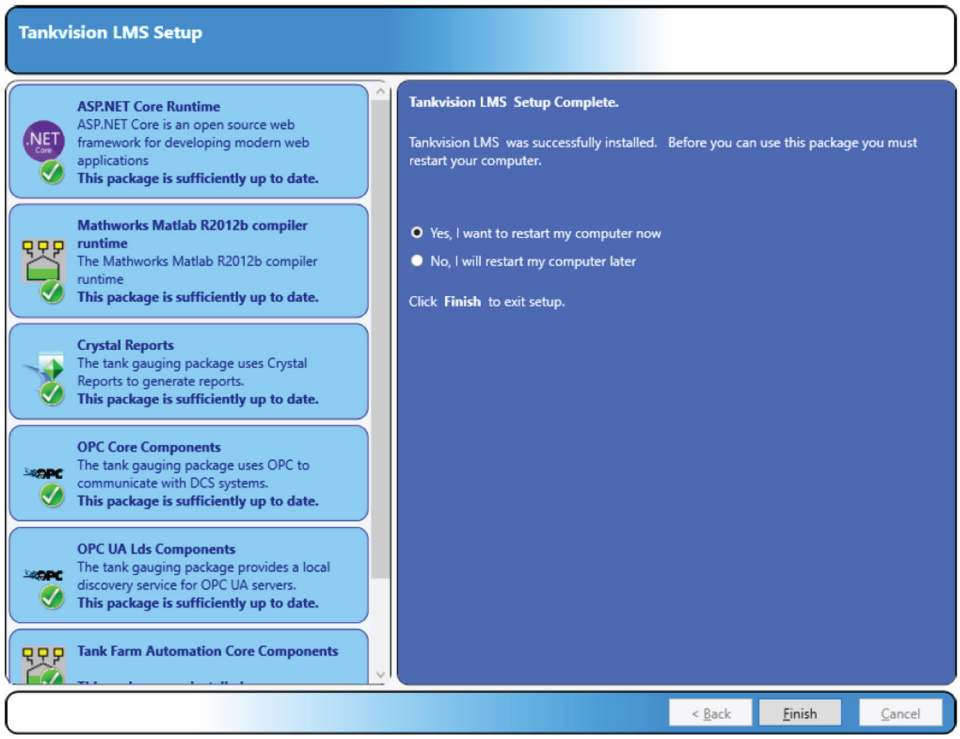
4. It is also possible to add a server manually.
   To do this, click the **Add Server** button.
   ↳ The following screen will be displayed:



In most cases only the **Name** needs to be configured. The options **Is Secure**, **Port** and **Path** are for advanced configuration of the Olympus Service and can be left as preset.

5.12 Finishing the installation

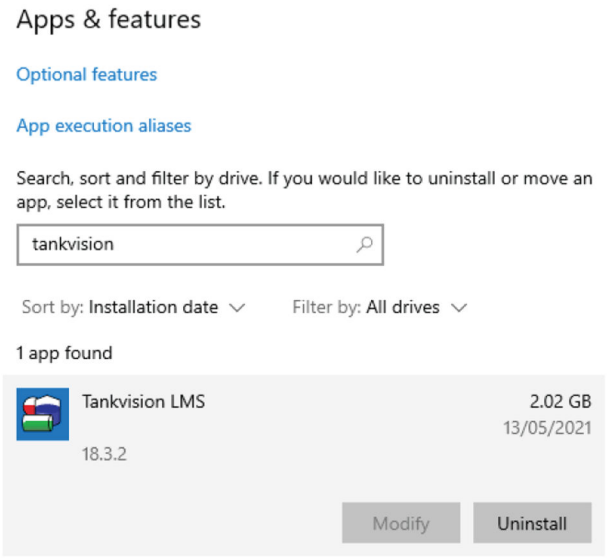
The installer will now complete the installation by installing some Windows services, which should take around 30 seconds and finally present you with a completion message.



- Press the **Finish** button to continue with a reboot of your computer to complete the installation process.

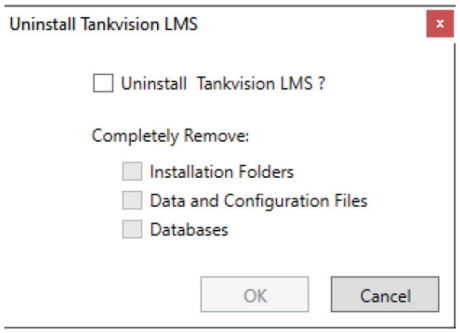
6 Uninstall

The system is uninstalled via the standard Microsoft Add or Remove Programs section applicable for your version of Windows.

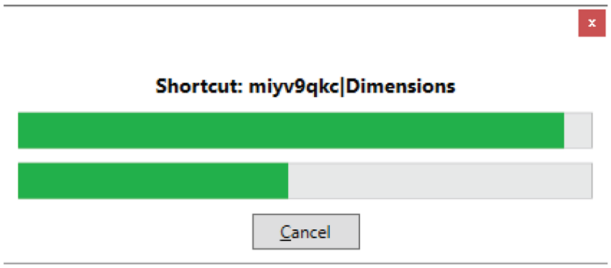


Make sure to take copies of any backups or files you may wish to restore later.

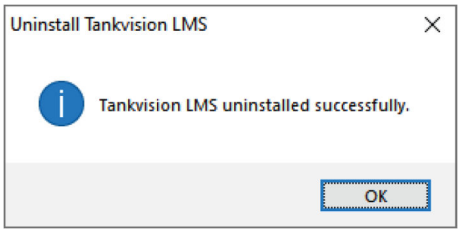
1. Select the parts of the product you would like to uninstall:



2. Select **Next**.
   ↳ The progress bar will indicate the uninstallation process.



Once uninstall is complete, you will see the finish dialog.



Installed pre-requisites are to be uninstalled manually and can be removed as required:
- Microsoft SQL Server
- OPC Core Components
- SAP Crystal Reports
- MATLAB Compiler runtime

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