GETTING STARTED GUIDE

MC Next software

MOUS
SOFTWARE

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1 Introduction

Welcome to MC Next! This *manual* is a comprehensive guide of the MC Next Easy-To-Use environment and features to get you started using the product right away.

What is the MC Next software?

MC Next software is your link between the construction site and the office. It facilitates the exchange of data between your CAD software and the total station.

The MC Next software supports Revit and AutoCAD software, including AutoCAD LT and BricsCAD. To prepare points in a CAD drawing for setting-out purposes, simply launch your CAD program from within the MC Next software environment. The MC Next functionality is automatically added to your CAD program. All of the CAD programs have the same workflow and functionality, whether you are working with, for example, AutoCAD LT or BricsCAD, so you can work right away.

In addition, the MC Next software allows you to import data from or export data to your Total Station, or a range of other external devices. You can also import from and export to a variety of file formats, enabling you to build, manage, and organize your projects with a minimum of time.

Related information

Sources of related information include the following:

- Help - The MC Next software has built-in help that lets you quickly find the information you need. Access it from the *Help* menu. Alternatively, click the **?** button in a dialog, or press **[F1]**.

Technical support

If you have a problem and cannot find the information you need in the product documentation, please contact your local dealer. Alternatively, you can go to the Support area of the MOUS Software website (www.moussoftware.com). Select the product you need information on. Product updates, documentation, and any support issues are available for download.

If you need to contact MOUS Software, please email support@moussoftware.com

Your comments

Your feedback about the supporting documentation helps us to improve it with each revision. Email your comments to info@moussoftware.com.

2 Installing the Software

This chapter describes how to install the MC Next software on your computer.

System Requirements

Before you install the product, you should make sure that your computer meets the minimum system requirements.

- Microsoft® Windows® XP, Windows Vista, Windows 7, Windows 8 or Windows 10 (32- and 64-bit versions)
- Administrative Privileges on the system
- Pentium Dual-core 1.80 GHz or better recommended
- 1 GB RAM or more recommended
- 250 MB of disk space required
- 1024 x 768 or higher resolution with 256 or more colors (at 96 DPI)
- Keyboard and Mouse or other pointing device
- USB port

Installing the MC Next Software

Choose a location on your computer to store the executable program, then save and run the .exe file.

Now follow the instructions in the Setup wizard.

Installing the hardware security device

When the MC Next Software is installed on your computer, a setup installshield wizard will automatically start to install the hardware security device.

After the security device drivers have been successfully installed, your system will recognize the security device to the USB port.

> **Note** – *The hardware security device is an essential and extremely valuable part of the software. The key effectively provides the license to use the software and as such the replacement cost is equal to the cost of another set of software.*

> **Note** - *A file named README.TXT may be along the files copied. Be sure to read this file if available. It contains information about MC Next that was not included in this manual at the time of print.*

3 A tour of the environment

Starting the software

The best way to get familiar with MC Next is to start it up. You start MC Next the same way you start any Windows-based application. Here are some of the common ways:

- Double-click on the MC Next icon on your desktop.

- From the Windows *Start* menu, choose *Programs | MC Next*.

The Welcome screen provides access to the most commonly used features:
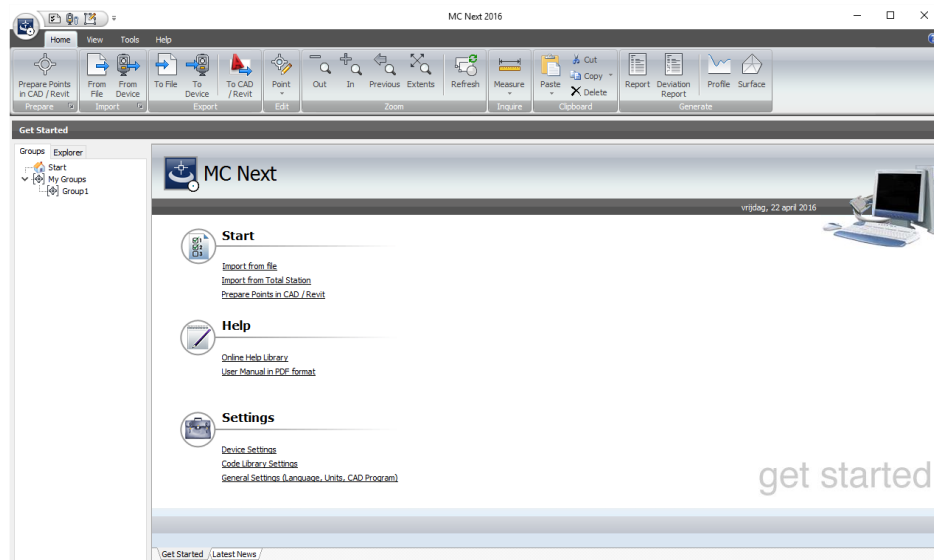
Ribbon

The MC Next Ribbon, located in the main window, organizes tools in logical groupings.

The ribbon is composed of a series of tabs, which are organized into panels. Some ribbon panels provide access to a dialog box related to that panel. To display the related dialog box, click the dialog box launcher denoted by an arrow icon, , in the lower-right corner of the panel.

To find out what any button does, point to it for a moment and a hint is displayed.

Working with the database

The main window shows your data, and provides data editing and viewing capabilities that allow you to maintain the integrity of your data.

You can modify point numbers, as well as insert and delete points. Additional functionality, such as cut, copy, and paste are also provided.

Data views

The main window provides easy access to two separate views of your points:

- ListView shows the points in a list and lets you select and edit items.
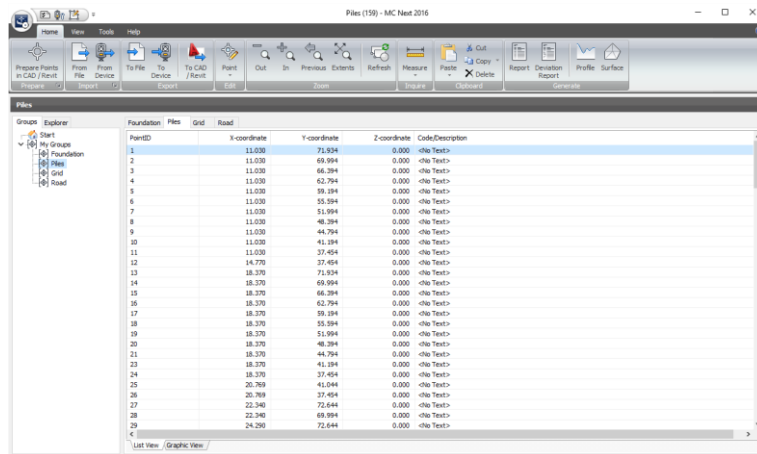
- GraphicView shows a graphical overview of the points and lets you zoom and select items easily.
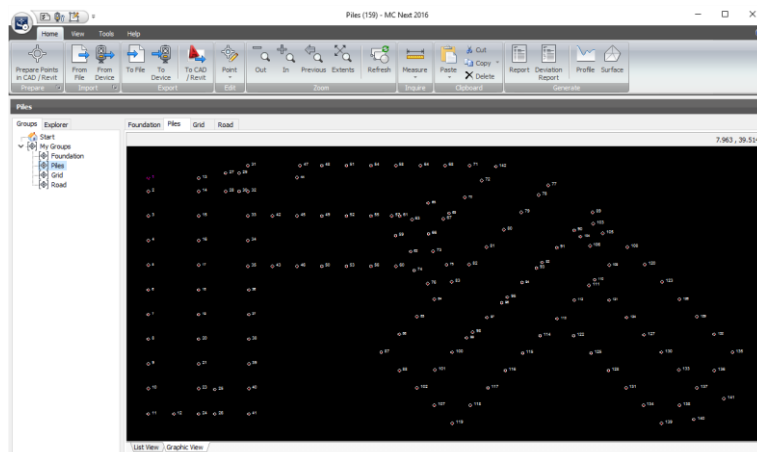
When you make changes to data in one view, the changes are reflected in the other view.

Setting general options

To change general settings for the software, select *Settings* from the Ribbon Quick Access Toolbar. The *Settings* dialog appears:
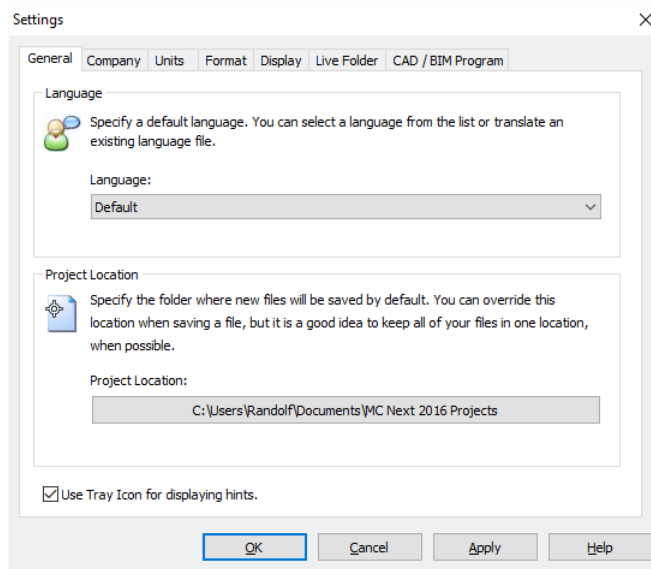
Language setting

To select another language for the MC Next software, select it from the *Language* drop-down list.

Project Location

The *Project Location* field defines the default folder for new projects. To select a different location, click the Browse button and then navigate to the folder.

💬 **Note** - *When you change the project location, you are not moving the folders and files that you had already created under the previous project location. To change the location of existing folders and files, you must save the project with a new name or move the folders yourself.*

Units

Select the *Units* tab to select the unit formats for values that the MC Next software displays and outputs. You can define settings for the following units: Coordinate order, Angle, Distance, Temperature, Pressure.

CAD / BIM Program

To select the CAD / BIM program to use with the MC Next software, select the *CAD / BIM Program* tab . To add a CAD / BIM program, click the Browse button next to the *Use program* field and then navigate to the .exe file.

To define additional settings, click **Advanced**.

Setting code library

You can change the code library settings by choosing *Code Library Settings* from the Ribbon Quick Access Toolbar.

The code library has been designed to allow the computer to understand and implement codes that are defined by the user. The definition of the code includes numerous pre-defined instructions, or features. This coding system is designed to allow the computer to relate codes to the automatic creation of a CAD drawing. Each code is given a description, such as Fence, Tree, Manhole, Kerb. These same descriptive notes can be used as feature codes in the field.

In the code library there are three types of codes:

- Line codes
- Symbol codes
- Control codes

Line codes

A line code is related specifically to a line that was observed. For example in the standard code library there is a line code **FCE** that is used to define how any fence lines that are recorded (as points) will be drawn in your CAD Program.

The line code FCE has the following features:

- Code: FCE
- Description: Fence
- Layer: FENCE
- Point symbol: PILE

You can select a layer and point symbol for this specific code from the associated DXF template file. This DXF Template file has the same filename as the code library and can freely be adjusted as needed.

Symbol codes

A symbol code is related specifically to a symbol (= block) that was observed. For example in the standard code library there is a symbol code **TREE** that is used to define how any trees that are recorded (as points) will be drawn in your CAD Program.

The symbol code TREE has the following features:

- Code: TREE
- Description: Evergreen Tree (Type 1)
- Layer: TREE
- Block: TREE_1
- Block size: 2.50
- Block rotation: 0
- Attributes: 0

You can select a layer and block for this specific code from the associated DXF template file and can freely be adjusted as needed. When you choose block size by *Observation* and / or block rotation by *Observation*, then this symbol is associated with an individual observation to a point. Some features are better described by more than one observation point.

Control codes

A control code controls the way a line code is implemented. For example if we code a point as **FCE B**, then the control code **B** will control the way the line code **FCE** is implemented, in this case starting a fence line (B= Begin). At the moment there are five control codes:

- B (Begin a line)
- E (Ends a line)
- CLS (Closes a line to the first point in the sequence)
- BC (Begin Curve)
- EB (End Curve)

A large number of features you survey have curved lines or edges. These include natural boundaries like stream edges and regular curves such as kerb lines at intersections. MC Next uses one curve fitting system to cover all these cases. The curve is always fitted through the surveyed points.

For example if we code a point as **KERB1 BC**, and an end curve is not specified, then a three-points curve is applied by default. So specifying an end curve is then not needed. When multiple points are observed, and an end curve is specified, then the curve will be fitted between them.

Syntax

Any point may have one or more codes assigned to it. Point codes are separated by a space. To use a control code it must be entered immediately after the line code that is to modify (allowing a space for separation) and only one control code at a time can be assigned to a line code.

4 Editing and Viewing Data

Editing data

ListView shows the points in a list and lets you add, edit, or delete points.
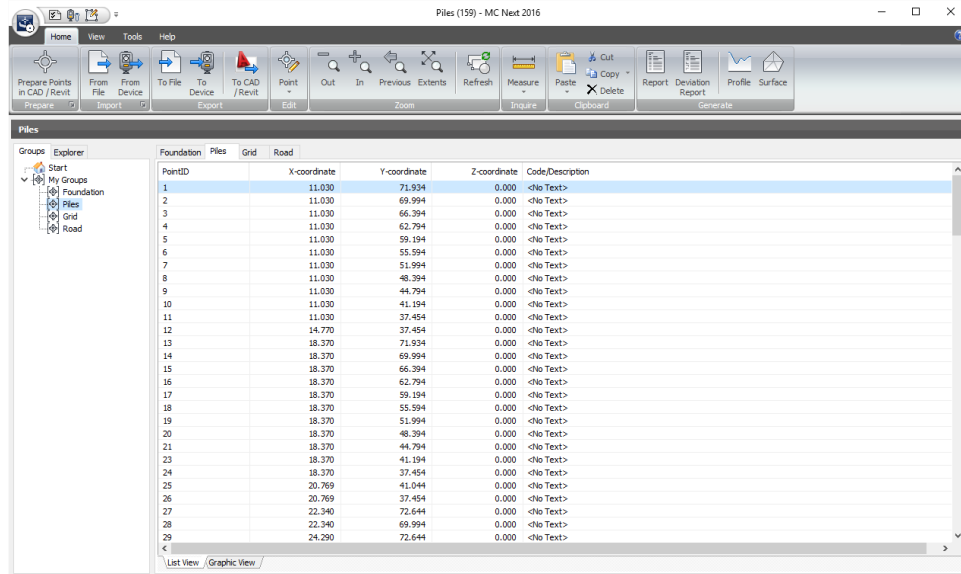
To select a range of points, press and hold the **[Shift]** key and then select the points. To add more points to the selection, press the **[Ctrl]** key instead of the **[Shift]** key.

To access shortcut commands, position the cursor over the ListView and then click the right mouse button. A shortcut menu appears.

Editing a single point

To edit any point in the list, highlight the appropriate cell and then enter the new information.

You can cut, copy, and paste information as required to and from the clipboard. You can access these commands from the Ribbon at the top of the screen.

💬 **Note** - *The contents of the clipboard are overwritten with each cut or copy action. To avoid losing data, perform the paste action immediately.*

Editing multiple points

You can edit multiple points by pressing **[Ctrl F2].**

1. Select a range of points in the ListView or GraphicView.

2. Press **[Ctrl F2]**.

    The *Edit special* dialog appears.
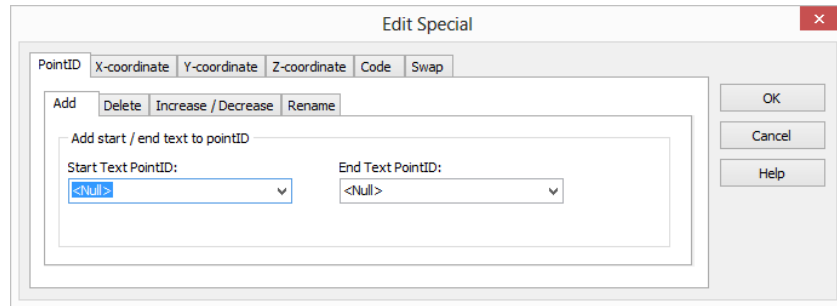
3. Make your changes and press **OK**.

Inserting points

Add points to the database as needed.

1. Select a point in the ListView, directly above where you want the new point to be inserted.

2. Right-click and then select *Insert Point*.

    The *Insert point* dialog appears.
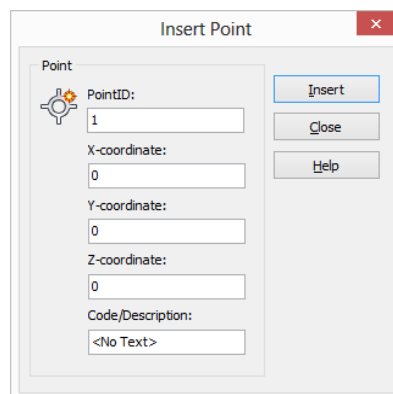
3. Enter the appropriate data for the new point.

    If required, you can leave the data fields empty, to be filled out at a later time.

4. To insert the data into the database, click **Insert**.

5. To insert another point at the same location, repeat step 3 and step 4.

6. When you are finished inserting points at that location, click **Close**.

💬 **Note** – *To insert multiple points at different locations, it is necessary to close the Insert dialog and move the cursor to a new insertion location.*

Deleting points

You can delete a point or multiple points by selecting the points in the ListView or GraphicView.

1. Select the points in the ListView or GraphicView

2. From the *Ribbon*, select *Delete*

    A confirmation message appears.

3. Click **Yes** to delete the selected point(s).

Viewing data graphically

GraphicView shows a graphical overview of the points and lets you zoom and select items easily.

Use the commands in the *Zoom* panel to zoom in and out or pan around your data.

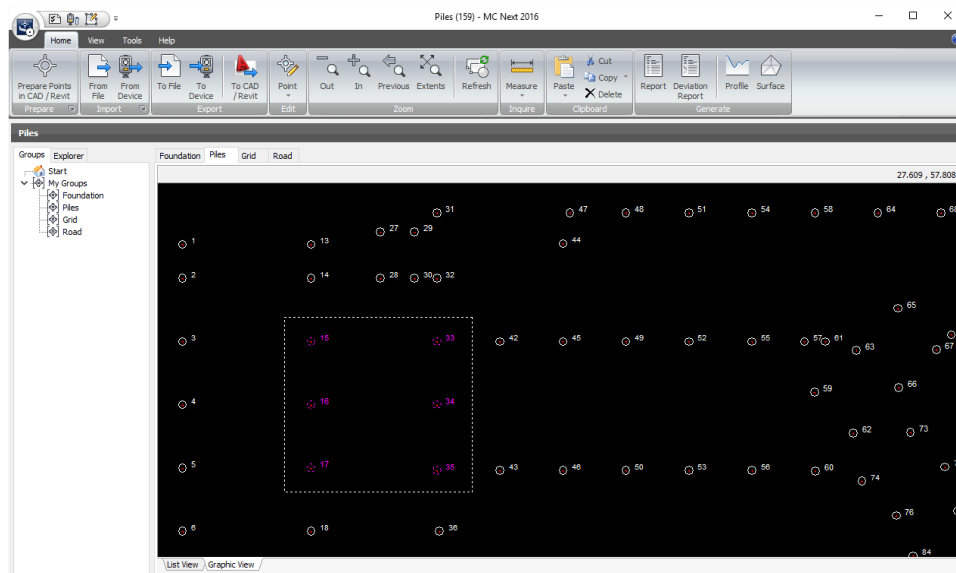| Select...	To...
Zoom Window	zoom to an area you select by drawing a rectangle in the GraphicView.
Pan	center a point in the drawng by doubleclicking the point in GraphicView.
Zoom In	increase the apparent size of items in the GraphicView.
Zoom Out	decrease the apparent size of items in the GraphicView.
Zoom Previous	display the previous view.
Zoom Extents	display the entire job.
Refresh	cancel all active commands and deselect all items.

To select a range of points, press and hold the **[Shift]** key and then drag a rectangle around the points. To add more points to the selection, press the **[Ctrl]** key instead of the **[Shift]** key.

To access shortcut commands, position the cursor over the GraphicView and then click the right mouse button. A shortcut menu appears.

Viewing the coordinate of a point

1. From the *Ribbon*, click the *ID Point* button

2. In the GraphicView, select a point.

    The *Inquire Coordinate* dialog appears:
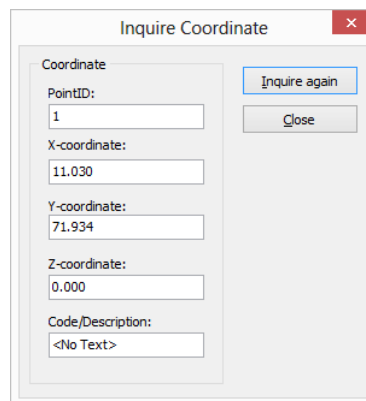
3. Close the dialog, or select another point.

To select a different command, click the Refresh button on the Ribbon.

Measuring the distance between two points

1. From the *Ribbon*, click the *Measure Distance* button .

2. In the GraphicView, select a begin point.

3. In the GraphicView, select an end point.

    The *Inquire Distance* dialog appears:
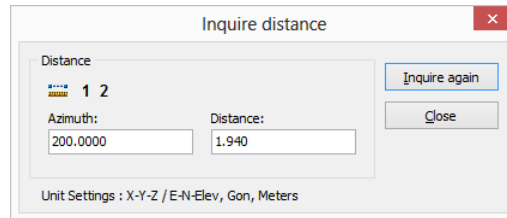
4. Close the dialog, or select another point.

To select a different command, click the Refresh button 🔄 on the Ribbon.

5 Communicating with Devices

The MC Next software communicates directly with devices to receive and send files. You can also exchange files, including DXF background files with Windows Mobile® devices.

The MC Next software accepts files from some types of device directly into the database. The software also supports standard ASCII formats, such as comma and tab delimited files. You can download an ASCII file from a device to your local drive and then import it into the database.

Setting communication parameters

To set communication parameters for a total station or a mobile device:

1. From the *Ribbon Quick Access Toolbar*, select *Device Settings*.

   The *Communications Settings* dialog appears.
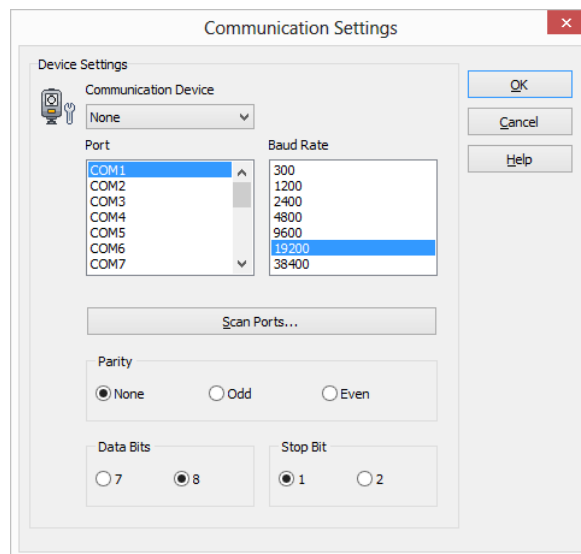
2. Select the appropriate settings and then press **OK**.

   💬 **Note** – *The MC Next software must be set to the same baud rate and parity as the device for the transmission to work properly.*

Receiving data from a mobile device

1. Connect the mobile device to the computer using Microsoft ActiveSync technology. For more information on ActiveSync, refer to the documentation for the mobile device.

2. From the *Ribbon*, select *Import from Device*.

The *Import from mobile device* dialog appears.
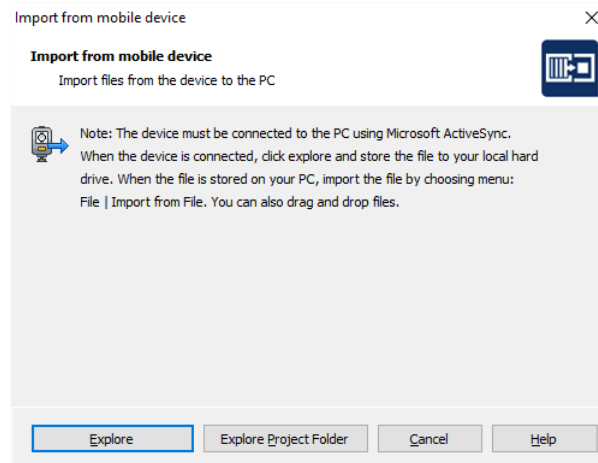
3. Click **Explore** or **Explore Project Folder** to start exchanging files.

☆ **Tip** – *If you copy the files to the local hard drive, you can then drag files to the main window of MC Next to add points to the database.*

Receiving data from a total station

When you receive data from a total station, the screens that appear depend on the type of total station connected. For more information, refer to the user documentation provided with your total station.

1. Connect the total station to the computer

2. From the *Ribbon*, select *Import from Device*.

💬 **Note** – *If you are working with a Trimble LM80 or NOMAD SERIE, you can skip the following steps. MC Next presents the Import from LM80 dialog to copy files to your local hard drive. Click on the button Explore to start exchanging files.*

💬 **Note** – *If you are working with a Leica TC400/700 SERIE or Leica (Power) Builder SERIE, you can skip the following steps. MC Next presents the Receive dialog and you can exchange files by pressing the button Update Instrument/Files (F5)*

The *Save Receive File* dialog appears.

3. Select the path into which the file will be saved.

4. Enter a destination name for the file to be received in the *File Name* field.

5. Select the file type in the List *Files of type* field.

6. Click on **Save**.

    MC Next displays the *Receive* dialog.

    Review the currently selected total station and communication settings. If the settings are not correct, see *Setting Communication Parameters*.

If the total station is a...	Then set...
Sokkia SET500 / 600 or SET5F / 6F	the *Checksum* option to *No* and the *Xon/Xoff* option to *Yes*.
	Make sure you send one job at a time and send data in POS view or coordinates.
Topcon GTS200 GPS3000 Series or	the *Protocol* option to *One Way*.
	You must send coordinates or points only.
Topcon GTS500 / 600 / 700 / 800 Series or FC6 / FC6A	the *Protocol* option to *Xon/Xoff*.
	You must send coordinates or points only.

7. Click on **Open Port**.

8. The message *Waiting to receive* appears, indicating that you should prepare the device for transferring a file.

9. The device sends the selected data to MC Next. During transmission, a screen displays on the device, indicating the number of records that are being sent.

10. When the transfer is complete, click on **Close Port**.

11. To save the received file, click **Save**.

Once the file is saved, a message asks if you want to add the received file to the current database. To add the file to the current database, click **Open**. If you do not want to add the received file, click **Cancel**.

Sending data to a mobile device

1. Connect the mobile device to the computer using Microsoft ActiveSync technology. For more information on ActiveSync, refer to the documentation for the mobile device.

2. From the *Ribbon*, select *Export to Device*.

    The *Export to mobile device* dialog appears.

3. Check the groups to export and then click **Next**.
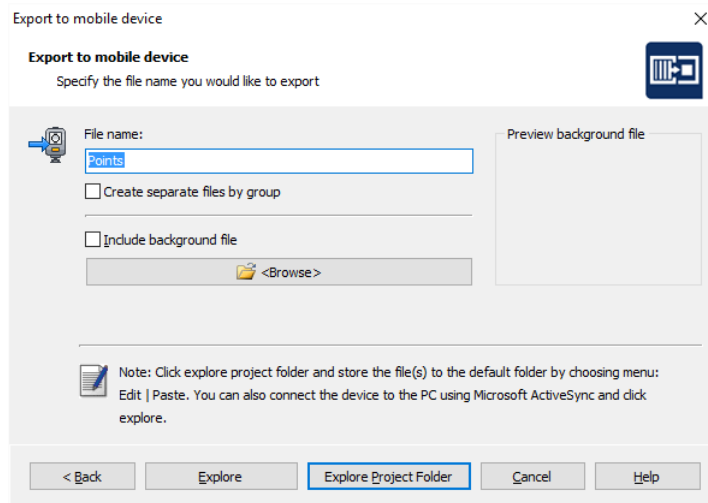
4. Enter a name for the file that you will export.

5. If you have created a background file in your CAD software, select the *Include background file* check box.

6. Click **Explore** or **Explore Project Folder** to start exchanging files.

Sending data to a total station

1. Connect the Total Station to the computer.

2. From the *Ribbon*, select *Export to Device*.

   The *Export to Device* Dialog appears.

3. Check the groups to export and then click **Next**.

   Review the currently selected total station and communication settings. If the settings are not correct, see *Setting Communication Parameters*.

 | If the total station is a... | Then set... |
   | --- | --- |
   | Sokkia SET500 / 600 or SET5F / 6F | the *Checksum* option to **No** and the *Xon/Xoff* option to **Yes**. |
   | | Make sure you send one job at a time and send data in POS view or coordinates. |
   | Topcon GTS200 GPS3000 Series or | the *Protocol* option to **One Way**. |
   | | You must send coordinates or points only. |
   | Topcon GTS500 / 600 / 700 / 800 Series or FC6 / FC6A | the *Protocol* option to **Xon/Xoff**. |
   | | You must send coordinates or points only. |

4. Prepare the total station to accept incoming data. For more information, refer to the user documentation provided with your total station.

5. When the device is ready, on the computer click **Send Now**.

    The MC Next software sends the current database to the device. During transmission, a screen displays on the device, indicating the number of records being received.

6. When the transfer is complete, click **OK**.

6 Working with CAD Data

This chapter describes how to insert points such as intersections of gridlines or foundation piles in your CAD drawing for setting-out purposes. It also describes how to import features from and export features to CAD files.

Setting up your CAD environment

When you launch your CAD software from within the MC Next software, the CAD software automatically displays the tools you need to work with the MC Next software.

To set up the MC Next software so that it starts the correct CAD software:

1. Start the MC Next software, if you have not already done so. To do this, from the Windows *Start* menu select *Programs* / *MC Next*.

2. From the *Ribbon Quick Access Toolbar* at the top of the screen, select *Settings*.

   The dialog *Settings* appears.

3. Select the *CAD / BIM Program* tab:
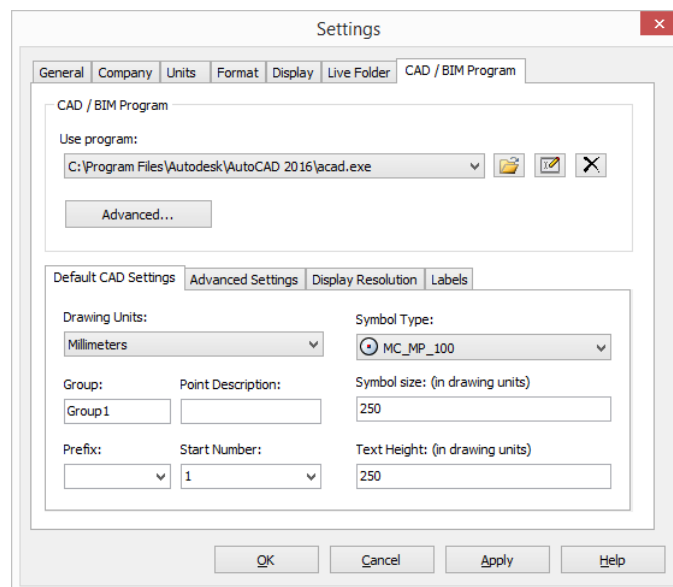
4. Click the Browse button next to the *Use Program* drop-down list.

5. Open the folder where your CAD program is located (for example c:\Program Files\Autodesk\AutoCAD 2016) and then click the executable file (for example acad.exe) to select it.
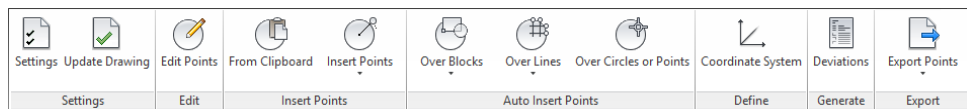
6. Click **Open**.

7. Click **OK** to apply these settings and close the *Settings* dialog.

To start your CAD software from within the MC Next software, select *Prepare points in CAD / Revit* from the *Ribbon*.

The CAD software automatically starts and displays the MC Next toolbar:

To open a CAD drawing, select *File* / *Open* in the CAD software.

If you have not already set the settings for drawings in the *CAD Program* tab of the *Settings* dialog in the MC Next software, you should do this the first time you open a CAD drawing for use with the MC Next software.

1. To do this, click the Settings button on the MC Next toolbar.

   The *Settings* dialog appears:

2. Make your changes and then click **OK**.

Inserting points in a CAD drawing

Insert points in a CAD drawing for setting-out purposes. For example, insert points such as the intersections of gridlines or foundation piles.

1. Click the Insert Points button ⊙ on the MC Next toolbar.

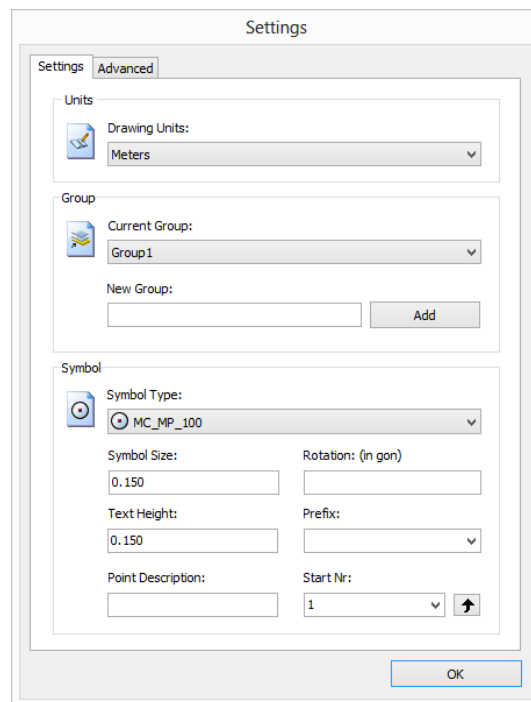> 💬 **Note** – *The position of the inserted points depends on the current Osnap settings, which means that the position of a point is for example "exactly" the intersection of two lines or the insertion point of a block. To review the current osnap settings enter the command OSNAP in the command line of the CAD software, or use the statusbar of the CAD software.*

2. Insert the points for stake out. The point number is inserted automatically.

3. When you have finished adding points, press **[Esc]**.

Auto Insert Points Over Blocks

The Auto insert Points over Blocks wizard allows you to automatically place points on top of existing Blocks. This can be practical for e.g. foundation piles or anchors for prefabricated walls: you let MC Next know the Block name – by clicking on a block symbol – and MC Next automatically places points on top of the block symbols with in case of foundation piles adoption of the pile number. This way you generate hundreds of points with only a few mouse clicks.
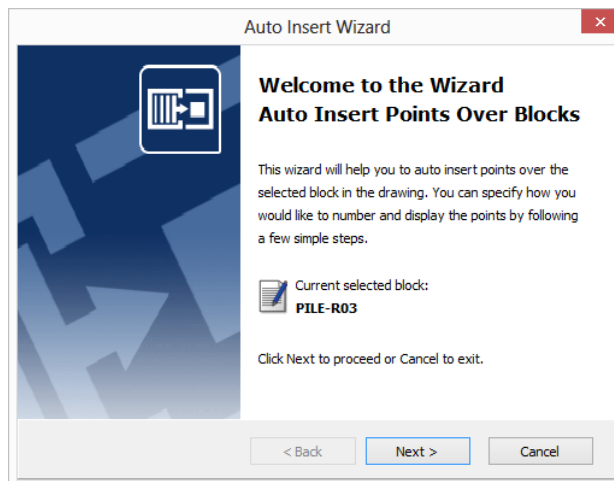
1. Click the Auto Insert Points over Blocks button 🔄 on the MC Next toolbar.

   The message *Select a block* appears.

2. Click on a Block in the drawing.

   The message *Select objects* appears.

3. In the drawing, drag a rectangular window around the area to use for the Auto Insert Points over Blocks wizard and then press **[Enter]**.

    The wizard *Auto Insert Points over Blocks* appears.

4. Follow the instructions in the wizard and then press **Finish**.

5. Click the Update Drawing button to insert the points in the current drawing.

Auto Insert Points Over Lines

The Auto insert Points over Lines wizard allows you to superimpose points over the intersections (2D) or endpoints (3D) of lines. This can be practical for e.g. grid lines or a foundation plan: you let MC Next know the layer name – by clicking on a line or polyline – and MC Next automatically places points over these lines.

1. Click the Auto Insert Points over Lines button 🖉 on the MC Next toolbar.

    The message *Select a line* appears on the screen.

2. Click on a Line in the drawing.
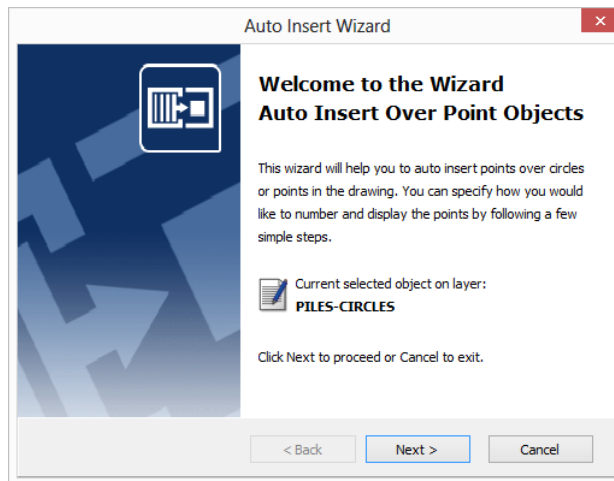
    The message *Select objects* appears.

3. In the drawing, drag a rectangular window around the area to use for the Auto Insert Points over Lines wizard and then press **[Enter]**.

    The wizard *Auto Insert Points over Lines* appears.

4. Follow the instructions in the wizard and then press **Finish**.

5. Click the Update Drawing button to insert the points in the current drawing.

Auto Insert Points Over Circles or Points

The Auto insert Points over Circles or Points wizard allows you to automatically place points on top of existing 'Circles'. This can be practical for e.g. foundation piles or anchors for prefabricated walls: you let MC Next know the Layer name – by clicking on a circle or point symbol – and MC Next automatically places points on top of these circles or points. This way you generate hundreds of points with only a few mouse clicks.

1. Click the Auto Insert Points over Circles or Points button on the MC Next toolbar.

    The message *Select a circle or point* appears.

2. Click on a Circle or Point in the drawing.

    The message *Select objects* appears.

3. In the drawing, drag a rectangular window around the area to use for the Auto Insert Points over Circles or Points wizard and then press **[Enter]**.

    The wizard *Auto Insert over Points Objects* appears.

4. Follow the instructions in the wizard and then press **Finish**.

5. Click the Update Drawing button to insert the points in the current drawing.
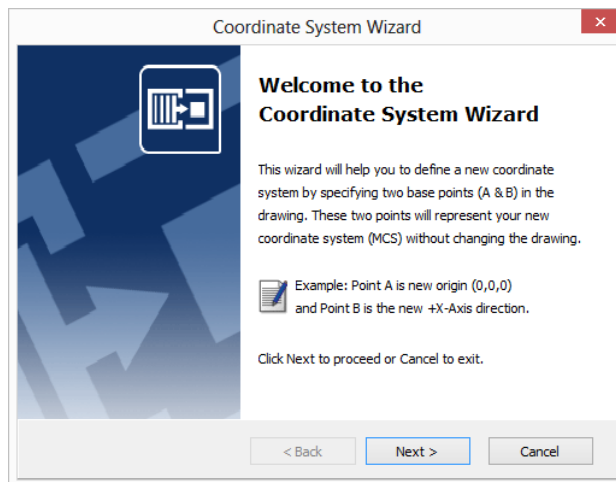
Coordinate System

The Coordinate System wizard will help you to define a new coordinate system by specifying two base points (A & B) in the drawing. These two points will represent your new coordinate system (MCS) without changing the drawing.

For example: Point A is new origin (0,0,0) and Point B is the new +X-Axis direction.

All setting out lists – including lists with polar correlations – are always based on coordinates. All points in a CAD drawing already have coordinates (WCS) but the axes are often chosen arbitrarily. This may mean that where 2 gridlines intersect the coordinates in the pile plan have different values to those in the foundation drawing!

MC Next offers you a simple and unambiguous way of defining the Coordinate System for all the drawings within a particular project.

1. Click the Define Coordinate System button on the MC Next toolbar.

    The *Coordinate System Wizard* appears. You can define a new Coordinate System by specifying two base points (A & B) in the drawing.

2. Follow the instructions in the wizard and then press **Finish**.

3. Click the Update Drawing button to insert the two base points in the current drawing.

Exporting from CAD to the MC Next software

Use the MC Next toolbar in your CAD software to export points and backgrounds.

Exporting points to MC Next

To export points to the MC Next software, click the Export Points button on the MC Next toolbar.

The points are loaded into MC Next. You can edit the points or send it to a mobile device or total station. For more information, see Communicating with Devices.

Exporting a background file and points to MC Next

When you use a Windows Mobile device, you can export a background file in DXF format, together with your points.

☆ **Tip** – *To reduce the file size of background files, we recommends you first use the LAYISO command in the CAD software to easily isolate layers you need for the background file. To use this LAYISO command, enter* **LAYISO** *in the command line of the CAD software and then use your mouse to select the entities to include in the background file and then press* **Enter**.

1. On the MC Next toolbar, click the arrow on the Export Points button and then click the Export Background File & Points button on the pullout menu.

    The message *Select objects for background file* appears.

2. In the drawing, drag a rectangular window around the area to include in the background file and then press **[Enter]**.

    The message *Background file is created* appears. The points are now exported to the MC Next software.

    You can now send the points to a mobile device. For more information, see Sending data to a mobile device.

3. To return to the original state of your drawing in the CAD software, enter **LAYUNISO** in the command line of the CAD software.

Importing files into the MC Next software

You can import standard ASCII formats, such as Comma- and Tab delimited files, into the MC Next software. You can also import DXF- or DXX files for setting-out purposes.

1. From the *Ribbon*, choose *Import from file*.

    The dialog *Import from file* appears.
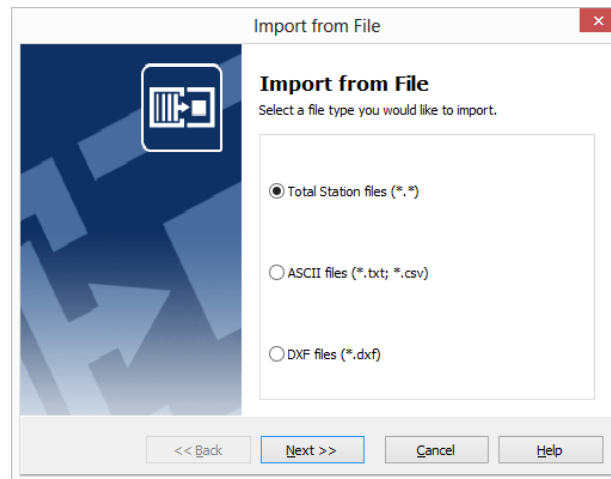
2. Select the type of file to import.

3. Follow the instructions in the wizard and then click **Import**.

Importing blocks from a DXF file

You can import blocks with or without attributes or import points (entity POINT) from a CAD drawing for setting out purposes. When importing blocks, you can select them by name or by selecting all blocks in the drawing that have a particular tag.

Normally you can use the insertion point of a block and the value stored in the tag. For example, a design point is displayed as follows in a CAD drawing:

1

DP

Here a block with the name "DP1" has two linked attributes, "Pointnumber" and "Code". The value "1" is stored in the tag "Pointnumber" and the value "DP" is stored in the tag "Code". To create a coordinate record, the MC Next software uses the insertion point of the block as the X- and Y-coordinate and the value stored in the tag as the point number.

You can also import blocks without attributes from a CAD drawing. The MC Next software uses the insertion point of the block as the X- and Y-coordinate and numbers the blocks in random order.

Note – *The MC Next software can export a DXF file for you to print the numbering on the original CAD drawing. For more information, see Exporting to a file.*

Importing design points from a DXF or DXX file

1. From the *Ribbon*, choose *Import from file*.

   The *Import from File* dialog appears.

2. Select the *DXF Files (*.dxf)* option and then click **Next**.

3. Click the Browse button [icon] to select a file.

   Note – *To open a DXX file, select the file type in the List Files of Type field. A DXX file contains only blocks and attribute information and is therefore much smaller in file size.*

4. To open the file, double-click it.

   The *Import from File* dialog lists the entities found in the file:
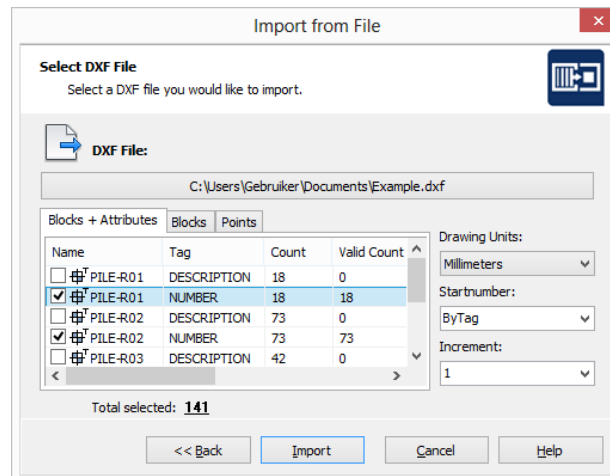
5. Select the CAD data to import by clicking the box next to the appropriate symbol. Remember to check each tab. For more information, see Selecting CAD data and establishing settings below.

6. To add the points to the MC Next software, click **Import**.

Selecting CAD data and establishing settings

Blocks and Attributes tab

The Blocks and Attributes tab displays the information for each block in four columns. The first two columns display the name and tag of the user block. The Count column the number of blocks that exist in the CAD drawing with that particular name and tag, and the Valid Count column displays the number of blocks that are valid. A block is invalid if the attribute (tag) contains no value. You cannot select invalid blocks.

Blocks tab

The Blocks tab displays only the blocks – it does not show attributes. You can easily select the blocks you want by clicking the box near the symbol. You can also select a start number and increment for the blocks.

Points tab

The Points tab enables you to select the points by layer that you want to import from the CAD drawing.

# Exporting from the MC Next software

You can export data from MC Next as Total Station files, DXF files, or to standard ASCII file formats, such as comma separated (.csv) or tab delimited (.txt) files.

Alternatively, export points directly to your CAD software. You can export points to a new drawing or to an existing drawing.

Exporting to a file

1. From the *Ribbon*, choose *Export to file*.

   The dialog *Export to file* appears.
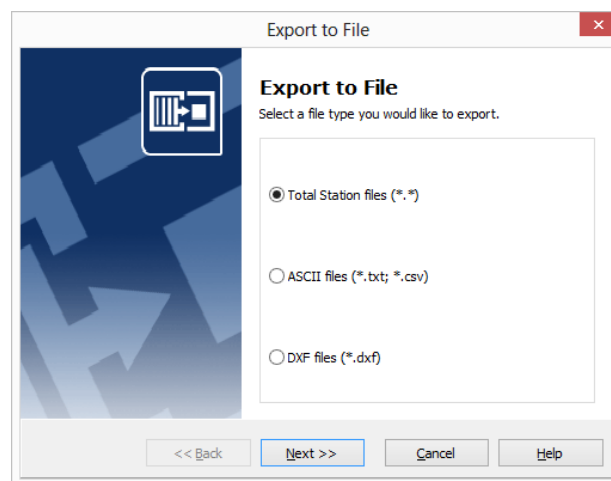
2. Select the file type that you want to export data to.

3. Follow the instructions in the wizard and then click **Export**.

Exporting to the CAD software

1. From the *Ribbon*, choose *Export to CAD / Revit*.

The dialog *Export to CAD* appears.

2. Select the *Export points to a new drawing* option or the *Export points to an existing drawing* option.

3. Follow the instructions in the wizard and then click **Export**.

Generating Reports

Use the Generate Report option in the MC Next software to obtain detailed inverse information for setting out or other field operations.

1. From the *Ribbon*, select *Generate Report*.

   The dialog *Generate Reports* appears.
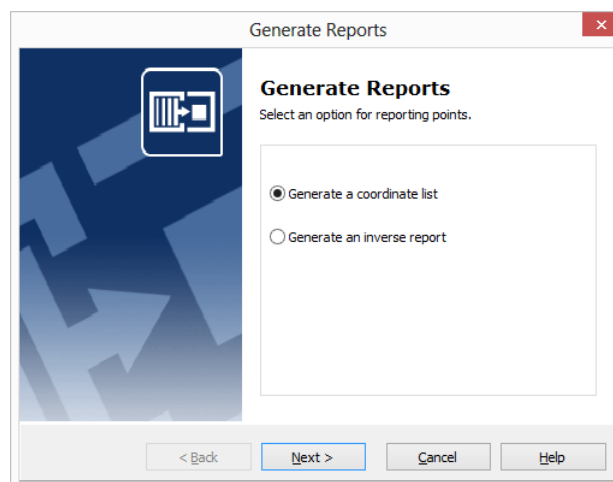
2. Select the *Generate Coordinate List* option to generate coordinates for each point or the *Inverse Report* option to include angle and distance data as well as coordinates for each point.

3. Follow the instructions in the wizard and then click **Generate**.

💬 **Note** – *You can sort the list by any column. To do this, click the column header for the column you want to sort by.*


Generating Deviation Report

The Deviations Wizard will help you to compare measured points with the original design points in the drawing. You can report and display the deviations in the drawing by following a few simple steps.

The Point Comparison is designed for use as an assistance in Quality Control (As-built) surveys.

1. From the *Ribbon*, select *Generate Deviation Report*.

   The *Deviations Wizard* appears.
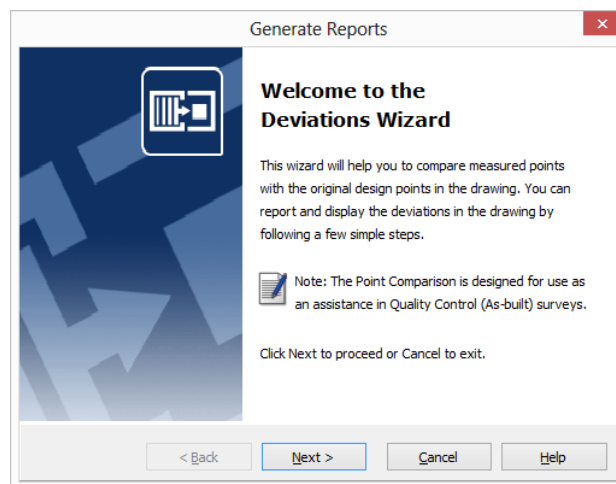
2. Follow the instructions in the wizard and then click **Export**.

   Select the measured points for the point comparison and a CAD file which contains the design points. MC Next will launch your CAD program and opens automatically the selected CAD File. When the CAD drawing is loaded, the wizard will be continued and you can specify how you would like to compare the measured points with the original design points.

3. Click the Update Drawing button to insert the deviations in the current drawing.
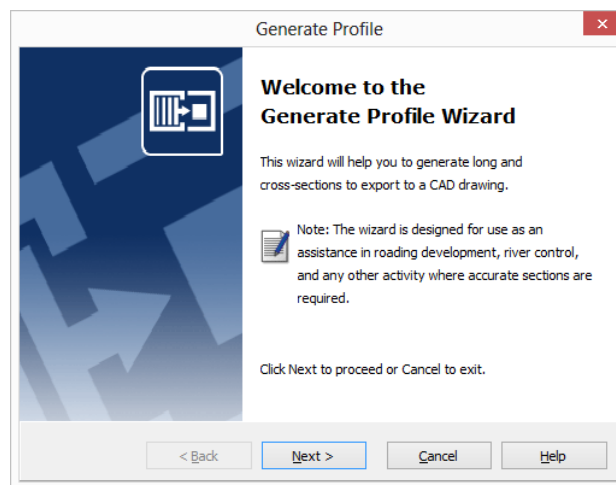
Generating Profile

The Generate Profile Wizard will help you to generate long and cross-sections to export to a CAD drawing.

The wizard is designed for use as an assistance in roading development, river control, and any other activity where accurate sections are required. You can define and export the profiles to a drawing by following a few simple steps.

1. From the *Ribbon*, select *Generate Profile*.

   The *Generate Profile Wizard* appears.

2. Follow the instructions in the wizard and then click **Export**.

   Your CAD software starts and automatically opens the CAD drawing showing the profiles.

Generating Surface and Calculate Volume

To calculate enclosed volumes of digital terrain models (DTM), use the Calculate Volume Wizard in the MC Next software.

The wizard is designed for use as an assistance in stockpile calculations and monitoring the filling of refuse pits and other such areas. You can report the calculation results and export the DTM to a drawing by following a few simple steps.

1. From the *Ribbon*, select *Generate Surface and Calculate Volume*.

   The *Calculate Volume Wizard* appears.
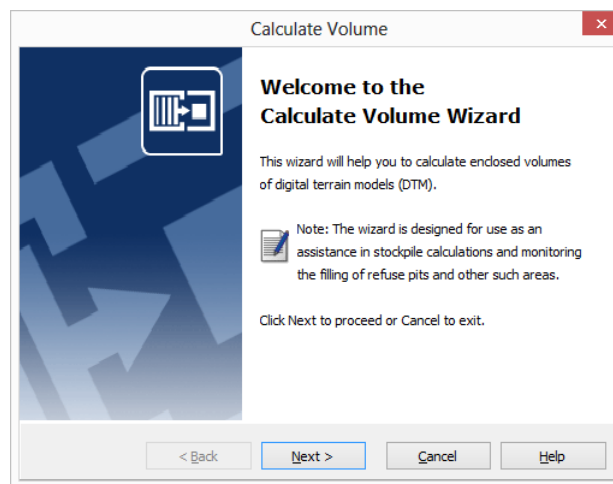
2. Follow the instructions in the wizard and then click **Export**.

   To add a selection of points to the DTM, specify an enclosed boundary. Points outside the boundary are not added to the DTM. When the DTM is created, you can review the results of the volume calculation and export the DTM to a CAD drawing.

7 Working with Revit Data

This chapter describes how to insert points such as intersections of gridlines or foundation piles in your Revit project for setting-out purposes. It also describes how to import features from and export features to Revit files.

## Setting up your Revit environment

When you launch your Revit software from within the MC Next software, the Revit software automatically displays the tools you need to work with the MC Next software.

To set up the MC Next software so that it starts the correct Revit software:

1. Start the MC Next software, if you have not already done so. To do this, from the Windows *Start* menu select *Programs* / *MC Next*.

2. From the *Ribbon Quick Access Toolbar* at the top of the screen, select *Settings*.

   The dialog *Settings* appears.

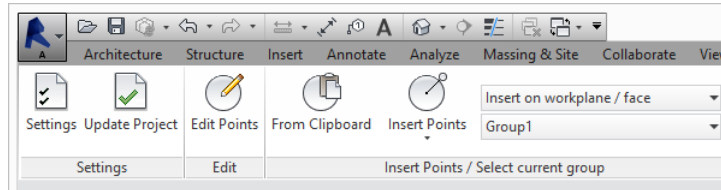3. Select the *CAD / BIM Program* tab:
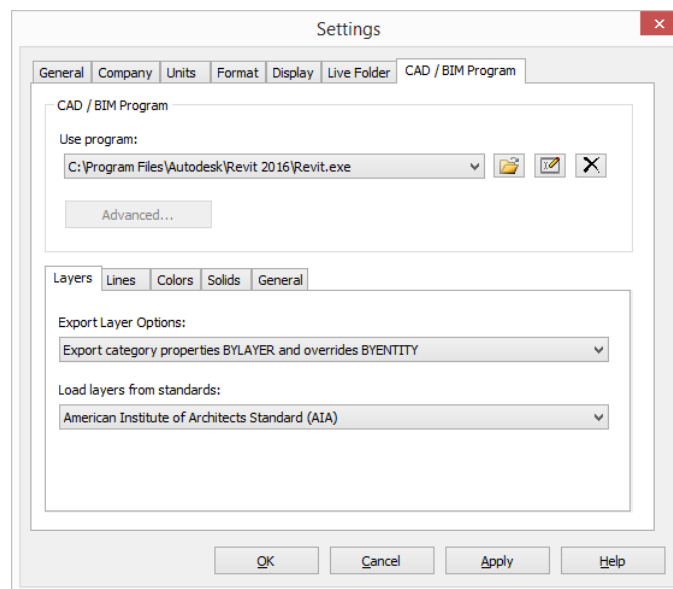
4. Click the Browse button next to the *Use Program* drop-down list.

5. Open the folder where your Revit program is located (for example c:\Program Files\Autodesk\Revit 2016) and then click the executable file (for example Revit.exe) to select it.

6. Click **Open**.

7. Click **OK** to apply these settings and close the *Settings* dialog.

To start your Revit software from within the MC Next software, select *Prepare points in CAD / Revit* from the Ribbon.

The Revit software automatically starts and displays the MC Next toolbar:


To open a Revit project, select *File / Open* in the Revit software.

If you have not already set the settings for projects in the *CAD / BIM Program* tab of the *Settings* dialog in the MC Next software, you should do this the first time you open a Revit project for use with the MC Next software.

1. To do this, click the Settings button on the MC Next toolbar.

   The *Settings* dialog appears:
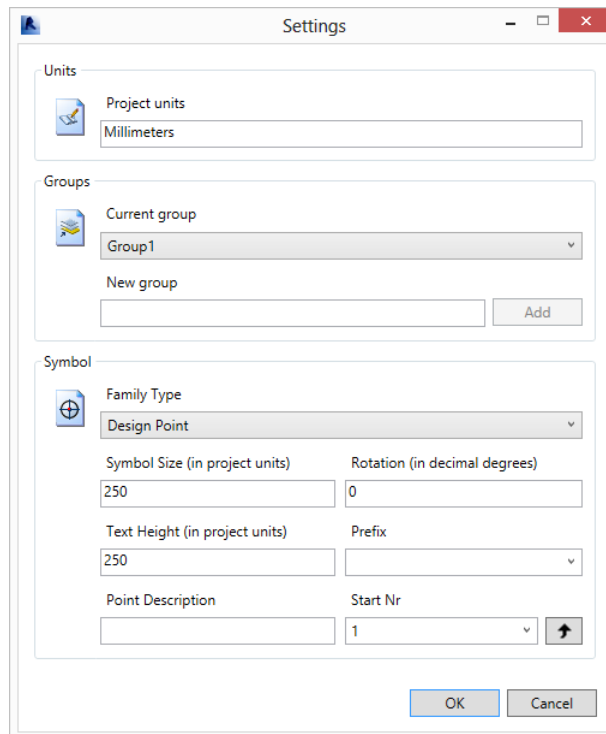
2. Make your changes and then click **OK**.

Inserting points in a Revit project

Insert points in a Revit project for setting-out purposes. For example, insert points such as the intersections of gridlines or foundation piles.
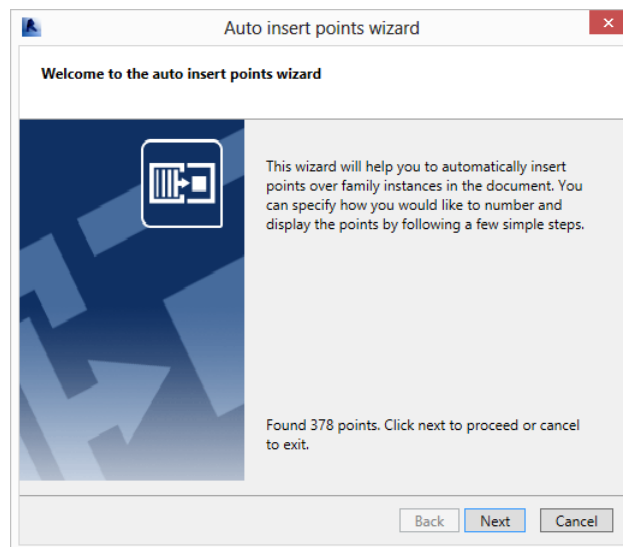
1. Click the Insert Points button ⊙ on the MC Next toolbar.

💬 **Note** – *The position of the inserted points depends on the current Snap settings, which means that the position of a point is for example "exactly" the intersection of two lines. To review the current snap settings go to the Manage tab and then click SNAPS.*

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2. Insert the points for stake out. The point number is inserted automatically.

3. When you have finished adding points, press **[Esc]** twice.

Auto Insert Points Over Families

The Auto insert Points over Families wizard allows you to automatically place points on top of existing Families. This can be practical for e.g. pilecaps or columns: you let MC Next know the family name – by clicking on a family – and MC Next automatically places points on top of the families. This way you generate hundreds of points with only a few mouse clicks.

1. Click the Auto Insert Points over Families button on the MC Next toolbar.

2. Click on a Family in the document.

    The selected family will be isolated.

3. Insert the points for stake out. The point number is inserted automatically.

4. When you have finished adding points, press **[Esc]** twice.

   The wizard *Auto Insert Points over Families* appears.

5. Follow the instructions in the wizard and then press **Finish**.

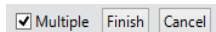6. The points will automatically be added to the document.

Auto Insert Points Over Geometry

The Auto insert Points over Geometry wizard allows you to automatically place points over non-repeating geometry. This can be practical for e.g. columns or floors: you let MC Next know the elements – by selecting multiple elements – and MC Next automatically places points over these elements.
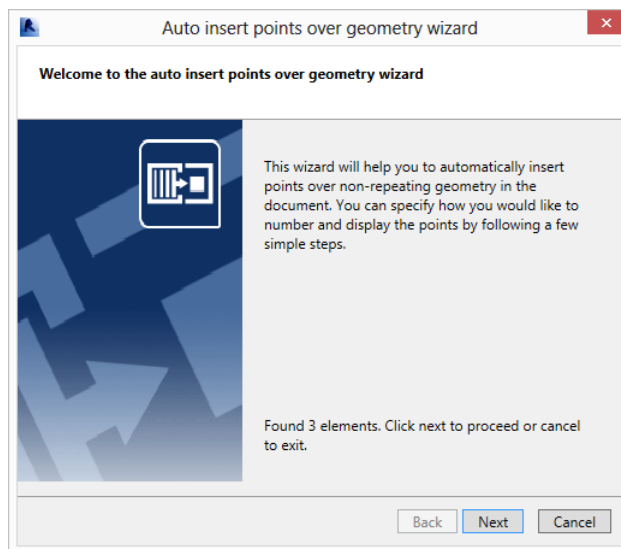
1. Click the Auto Insert Points over Geometry button on the MC Next toolbar.

   The message *Select multiple elements* appears on the screen.


2. In the document, select the elements to use for the Auto Insert Points over Geometry Wizard and then press **Finish**.

   The wizard *Auto Insert Points over Geometry* appears.

3. Follow the instructions in the wizard and then press **Finish**.

4. The points will automatically be added to the document.

Auto Insert Points Over Grid

The Auto insert Points over Grid wizard allows you to superimpose points over the intersections of grid lines.
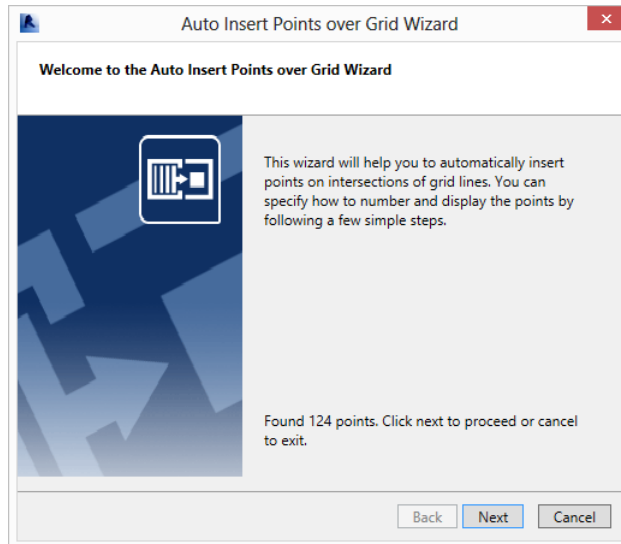
1. Click the Auto Insert Points over Grid button on the MC Next toolbar.

   The wizard *Auto Insert over Grid* appears.

2. Follow the instructions in the wizard and then press **Finish**.

3. The points will automatically be added to the document.

Adding point tags in a Revit project

To add point tags to the points in a Revit project, select a plan view from the Project Browser and then click the Tag Points button on the MC Next toolbar.

The points are now being tagged with a point number.

Exporting from Revit to the MC Next software

Use the MC Next toolbar in your Revit software to export points and backgrounds.

Exporting points to MC Next

To export points to the MC Next software, click the Export Points button on the MC Next toolbar.

The points are loaded into MC Next. You can edit the points or send it to a mobile device or total station. For more information, see Communicating with Devices.

Exporting a background file and points to MC Next

When you use a Windows Mobile device, you can export a background file in DXF format, together with your points.

1. Select a view to include in the background file, if you have not already done so. To do this, select a view from the project browser.

2. On the MC Next toolbar, click the arrow on the Export Points button and then click the Export Background & Points button on the pullout menu.

    The points are now exported to the MC Next software and the background file is created.

    You can now send the background and the points to a mobile device. For more information, see Sending data to a mobile device.
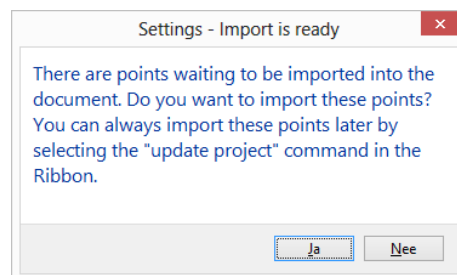
Exporting to the Revit software

1. From the *Ribbon*, select *Export to CAD / Revit*.

    The dialog *Export to CAD / Revit* appears.

2. Check the groups to export and then click **Export**.

    In Revit, the message *Import is ready* appears.

3. Choose **Yes** to import the points into the current project or choose **No** to cancel. You can always import the points later by selecting the Update Project button in the Ribbon.

Generate Deviations

The Deviations Wizard will help you to compare measured points with the original design points in the document. You can report and display the deviations in the document by following a few simple steps.

The Point Comparison is designed for use as an assistance in Quality Control (As-built) surveys.

1. From the *Ribbon*, select *Generate Deviation Report*.

   The *Deviations Wizard* appears.
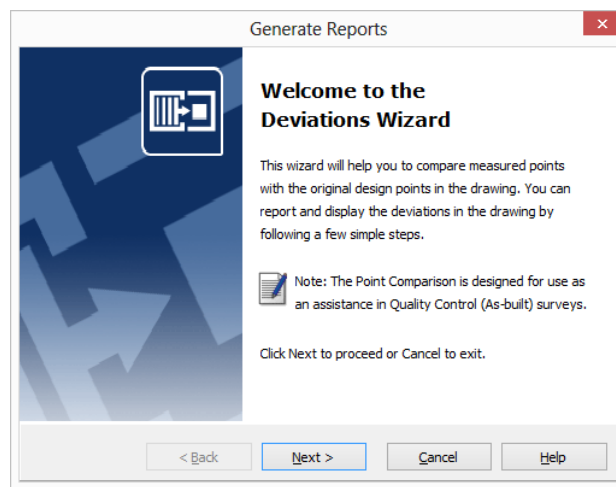
2. Follow the instructions in the wizard.

   The wizard allows you to select the measured points to be used in the point comparison and a Point Group or Revit document which contains the design points. Select *From Group* to compare two groups of points or select *From Revit Document* to generate deviations in the Revit document.

A Tutorial

This tutorial has lessons about settings, importing and exporting files, preparing points in a CAD drawing, generating reports and calculating volumes.

You can work through these lessons sequentially, or you can do one lesson at a time. However, within each lesson you should complete the exercises in the order presented, as the first exercises provide you with the information you need for the later exercises in that lesson.

Before you begin

Each lesson, except for the first one, has a tutorial drawing and/or data file.

🗩 **Note** – *Working through these lessons will result in alteration of the example files. Backup copies of these example files can be found in the \Program Files\MOUS Software\MC Next <Version Number>\Tutorial folder.*

If a lesson has been previously run, copy these unaltered example files to the \Documents\MC Next *<Version Number>* Tutorial folder when starting a new tutorial session to ensure that the sequence outlined in each lesson can be properly followed.

Lesson 1: Apply settings

Applying general software settings

In this exercise, you will select the units and a CAD program for MC Next. To work through this lesson follow these steps:

1. Start the MC Next software, if you have not already done so. To do this, from the Windows *Start* menu select *Programs* / *MC Next*.

2. From the *Ribbon Quick Access Toolbar* at the top of the screen, select *Settings*.

    The *Settings* dialog appears.
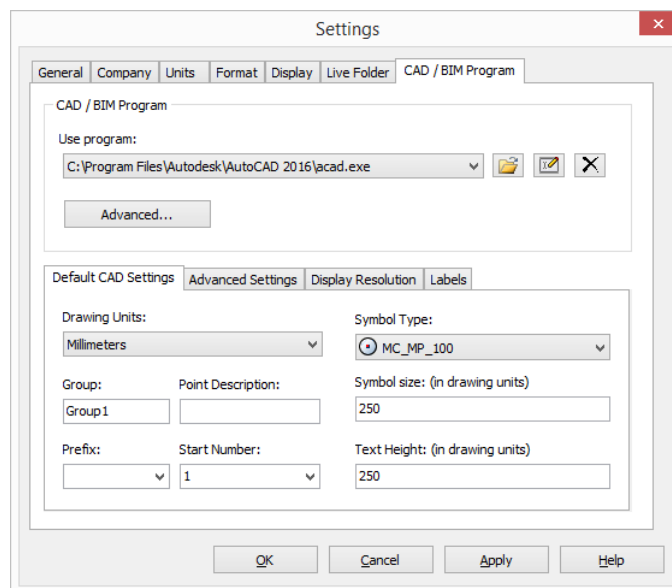
3. Select the *Units* tab:
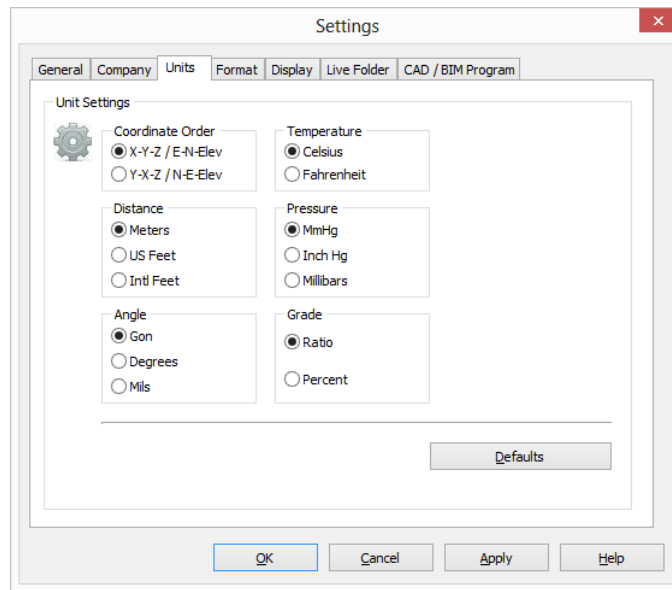
4. Select the following settings:

    - Coordinate Order: X-Y-Z / E-N-Elev

    - Distance: Meters

    - Angle: Gon

    These units will now be the standard units that MC Next uses for your projects.

5. Select the CAD / BIM Program tab:

6. Click the Browse button next to the *Use Program* drop-down list.

7. Open the folder where your CAD program is located (for example c:\Program Files\Autodesk\AutoCAD 2016) and then click the executable file (for example acad.exe) to select it.

8. Click **Open**.

9. Click **OK** to apply these settings and close the *Settings* dialog.

Applying total station communication settings

In this exercise, you will select the total station and settings that the MC Next software will use.

1. From the *Ribbon Quick Access Toolbar* at the top of the screen, select *Device Settings*.

    The *Communication Settings* dialog appears:
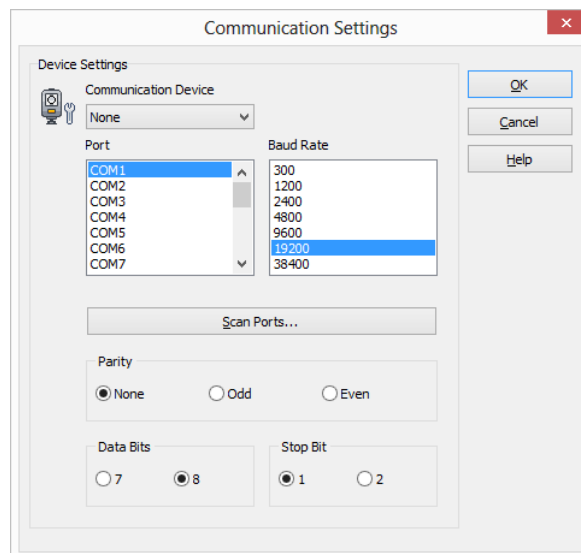
2. In the *Communication Device* drop-down list, select your total station.

3. Select the appropriate settings for port, baud rate, data bits and stop bit.

> **Note** – *The MC Next software must be set to the same baud rate and parity as the device for data transmission to work correctly.*

4. Click **OK** to apply these settings and close the dialog.

This concludes the Apply Settings lesson. In the next lesson, you'll learn how to import and export files.
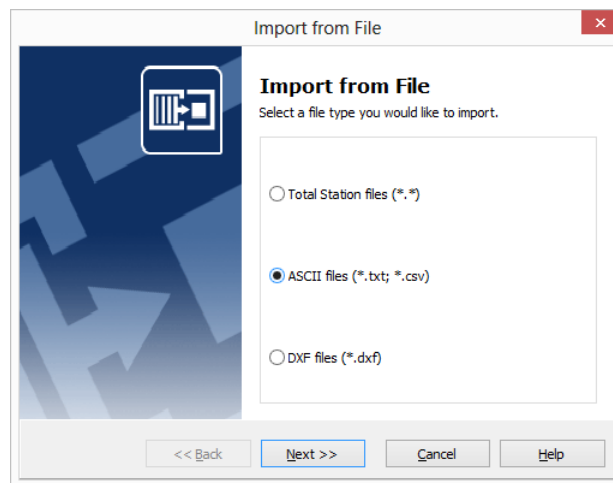
Lesson 2: Import and export files

Importing a file

In this exercise, you will learn how to import a file.

1. Start the MC Next software, if you have not already done so.

2. From the *Ribbon*, select *Import from File*.

    The *Import from File* wizard appears:

3. Select the *ASCII files* option and then click **Next**.

4. Click the Browse button and then navigate to the \ Documents \ MC Next *<Version Number>* Tutorial \ MC Example Project Meters folder. Select the file 4_Terrain_MCS.txt.

5. Click **Open**.

6. Click **Import**.

The file is imported into the MC Next software. Notice that the contents of the file is displayed in both the ListView and the GraphicView.

☆ **Tip** – *You can also import files by dragging them from your local hard drive and dropping them into the MC Next software window.*

Exporting files to CAD

In this exercise, you will learn how to export a file to your CAD program.

1. From the *Ribbon*, select *Export to CAD / Revit*.

The *Export to CAD* wizard appears:

2. Select the *Export points to a new drawing* option and then click **Next**.

3. Select group *4_Terrain_MCS* and then click **Next**.

4. Select the units. For *Units (XY)* and *Units (Z)*, select Meters.

5. Click **Details**.

6. For the *Annotation Type* option, select PointID + Code.

7. Click **Next**.

8. Select the *Draw Polyline between continuous range of points* option and then click **Next**.

9. Select the *With coordinates as measured* option and then click **Export**.

Your CAD software starts and automatically opens the CAD drawing you have just exported.

💬 **Note** – *Notice that point 3001 and 3002 are measured as reference points, which will be used in lesson 4 to position the design drawing.*

Exporting control points only file

In this exercise, you will learn how to export a file that contains only control points.

1. Return to the MC Next software, if you have not already done so.

2. In the ListView of the MC Next software, select the points to export. Press and hold the **[Shift]** key as you click the left mouse button on point 9000 and then click the left mouse button on point 9050.

The points 9000 to 9050 are now selected.

3. From the *Ribbon*, select *Copy*.

   The points 9000 to 9050 are saved to the clipboard.

4. From the *Ribbon Application Menubar* at the top of the screen, select *New*.

5. From the *Ribbon*, select *Paste*.

   The control points 9000 to 9050 are added to the new group.

6. From the *Ribbon*, select *Export to File*.

   The *Export to File* wizard appears.

7. Select the *ASCII files* option and then click **Next**.

8. Select the new group and then click **Next**.

9. Click the Browse button 🗁 and then navigate to the \ Documents \ MC Next *<Version Number>* Tutorial \ MC Example Project Meters folder. Enter the file name **ControlPoints.txt**.

10. Click **Save**.

11. Click **Export**.

    The file is exported.

📝 **Note** – *The file ControlPoints.txt will be added to a project in lesson 5.*

This concludes the Import and Export Files lesson. In the next lesson, you'll learn how to prepare points in a CAD drawing.

Lesson 3: Prepare points in a CAD drawing

In this lesson, you will familiarise yourself with terms commonly used in CAD drawings and learn how to prepare points in a CAD drawing.

Understanding terms used in a CAD drawing

The table below defines some of the terms that the MC Next software uses when referring to CAD drawings:

| Term	Definition
Attribute	An Attribute depence on a User block. You can see it as a label linked with a User block, which contains information of that User block. A "Pointnumber" or "Code" are examples of attributes. They are giving information of the User block. An attribute is always displayed as text.
Block	A block (or User block) is a group of entities. For example a symbol, which can contains a number of lines.
CSV	A CSV file is a Comma Separated Value File. A CSV file is a text file and contains per line information of a point separated with a comma sign. For example: PointID, X, Y, Z, Code
DXF	The DXF format is a standard Drawing eXchange Format for CAD drawings. You can easily save a CAD drawing as a DXF file in your CAD application.
DXX	The DXX format is a Attribute Information format. You can save a CAD drawing as a DXX file. A DXX file contains only information of User blocks with attributes in a CAD drawing, and is therefore much smaller in file size than a DXF file.
Entity	A entity is a single object in a CAD drawing. For example a line, circle or text.
Insertion point	The insertion point of a User block is the base point of a User block, which you are using to insert the User block in a CAD drawing
Tag	A Tag is the name of the attribute. For example "Pointnumber" or "Code".
TXT	A TXT file is a Tab Delimited File. A TXT file is a text file and contains per line information of a point separated with a tab sign. For example: PointID X Y Z Code

Inserting points in a CAD drawing

1. Start the MC Next software, if you have not already done so.

2. From the *Ribbon* at the top of the screen, select *Prepare Points in CAD / Revit*.

   Your CAD software automatically starts and displays the MC Next toolbar.

3. In the CAD software, select *File / Open* and then navigate to the \ Documents \ MC Next <Version Number> Tutorial \ MC Example Project Meters folder. Select the file MC_Example_clean.dwg.

4. When the CAD drawing opens, click the Settings button ⬚ on the MC Next toolbar.

The *Settings* dialog appears:
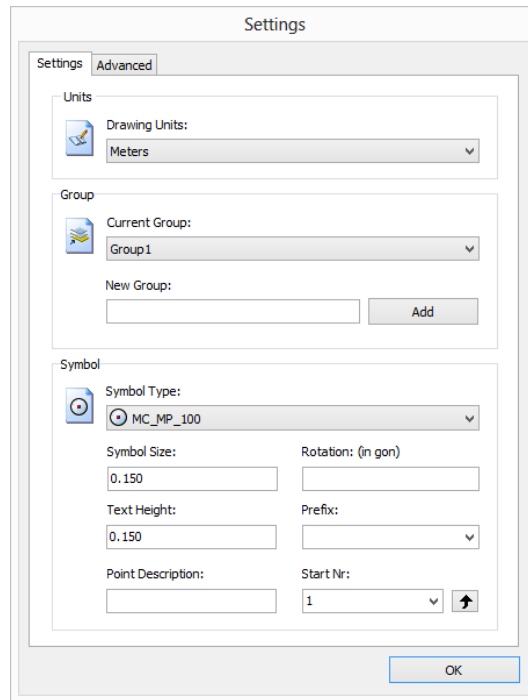
a. In the *Drawing Units* drop-down list, select Meters.

b. In the *New Group* field, enter **Foundation** and then click **Add**.

c. In the *Start Number* field, enter **501**.

d. Click **OK** to apply these settings.

If you are using AutoCAD LT, click the Update Drawing button on the MC Next toolbar to save these settings in the drawing.

5. In the command line of your CAD software, enter **OSNAP**. For the snap function, select Intersection and then click **OK**.

☆ **Tip** – *The position of the inserted points depends on your current OSNAP settings, which means that the position of a point is for example "exactly" the intersection of two lines or the insertion point of a block. To review the current OSNAP settings, enter the command OSNAP in the command line of the CAD software, or use the status bar of the CAD software. Make sure that the Object Snap is on.*

6. On the MC Next toolbar, click the Insert Points button ⦿ .

7. With your left mouse button, click one of the outside corners of the extension foundation at the left of the drawing and then click again to position the point number.

💬 **Note** – *The snap function activates as you approach the intersection with the mouse cursor. Make sure you zoom in far enough to visually see the snap position of the point.*

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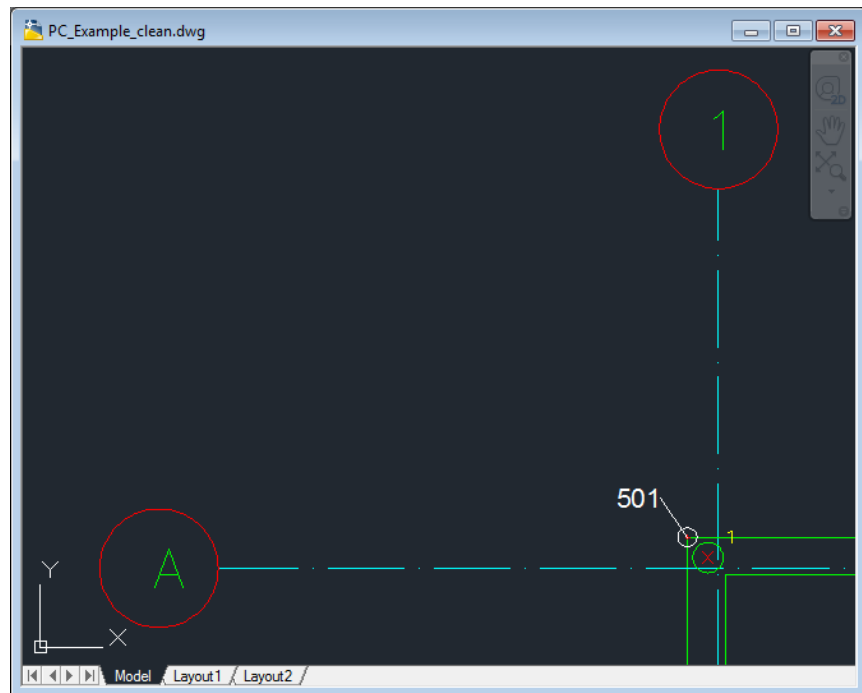
8. Click each of the remaining points on the outside corners of the foundation.

9. When you have finished selecting the points, press **[Esc]**.

10. From the *File* menu of your CAD software, select *Save* to save the current drawing.

Auto Insert Points over Blocks

In this exercise, you will learn how to automatically insert points over blocks in a CAD drawing for setting out purposes.

1. Click the Auto Insert Points over Blocks button on the MC Next toolbar.

   The message *Select a block* appears.

2. Click on a foundation pile (= Block) from the main building in the drawing.

   The message *Select objects* appears.

3. In the drawing, drag a rectangular window around the area to use for the Auto Insert Points over Blocks wizard and then press **[Enter]**. For now, select the entire drawing.

   The wizard *Auto Insert Points over Blocks* appears on the screen.

4. Click **Next** and select the *By Tag* option to number the blocks. Click **Next** to continue.
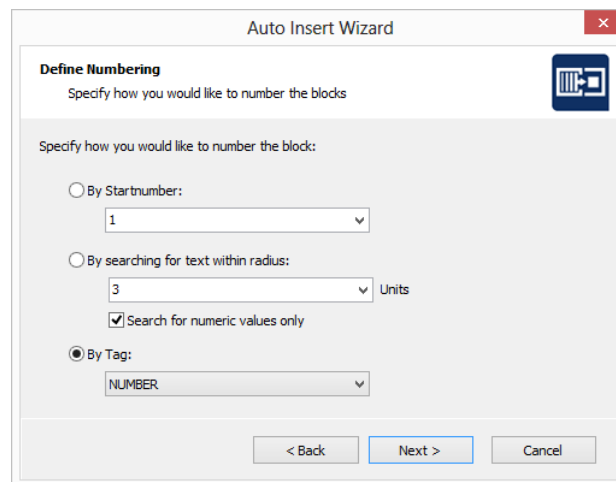
5. Click the **Select all blocks with current Tag** button to select all foundation piles and then click **Next**.

6. In the *New Group* field, enter **Piles**, click **Add** and then click **Next**.

7. Review the settings for the points and click **Next**.

8. Select for invalid numbers the *Skip* option and then click **Next**.

9. A summary of the points will be displayed. Review the points and then click **Next**.

10. Click **Finish** to close the wizard.

11. Click the Update drawing button ☑ on the MC Next toolbar to insert the points in the current drawing.

12. From the *File* menu of your CAD software, select *Save* to save the current drawing.

Auto Insert Points over Lines

In this exercise, you will learn how to automatically insert points over lines in a CAD drawing for setting out purposes.

1. Click the Auto Insert Points over Lines button ☺ on the MC Next toolbar.
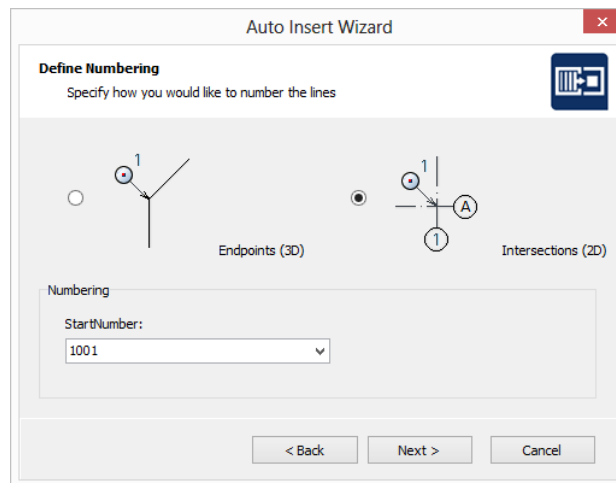
   The message *Select a line* appears.

2. Click on a grid line from the main building in the drawing.

   The message *Select objects* appears.

3. In the drawing, drag a rectangular window around the area to use for the Auto Insert Points over Lines wizard and then press **[Enter]**. For now, select the main building.

   The wizard *Auto Insert Points over Lines* appears.

4. Click **Next** and select the *Intersections (2D)* option. In the *Start number* field, enter **1001** and then click **Next**.

5. Select layer *GRID-LINES-25* and then click **Next**.

6. In the *New Group* field, enter **Grid**, click **Add** and then click **Next**.

7. Review the settings for the points and click **Next**.

8. Select the *first option* for Number Route and then click **Next**.

9. A summary of the points will be displayed. Review the points and then click **Next**.

10. Click **Finish** to close the wizard.

11. Click the Update drawing button on the MC Next toolbar to insert the points in the current drawing.

12. From the *File* menu, choose *Save* in your CAD program to save the current drawing.

Auto Insert Points over Circles or Points

In this exercise, you will learn how to automatically insert points over circles and points in a CAD drawing for setting out purposes.

1. Click the Auto Insert Points over Circles or Points button on the MC Next toolbar.

    The message *Select a circle or point* appears.

2. Click on a foundation pile (= Circle) at the left of the drawing (extension, not the main building).

    The message *Select objects* appears.

3. In the drawing, drag a rectangular window around the area to use for the Auto Insert Points over Circles or Points wizard and then press **[Enter]**. Select the extension, not the main building.

    The wizard *Auto Insert Points over Circles or Points* appears.
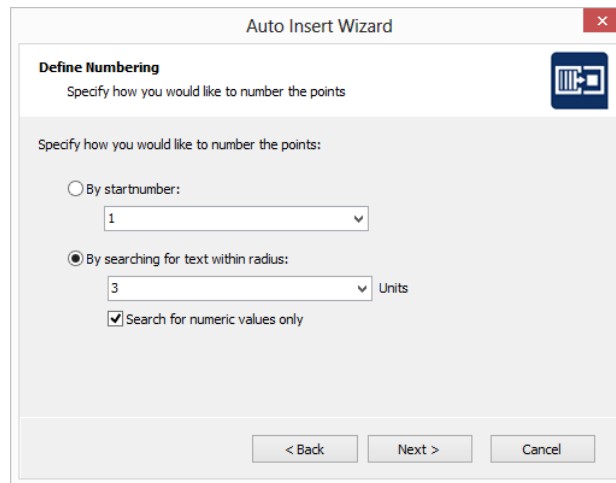
4. Click **Next.** Select the *By searching for text within radius* option and then click **Next**.

5. Select layer *PILES-CIRCLES* and then click **Next**.

6. From the Groups list, select *Piles* and then click **Next**.

7. For the position of the Point Number, select the *second quadrant*. In the *Shift Number: +/-* field, enter **200** and then click **Next.**

8. For invalid numbers, select the *Assign number* option and then click **Next**.

9. A summary of the points will be displayed. Review the points and then click **Next**.

10. Click **Finish** to close the wizard.

11. Click the Update drawing button ☑ on the MC Next toolbar to insert the points in the current drawing.

    In the following steps you will learn how to split polylines from the ROAD-LINES layer into segments of 2 meters for setting out purposes.

12. Make layer **ROAD_LINES** "current" by clicking on the layer in the layer list.

13. On the command line, enter **MEASURE** and then press [**Enter**].

    The message *Select object to measure* appears.

14. Click one of the polylines from the *ROAD_LINES* layer.

    The message *Specify length of segment or [Block]* appears.

15. Enter **2** and then press [**Enter**].

Notice that the polyline is split into segments of 2 meters. The marked points are POINT entities.

16. Now repeat step 13, 14 and 15 to split the two remaining polylines from the *ROAD_LINES* layer.

17. Click the Auto Insert Points over Circles or Points button on the MC Next toolbar.

    The message *Select a circle or point* appears.

18. Click on one of the marked points (entity point).

    The message *Select objects* appears.

19. In the drawing, drag a rectangular window around the area to use for the Auto Insert Points over Circles or Points wizard and then press **[Enter]**. For now, select the entire drawing.

    The wizard *Auto Insert Points over Circles or Points* appears.

20. Click **Next** and select the *By Startnumber* option. In the *Start number* field, enter **2001** and then click **Next**.

21. Select layer *ROAD_LINES* and then click **Next**.

22. In the *New Group* field, enter **Road**, click **Add** and then click **Next**.

23. Review the settings for the points and click **Next**.

24. Select for Number Route the *None (by creation order)* option and then click **Next**.

25. A summary of the points will be displayed. Review the points and click **Next**.

26. Click **Finish** to close the wizard.

27. Click the Update drawing button on the MC Next toolbar to insert the points in the current drawing.

28. From the *File* menu, choose *Save* in your CAD program to save the current drawing.

This concludes the Prepare Points in CAD drawing lesson. In the next lesson, you'll learn how to define a new coordinate system in a CAD drawing.

Lesson 4: Define a Coordinate System

In this exercise, you will learn how to define a new Coordinate System (MCS) in a CAD drawing.

To work through this lesson follow these steps

1. Start the MC Next software, if you have not already done so.

2. From the Ribbon at the top of the screen, select *Prepare Points in CAD / Revit*.

    Your CAD software automatically starts and displays the MC Next toolbar.

3. In the CAD software, select *File / Open* and then navigate to the \ Documents \ MC Next <Version Number> Tutorial \ MC Example Project Meters folder. Select the file MC_Example_WCS.dwg.

4. When the CAD drawing opens, click the Define Coordinate System button on the MC Next toolbar.

    The *Coordinate System Wizard* appears.
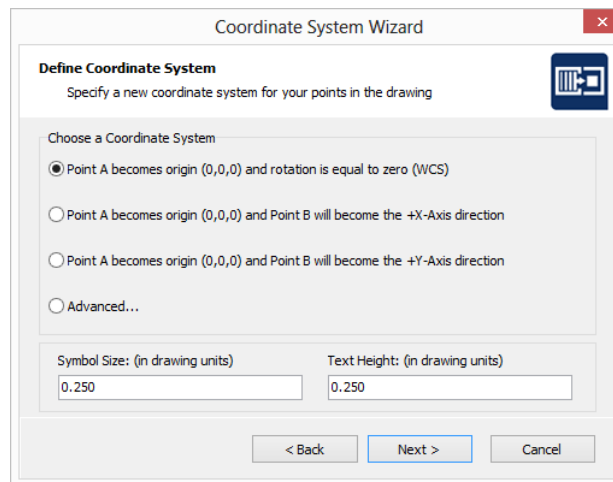
5. Click **Next**. Select the *Advanced...* option and then click **Next**.

6. From the Groups drop-down list, select *Grid*. Select point *1001* and then click the **= Point A** button.

    📝 **Note** – *We will give Point 1001 the coordinates from point 3001 that is used in lesson 2 – file: 4_Terrain_MCS.txt. We will give Point 1011 the coordinates from point 3002. Point 3001 and 3002 are measured outside in the field as reference points and represent the two intersection of gridlines. We will use these points to position the design drawing.*

7. In the *New X in CAD:* field, enter **202328.928** (= meters). In the *New Y in CAD:* field, enter **439451.684**.

8. Select point *1011* and then click the **= Point B** button.

9. In the *New X in CAD:* field, enter **202330.319** (= meters). In the *New Y in CAD:* field, enter **439487.662** and then click **Next**.

10. A summary of the coordinate system will be displayed. Review the data and click **Next**.

11. Click **Finish** to close the wizard.

12. Click the Update drawing button on the MC Next toolbar to insert the two base points in the current drawing.

13. From the *File* menu, choose *Save* in your CAD program to save the current drawing.

This concludes the Define a Coordinate System lesson. In the next lesson, you'll learn how to export inserted points to the MC Next software and then send it to your mobile device or Total Station.

Lesson 5: Export points to a device

In this exercise, you will learn how to export points from your CAD software to the MC Next software and then send them to your Mobile Device or Total Station.

Export Points from the CAD software

1. Start the MC Next software, if you have not already done so.

2. From the *Ribbon* at the top of the screen, select *Prepare Points in CAD / Revit*.

   Your CAD software automatically starts and displays the MC Next toolbar.

3. In the CAD software, select *File / Open* and then navigate to the \ Documents \ MC Next <Version Number> Tutorial \ MC Example Project Meters folder. Select the file MC_Example_MCS.dwg

4. When the CAD drawing opens, click the Export Points button 🖼 on the MC Next toolbar.

   The points will be loaded into the MC Next software. You can now send the points to a Mobile Device or Total Station.

Export Background File and Points

When you use a Windows Mobile Device, you can export a background file in DXF format, together with your points.

☆ **Tip** – *To reduce the file size of background files, we recommends you first use the LAYISO command in the CAD software to easily isolate layers you need for the background file. To use this LAYISO command, enter* **LAYISO** *in the command line of the CAD software and then use your mouse to select the entities to include in the background file and then press* **[Enter]**.

1. Return to the CAD software, if you have not already done so.

2. On the MC Next toolbar, click the arrow on the Export Points button 🖼 and then click the Export Background File & Points button 🖼 on the pullout menu.

   The message *Select objects for background file* appears.

3. In the drawing, drag a rectangular window around the area to include in the background file. For now, select the entire drawing.

4. Press **[Enter]**.

The message *Background file is created* appears. The points are now exported to the MC Next software.

To return to the original state of your drawing in the CAD software, enter **LAYUNISO** in the command line of the CAD software.

You can now send the points to a mobile device.

Export to Mobile Device

In this exercise, you will learn how to export points and a background file to a mobile device.

1. Return to the MC Next software, if you have not already done so.

2. Connect the mobile device to the computer, using Microsoft ActiveSync technology. For more information on ActiveSync, refer to the documentation for the mobile device.

3. From the *Ribbon*, select *Export to Device*.

   The *Export to Device* dialog appears.

4. Check the groups to export.

5. Click the **Add File...** button and then navigate to the \ Documents \ MC Next <Version Number> Tutorial \ MC Example Project Meters folder. Select the file ControlPoints.txt and then click **Open**.

6. Click **Next** and enter a name for the file that you want export.
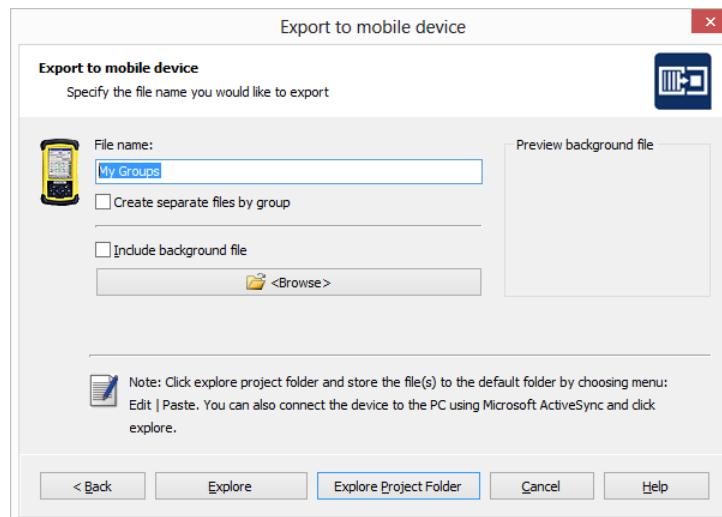
7. If you have created a background file in your CAD software, select the *Include background file* check box.

8. Click **Explore** or **Explore Project Folder** to start exchanging files.

    The file(s) are now saved on the clipboard.

9. To store the file(s) to the default folder, select *Paste* from the *Edit* menu. You can also create a new destination folder, if required.

Export to Total Station

In this exercise, you will learn how to export points to a Total Station.

1. Return to the MC Next software, if you have not already done so.

2. Connect the Total Station to the computer.

3. From the *Ribbon*, select *Export to Device*.

    The *Export to Device* dialog appears.

4. Check the groups to export.

5. Click the **Add File...** button and then navigate to the \ Documents \ MC Next <Version Number> Tutorial \ MC Example Project Meters folder. Select the file ControlPoints.txt and then click **Open.**

6. Click **Next** and prepare the device for transmission.

7. When the device is ready, click **Send Now**.

    The MC Next software sends the points to the device. During transmission, a screen displays on the device, indicating the number of records being received.

8. When the transfer is complete, click **OK**.

This concludes the Export Points to a device lesson. In the next lesson, you'll learn how to generate Reports.

Lesson 6: Generating Setting Out Reports

In this exercise, you will learn how to generate a report that lists the coordinates in a file.

1. Start the MC Next software, if you have not already done so.

2. From the *Ribbon*, select *Import from file*.

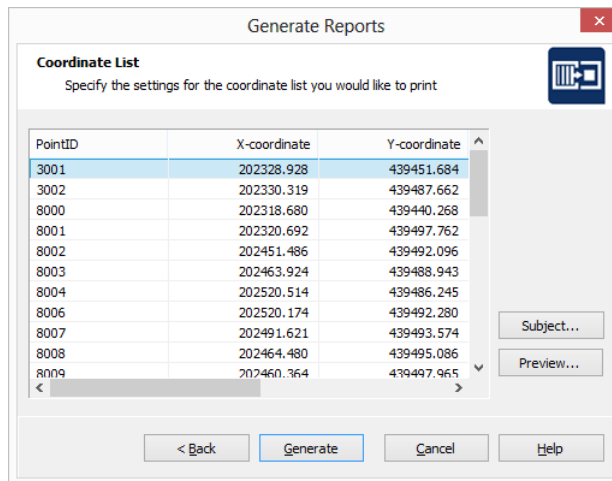   The *Import from file* wizard appears.
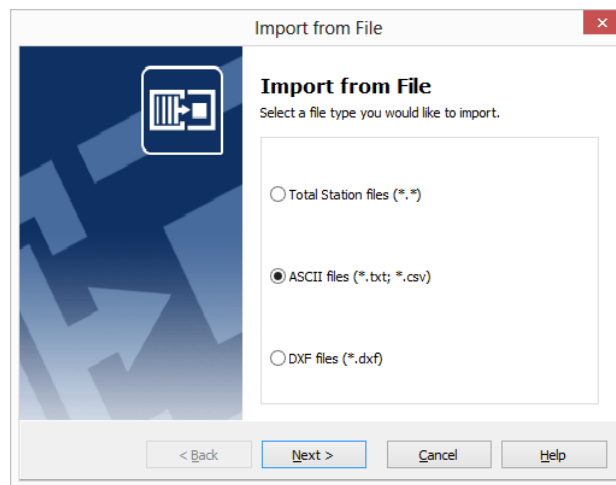
3. Select the *ASCII files (*.txt; *.csv)* option and then click **Next**.

4. Click the Browse button and then navigate to the \ Documents \ MC Next *<Version Number>* Tutorial \ MC Example Project Meters folder. Select the file 4_Terrain_MCS.txt

5. Click **Open**.

6. Click **Import** to import the file into the MC Next software.

7. From the *Ribbon*, select *Generate Reports*.

   The dialog *Generate Reports* appears.

8. Select the *Generate a Coordinate List* option and then click **Next**.

9. Select group *4_Terrain_MCS* and then click **Next**.

   A coordinate list similar then the one below appears:

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10. Click **Generate** to view the report in the active internet browser for printing.

This concludes the Generate Reports lesson. In the next lesson, you'll learn how to generate a Deviation Report and export the deviations to CAD.

Lesson 7: Generating a deviation report

In this exercise, you will learn how to generate a deviation report and export the deviations to CAD.

1. Start the MC Next software, if you have not already done so.

2. From the *Ribbon*, select *Import from file*.

    The *Import from file* wizard appears.
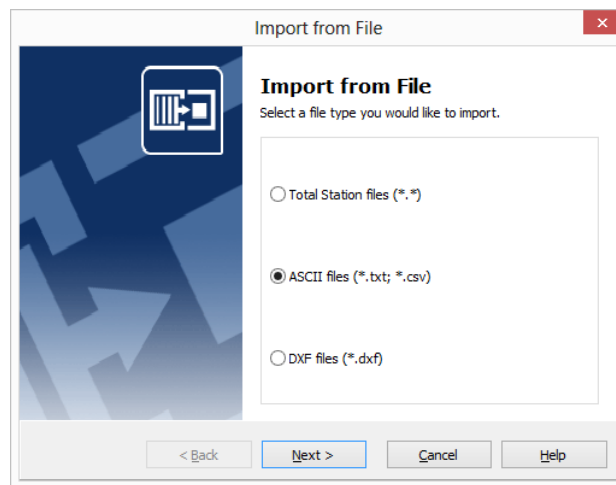
3. Select the *ASCII files (*.txt; *.csv)* option and then click **Next**.

4. Click the Browse button and then navigate to the \ Documents \ MC Next *<Version Number>* Tutorial \ MC Example Project Meters folder. Select the file 6_Measured_Piles_MCS.txt

5. Click **Open**.

6. Click **Import** to import the file into the MC Next software.

7. From the *Ribbon*, select *Generate Deviation Report*.

    The *Deviations wizard* appears.
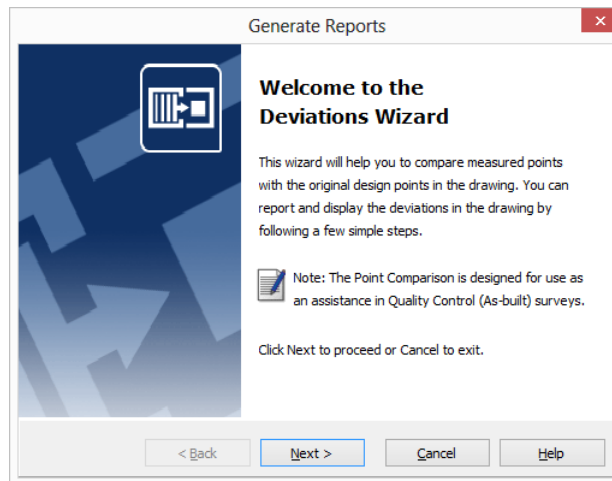
8. Click **Next**. Select group *6_Measured_Piles_MCS* and then click **Next**.

9. You can select all measured points or a range of points for the point comparison. For now, select all measured points and then click **Next**.

10. Select the *From CAD File* option. Click the Browse button [icon] and navigate to the \ Documents \ MC Next <Version Number> Tutorial \ MC Example Project Meters folder. Select the file MC_Example_MCS.dwg and then click **Open**.

11. Click **Next**.

   Your CAD software starts and automatically opens the CAD drawing you have just selected. When the drawing opens, the Deviations wizard appears.

12. Click **Next.** Select group *Piles* (this is the group with the design points) and then click **Next**.

13. Verify the settings for the point comparison and then click **Next**.
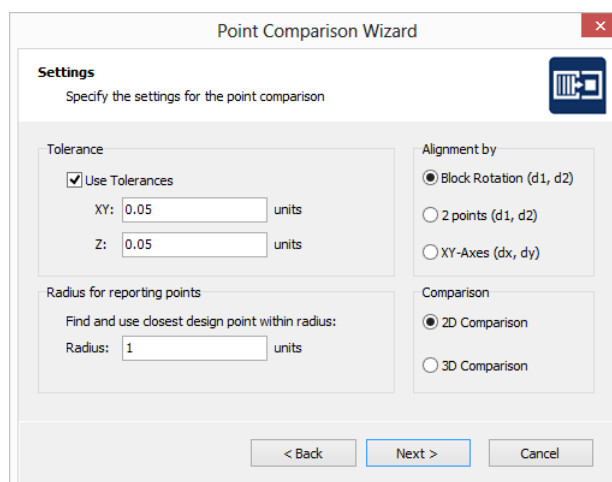
14. Review the results and then click **Next**.
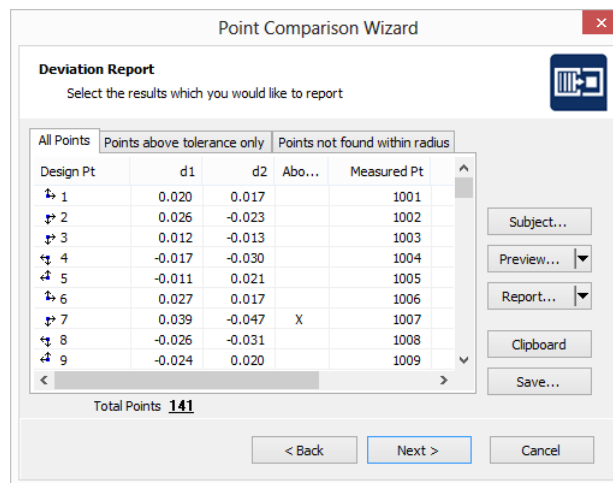
15. Verify the CAD settings for the deviations and then click **Next**.

16. Verify the settings for points above tolerance and then click **Next**.

17. A summary of the point comparison will be displayed. Review the data and then click **Next**.

18. Click **Finish** to close the wizard.

19. Click the Update drawing button ☑ on the MC Next toolbar to insert the deviations in the current drawing.

20. From the *File* menu, choose *Save* in your CAD program to save the current drawing.

This concludes the Generate a Deviation Report and export to CAD lesson. In the next lesson, you'll learn how to generate a front view of a façade.

Lesson 8: Generate a front view

In this lesson, you will learn how to generate a front view of a façade and then export it to your CAD software.

1. Start the MC Next software, if you have not already done so.

2. From the *Ribbon*, select *Import from File*.

   The *Import from File* wizard appears:
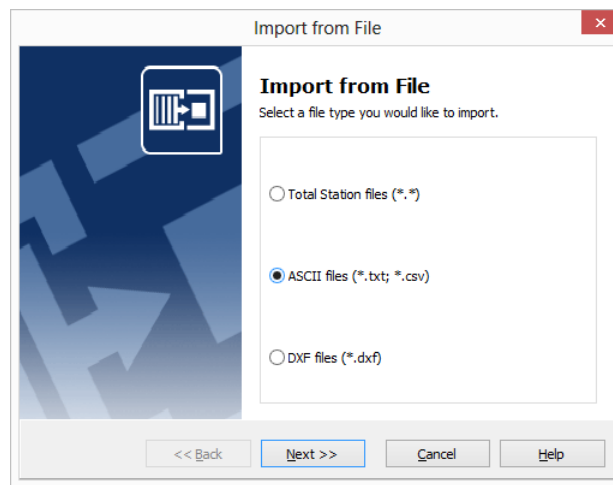
3. Select the *ASCII files* option and then click **Next**.

4. Click the Browse button and then navigate to the \ Documents \ MC Next *<Version Number>* Tutorial \ MC Example Project Meters folder. Select the file 7_Facade_WCS.txt.

5. Click **Open**.

6. Click **Import** to import the file into the MC Next software.

7. From the *Ribbon* menu, select *Export to CAD*.

   The *Export to CAD* wizard appears:

8.   Select the *Export points to a new drawing* option and then click **Next**.

9.   Select group *7_Facade_WCS* and then click **Next**.

10. Select the units. For *Units (XY)* and *Units (Z)*, select Meters.

11. Click **Details**.

12. For the *Annotation Type* option, select PointID + Code. Click **Next**.

13. Select the *Draw Polyline between continuous range of points* option and then click **Next**.

14. Select the *With different axes and/or view* option and then click **Next**.

15. For the alignment of the drawing, select the *By 2 points (Origin and +X-axes direction)* option and then click **Next**.

💬   **Note** – *You can specify a new origin and +X-axes (East direction) for the survey. In this exercise, the survey will first be positioned on the origin and X-Axes direction by specifying two points, and then generating a front view. Point 1 is measured on the facade at the left-bottom corner and Point 2 is measured on the facade at the right-bottom corner.*

16. Select point 1 in the list and then click the button with the arrow for New Origin.

17. Select point 2 in the list and then click the button with the arrow for New +X-Axes direction. Click **Next**.

18. Select the *Front View* option and then click **Export**.

   Your CAD software starts and automatically opens the CAD drawing you have just exported.

This concludes the generate a front view of a facade lesson. In the next lesson, you'll learn how to generate a DTM of a stockpile and calculate volumes.

Lesson 9: Generate a DTM and export to CAD

In this lesson, you will learn how to generate a DTM (Digital Terrain Model) of a stockpile. You will calculate the total volume of the stockpile and then export the created DTM to your CAD software.

1. Start the MC Next software, if you have not already done so.

2. From the *Ribbon*, select *Import from File*.

   The *Import from File* wizard appears:
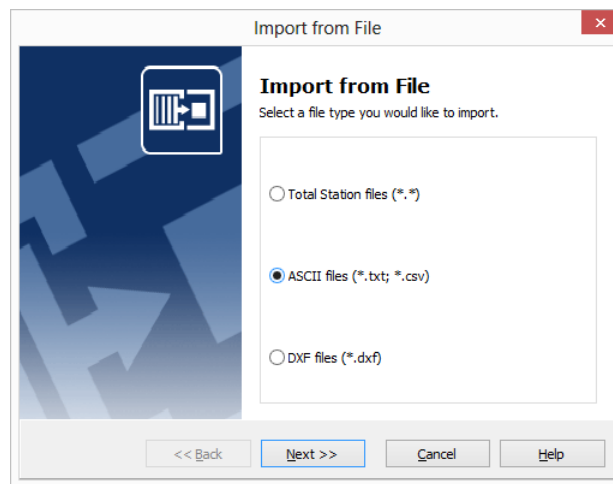
3. Select the *ASCII files* option and then click **Next**.

4. Click the Browse button and then navigate to the \ Documents \ MC Next *<Version Number>* Tutorial \ MC Example Project Meters folder. Select the file 8_StockPile_WCS.txt.

5. Click **Open**.

6. Click **Import** to import the file into MC Next.

7. From the *Ribbon*, select *Generate Surface and calculate Volume*.

   The *Calculate Volume* wizard appears:

8. Click **Next**.

9. Select the first (stockpile) option to calculate volumes and then click **Next**.

10. Select group *8_StockPile_WCS* and then click **Next**.

11. Select the range of points to use for the DTM. By default, all points are selected. For this exercise, select all points and then click **Next**.

12. Click **Define Boundary...** and from the selected points list, select *Point 1* to *Point 20* (This is the base of the stockpile) as boundary points for the DTM. Click the right arrow button to add the points to the *boundary points* list. Click **OK** and then click **Next**.
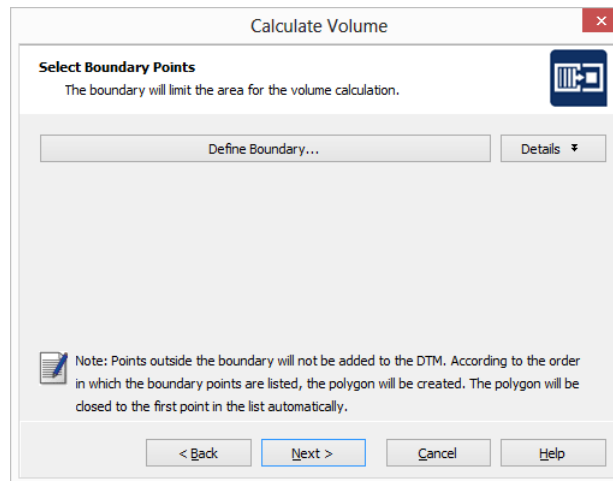
13. You can define breaklines to adjust the triangle model. For this exercise, we don't define any breaklines. Click **Next** to continue.

14. Click **3D Preview** to view the created DTM.

15. Click **Close** and then **Next**.

16. Review the results of the volume calculation and then click **Next**.

17. Verify the contour settings for the DTM and then click **Next**.

18. Check the CAD settings for the DTM and then click **Export**.

    Your CAD software starts and automatically opens the CAD drawing showing the DTM of the stockpile.

19. Use the commands SHADE and ORBIT to view the DTM in your CAD software. For more information, refer to the documentation for your CAD software.

# B Frequently Asked Questions

This chapter describes the most frequently asked questions with the MC Next software.

1 The MC Next toolbar in CAD is not displayed

If you want to display the (classic) MC Next toolbar in CAD again, then do the following;

1. First close your CAD software.

2. Start the MC Next software, if you have not already done so.

3. From the *Ribbon Quick Access Toolbar* at the top of the screen, select *Settings*.

   The *Settings* dialog appears.
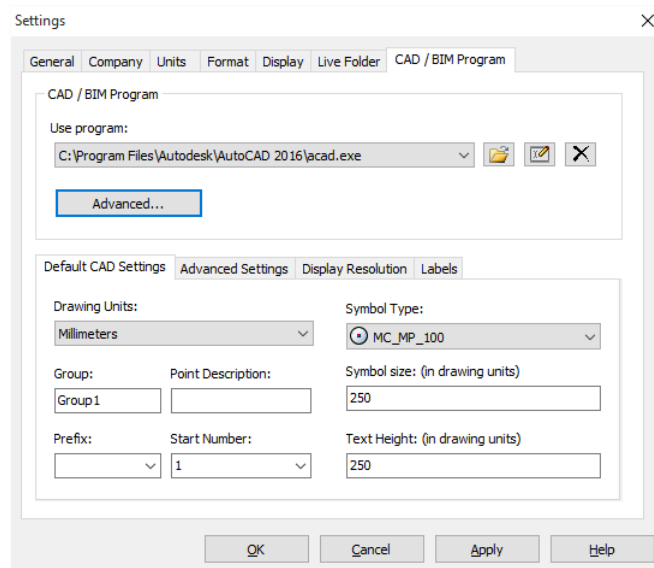
4. Select the *CAD / BIM Program* tab.

5. Click the **Advanced** button under the *Use Program* drop-down list.

   The *Advanced Settings* dialog appears.
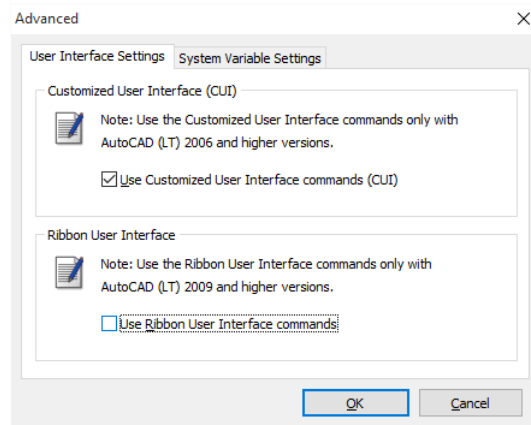
6. Uncheck the option *Use Ribbon User Interface commands*. Press **OK** and then **OK** again.

7. From the *Ribbon* at the top of the screen, select *Prepare points in CAD / Revit*.

   Your CAD software automatically starts and the MC Next toolbar should be visible again in CAD, see screenshot below.
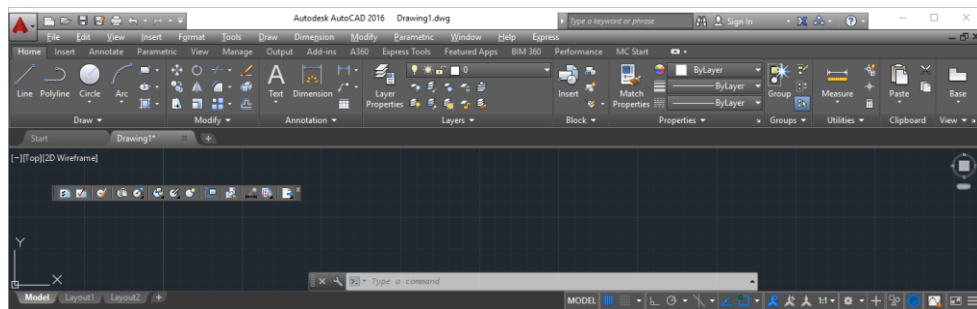
2 Export background file and points in CAD is not working

When Export background file and points in CAD is not working any more than most likely the CAD drawing file (. dwg) has become damaged or corrupt in some way. To recover the CAD drawing, follow these steps:

1. Start the MC Next software, if you have not already done so.

2. From the *Ribbon* at the top of the screen, select *Prepare Points in CAD / Revit*.

   Your CAD software automatically starts and displays the MC Next toolbar.

3. In the CAD software, select *File / Open* and then navigate to the damaged or corrupt drawing file.

4. When the CAD drawing opens, press **[Ctrl + C]** (Copy to Clipboard in CAD).

   The message *Select objects* appears.

5. In the drawing, drag a rectangular window around the area that you want to copy to the clipboard. For now, select the entire drawing and press **[Enter]**.

6. In the CAD software, select *File | New* to create a new drawing. Select a default Template for the drawing ("acadiso.dwt") and then click **Open**.

7. When the new CAD drawing opens, right-click and a shortcut menu appears. From the shortcut menu, select *Clipboard* and then *Paste to Original Coordinates*.
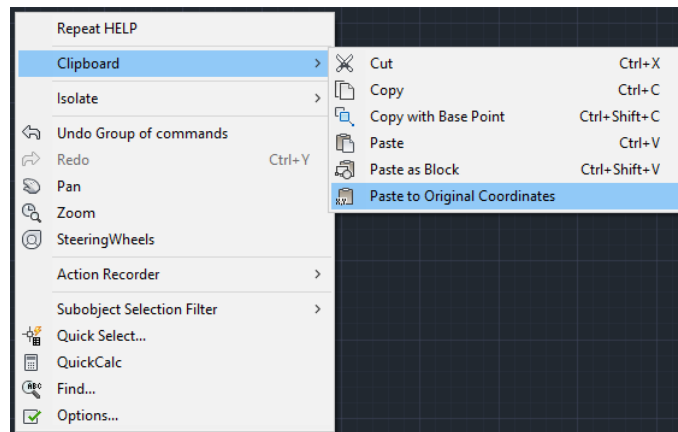
8. On the MC Next toolbar, click the *Settings* button 🗲.

   The Settings window appears:
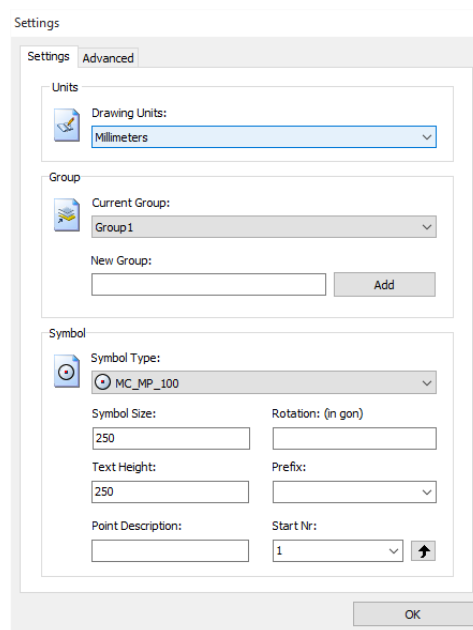
9. Select the *drawing units* and then press **OK**.

10. On the MC Next toolbar, click the arrow on the Export Points button and then click the Export Background File & Points button on the pull-out menu.

    The message *Select objects for background file* appears.

11. In the drawing, drag a rectangular window around the area to include in the background file. For now, select the entire drawing.

12. Press **[Enter]**.

    The message *Background file is created* appears. The points are now exported to the MC Next software.

If the drawing persists with problems, try the following steps:

1. In the CAD software, select *File | Save as*.

    The Save dialog appears.

    a. In the *files of type* drop-down list, select AutoCAD R12/LT2 DXF (*.dxf).

    b. In the *file name* field, key in a new name for the drawing.

    c. Click **Save** to save the drawing.

2. Close the drawing.

3. In the CAD software, select *File | Open* and navigate to the saved DXF file.

4. When the CAD drawing opens, select *File | Save As* and save the drawing in DWG file format.

5. On the MC Next toolbar, click the *Settings* button.

    The Settings window appears.

6. Select the *drawing units* and then press **OK**.

7. Export the background file and points again to the MC Next software by choosing *Export background file and Points*.

3 The message "Unable to access Sentinel Run-time Environment (H0033)" appears

When you launch MC Next, the following message appears on the screen:
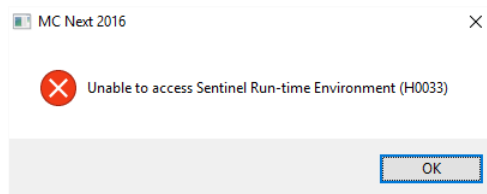
To recover the Sentinel Run-time Environment, try the following steps:

1. Reinstall the MC Next software.

    Don't worry, you don't lose any settings. Download the installation package from our web site www.moussoftware.com. Choose a location on your computer to store the setup file, then save and run the .msi file.

    The Setup window appears:
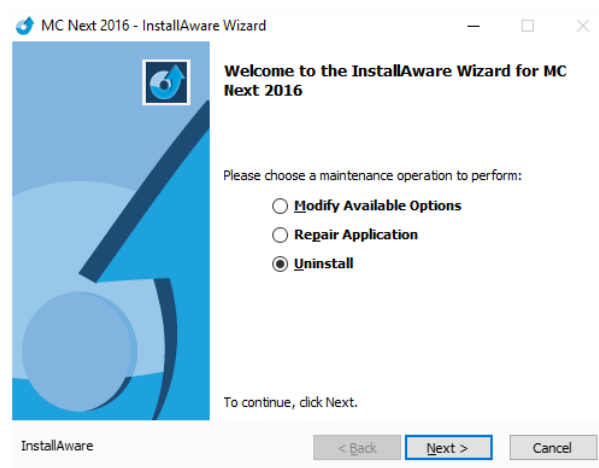
2. Select *Uninstall* and then click **Next**.

3. Follow the instructions in the wizard and then click **Finish**.

4. When the MC Next software in uninstalled, launch the .msi file again.

5. The Setup window appears:
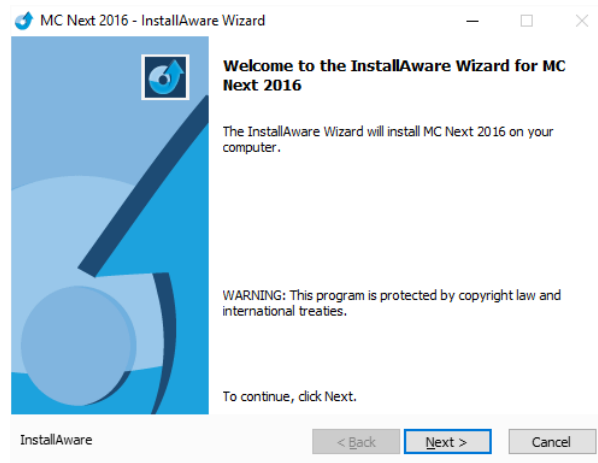
6. Follow the instructions in the wizard and then click **Finish**.

Launch MC Next and see if the message appears.

If the message still appears, then try the following steps:

1. Open Windows Explorer and navigate to the folder where your MC Next program is located (default *c:\Program Files (x86)\MOUS Software\MC Next 2016*).

2. Go to the *HASP* folder and right-click on the file: *MCN2016haspdinst.exe*

3. From the shortcut menu, select *Send to | Desktop (create shortcut)*.
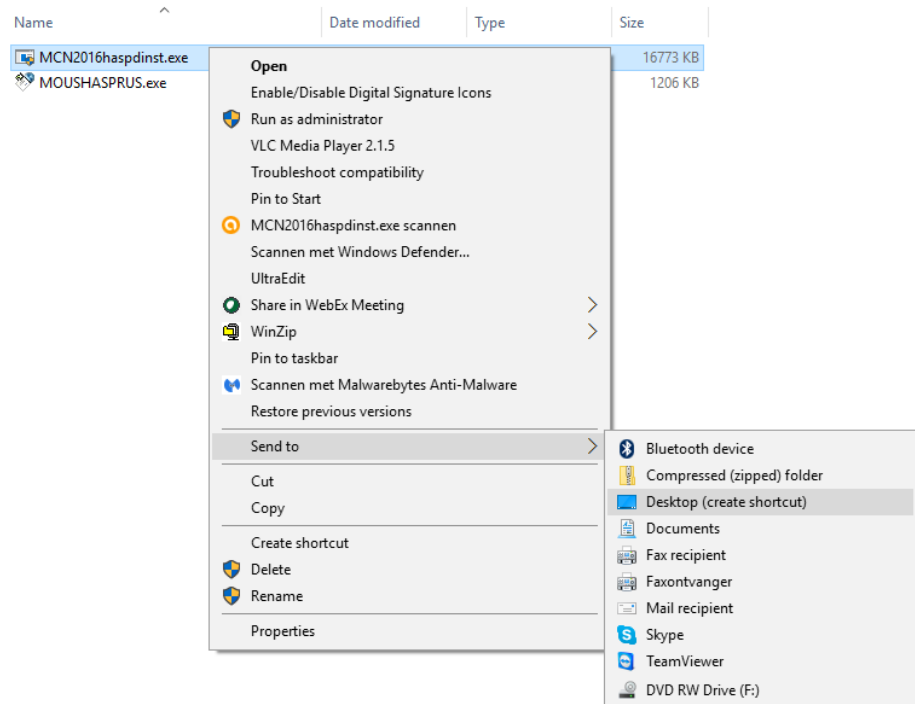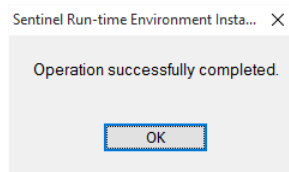
A shortcut is created on the desktop.

4. Go to the desktop and right-click on the shortcut icon. From the shortcut menu, select *Properties*.
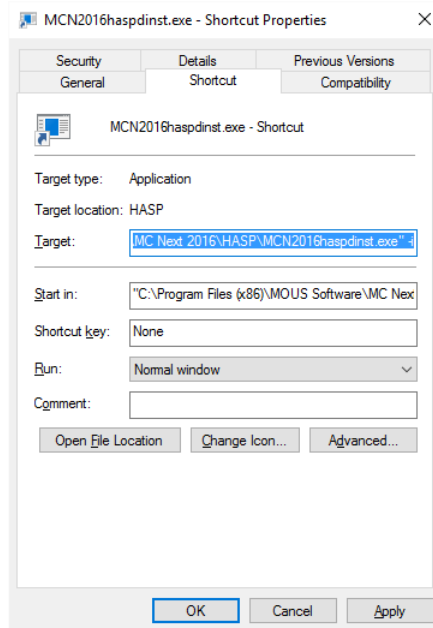
    The Properties window appears:
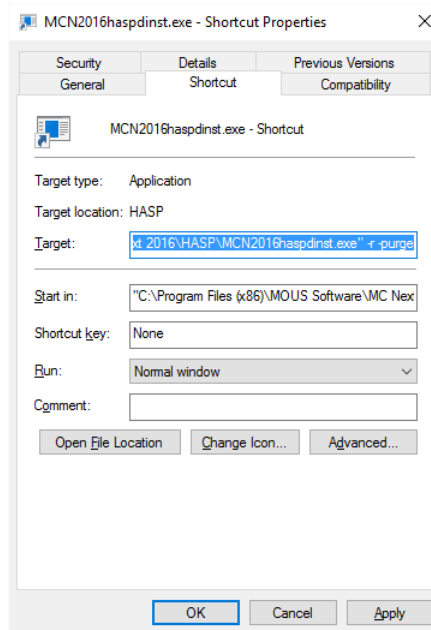
5. In the *Target* field, key in at the end (after the "-sign) a **space** sign and then **-r** and then a **space** sign and then **–purge** (see screenshot).

6. Click **Apply** and then click **OK**.

7. Double click on the shortcut icon to run the executable.

    This will remove the Sentinel Run-time Environment. When the Sentinel Run-time Environment is removed, the following message appears:

8. Right-click again on the shortcut icon. From the shortcut menu, select *Properties*.

    The Properties window appears:

9. In the *Target* field, first delete **–r –purge** and then key in at the end (after the "-sign) a **space** sign and then **–i** (see screenshot).

10. Click **Apply** and then click **OK**.

11. Double click on the shortcut icon to run the executable.

    This will install the Sentinel Run-time Environment. When the Sentinel Run-time Environment is installed, the following message appears: