

MCSmart - 1.3.0.ENG.03



MANUAL

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1 Introduction

Thank you for purchasing a Movacolor metering device. This manual is addressed to operators and **qualified technicians** taking care of the metering of dry additives to ensure correct use of the Movacolor dosing unit.

❗ **IMPORTANT NOTE: THIS MANUAL MUST BE READ BEFORE INSTALLING THE DOSING UNIT. KEEP THIS MANUAL IN A PLACE ACCESSIBLE FOR ALL OPERATORS.**

1.1 Symbols

❗ Important note



Attention; safety regulations for the operator

1.2 Terms

Operator:	A person charged to operate, adjust, maintain and clean the machine.
Qualified Technician:	A specialized, suitable trained person authorized to execute the installation, non-routine maintenance, or repairs requiring special knowledge of the machine and how it operates.

1.3 Disclaimer

Movacolor does not warrant that the hardware or software will work properly in all environments and applications, and makes no warranty and representation, either implied or expressed, with respect to the quality, performance, merchantability or fitness for a particular purpose.

Movacolor has made every effort to ensure that this user's manual is accurate; Movacolor disclaims liability for any inaccuracies or omissions that may have occurred.

Information in this user's manual is subject to change without notice and does not represent a commitment on the part of Movacolor. Movacolor assumes no responsibility for any inaccuracies that may be contained in this user's manual. Movacolor makes no commitment to update or keep the current information in this user's manual, and reserves the right to make improvements to this user's manual and/or to the products described in this user's manual, at any time without notice.

If you find information in this manual that is incorrect, misleading or incomplete, we would appreciate your comments and suggestions.

2 General information

2.1 Safety



The equipment is only designed and may only be used for the dosing of dry additives. Any use that is not in conformity with the instructions is considered improper and as such frees the manufacturer from any liability regarding damage to things and/or persons.



Before switching on the unit for the first time, ensure that the mains power voltage applied is between 95 and 250VAC.



Always switch off the Movacolor control cabinet and disconnect the mains power plug from electrical power before performing maintenance.



Ensure that all parts are securely fixed to the extruder or injection molding machine.



Dangerous voltages are present inside the control cabinet for up to 2 minutes after it has been switched off.

2.2 System requirements

- Movacolor touchscreen controller software version 2.1.0 or higher;
- Personal computer with the following specification;
 - Windows 7, Windows 8, Windows 10 (x86 or x64);
 - Intel i5 processor or higher;
 - At least 4 Gigabytes of RAM recommended;
 - 10 gigabytes of free hard disc space*;
 - 10/100/1000Mbps Ethernet port;
- Touchscreen controllers and computers to be connected to the Ethernet network using cat 5 or higher network connection cable.

* maximum database size can exceed 10 gigabytes over time

3 Connection options

3.1 Standalone direct connection single MCTC

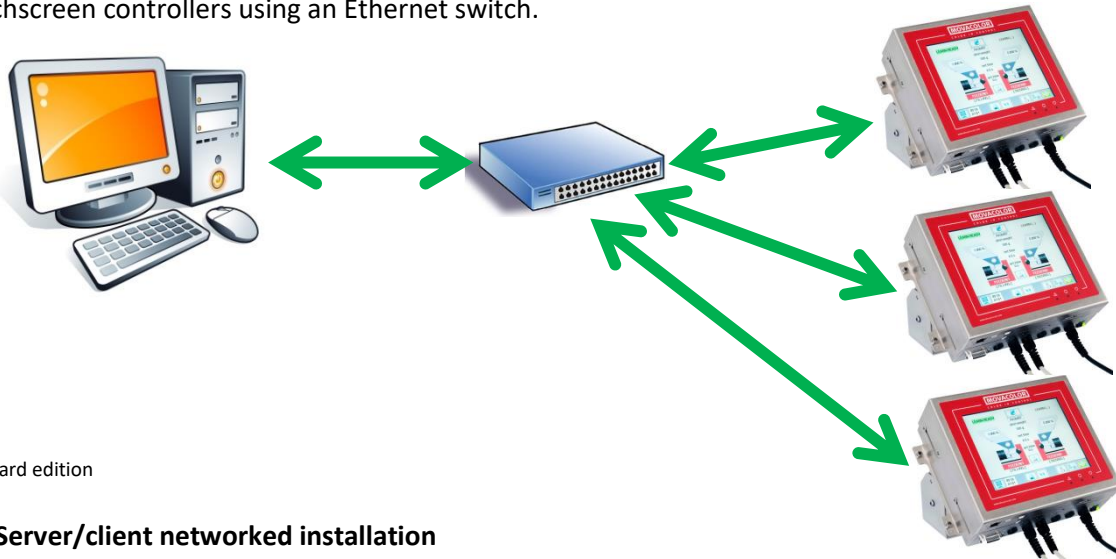
With the standalone direct connection option, the MCTC and MCSmart computer are directly connected with each other using an Ethernet cable.



Basic edition

3.2 Standalone direct connection multiple MCTC's

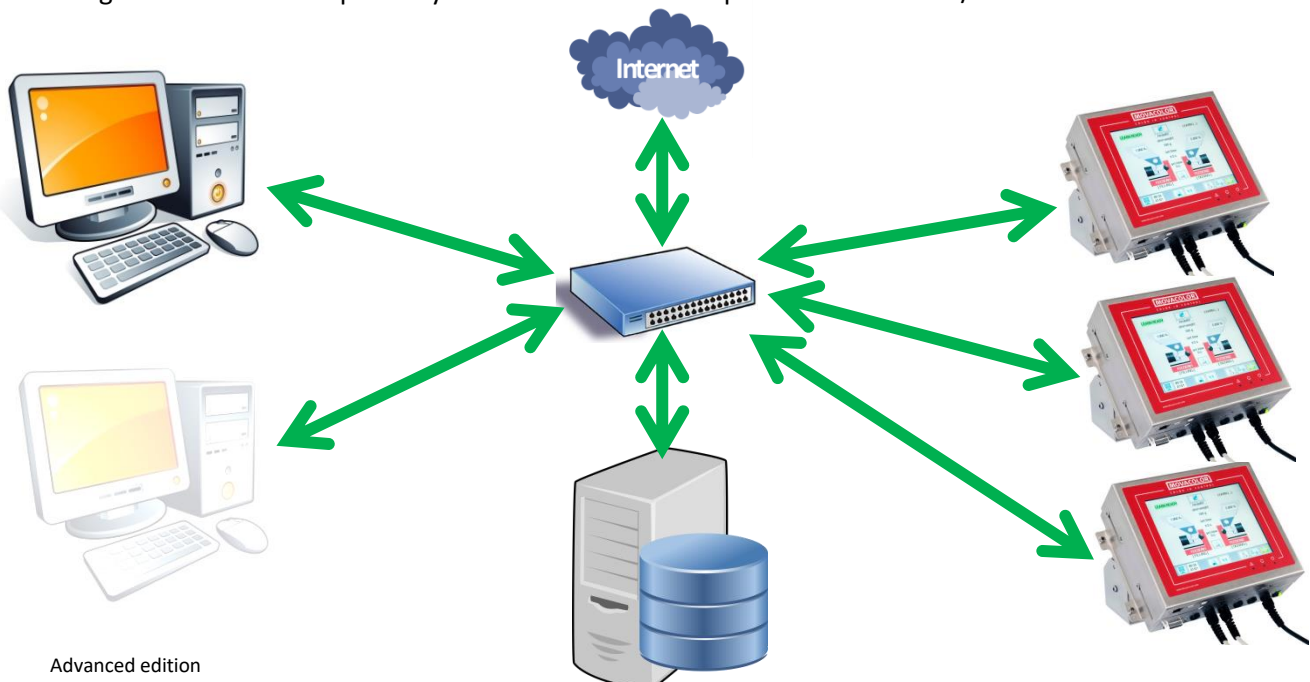
With the standalone direct connection multiple MCTC's, the MCSmart computer is connected to multiple touchscreen controllers using an Ethernet switch.



Standard edition

3.3 Server/client networked installation

The most advanced installation option is the server/client option. This option incorporates a dedicated database server (computer), single or multiple desktop or web clients and multiple MCTC's connected using a network which optionally is connected to the corporate network and/or the internet.



Advanced edition

4 License options

4.1 Available licence options

Three license options are available

1. Basic edition (license file required)
2. Standard edition (license file required)
3. Advanced edition (license file required)

Contact your local Movacolor dealer for license pricing and ordering

4.2 License table

Functionality	Basic	Standard	Advanced
VNC client	X	X	X
Log data graph view	X	X	X
Log data table view	X	X	X
Event log export	X	X	X
Backup/restore MCTC configuration	X	X	X
Export log data (csv, xlsx, xls, pdf,)	X	X	X
Export/import log data for service support		X	X
Order management		X	X
Reporting		X	X
Materials management		X	X
Recipe management		X	X
Multiple MCTC's connected (up to 25)		X	X
Big factory (unlimited number of MCTC's)			X
Multiple desktop clients			X
Web client			X
External database (PostgreSQL, MSSQL)			X

4.3 License file

During installation of the application a license file will be requested. The initial installation can be done with a trial license. Once the trial license has been installed, a Hardware ID can be acquired from the application. This Hardware ID is used to request your official license at your Movacolor representative. This official license file is hardware coupled and can be used on one computer only.

The Advanced Edition is capable of handling multiple desktop clients, however only one license file is required during installation of the server application.

Request your trial license at your Movacolor representative.

4.4 License update

MCSmart works with a computer (hardware) related license system. This means the purchased license file can be installed on one computer only.

The previous chapters describes how to install MCSmart using a trial license. This trial license installation step is required to be able to read the Hardware ID, required for requesting a time limit free purchased license.

The license purchase procedure:

- Install MCSmart using a trial license file;
- Read the Hardware ID from the settings menu;

- Sent this Hardware ID together with your MCSmart purchase order to your Movacolor representative;
- You will receive a license file by email from Movacolor or your Movacolor representative;
- Update the license of your installed MCSmart application.

4.4.1 Read Hardware ID

For purchase of a non-trial license of MCSmart, a Hardware ID of the computer where MCSmart is installed on is required. This Hardware ID can be found in the settings tab of the MCSmart application

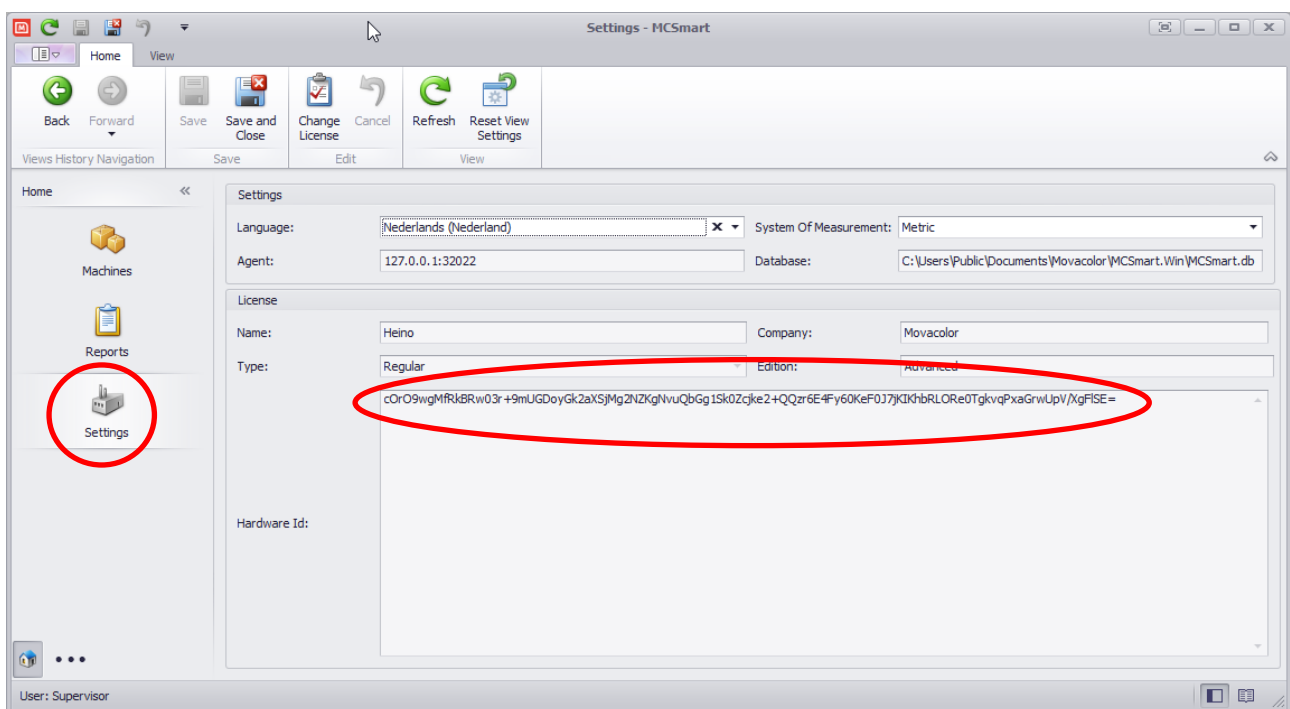
Start the MCSmart application by double clicking the icon on your Desktop, or by choosing it from the Windows start menu



The application will ask for login credentials

Username	Password
User	No password required
Supervisor	2222

Once the application is loaded, navigate to the settings screen



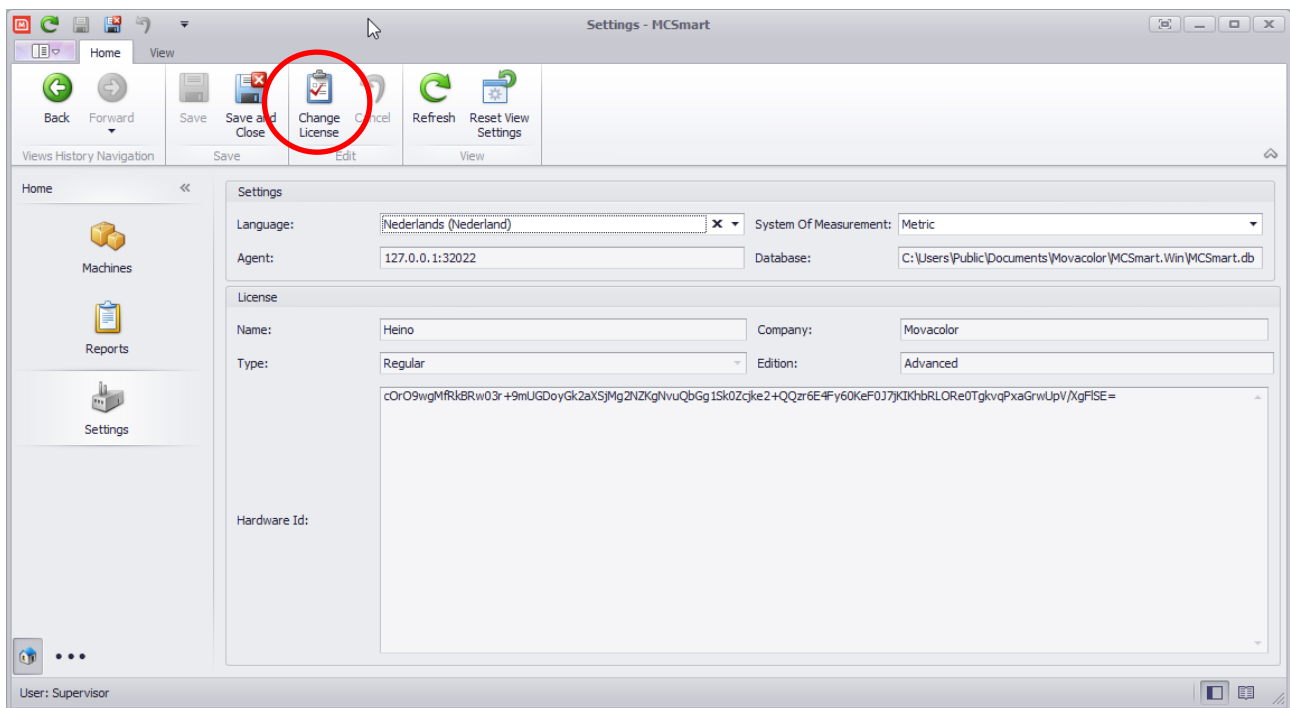
This screen displays info about the current loaded license and the Hardware ID. Select this Hardware ID code and copy/paste in an email to be sent to you Movacolor representative.

① For MCSmart Advanced, the Hardware ID of the server computer will be shown. This is the hardware ID you need to use for the purchase of a non-trial license.

This Hardware ID of the server computer can be requested from either one of the Desktop applications.

4.4.2 Change license file

Once received an official purchased license file, you can update this using the MCSmart Desktop application (also for MCSmart Advanced).



From the Settings menu choose “Change License”, a file select screen will pop-up. Select the received license file and choose Open. After a restart of the Desktop application the new license will be activated.

5 System principle

MCSmart application is based on a few pieces of software running on your computer or server.

- Viewer application (Desktop client application or web interface via a webbrowser)
- MCSmartAgent service
- Database software

5.1 Viewer application

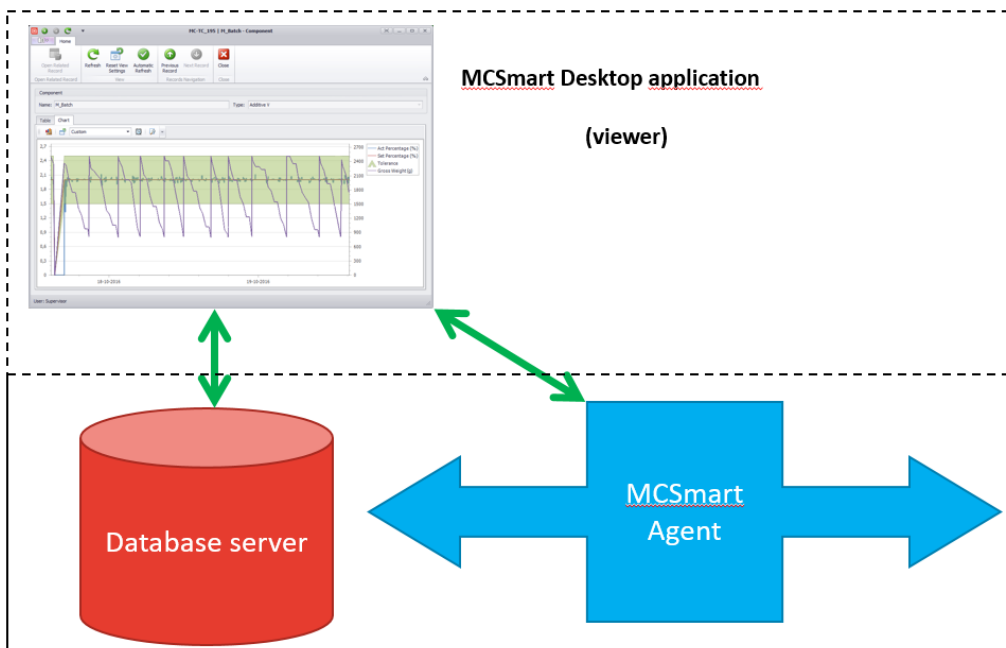
With the viewer application you can browse through historical logdata, generate graphs, generate reports and all other functions. The MCSmart Desktop application is full featured, where the web interface has limited features available.

5.2 MCSmartAgent

The MCSmartAgent service is a piece of software running continuously in the background. You don't see any icon or other identification of this process running. The MCSmartAgent listens for incoming data from any MCTC in the network and puts the received logdata in the database.

5.3 Database

Database software. MCSmart uses SQL database for storing historical data and more. MCSmart Basic and Standard are using SQLITE database software. MCSmart Advanced can use either PostgreSQL or MSSQL database software. The PostgreSQL or MSSQL database is accessible for third party application like reporting applications or ERP systems. Contact your Movacolor representative for detailed documentation about the database table structure.



6 Software installation

6.1 Basic edition

The basic edition is the low entry version of MCSmart, it comes with basic MCTC monitoring functions and is suitable for process optimization or trouble shooting. With MCSmart Basic one MCTC can be connected simultaneously.

6.1.1 Basic requirements

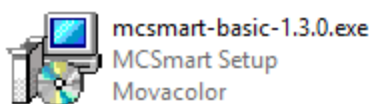
Be sure you have a valid trial license file available, in doubt, please request your trial license file at your Movacolor representative.

It is important that all network settings your computer and the MCTC are configured properly. They need to be configured in the same subnet. If you're in doubt about if your computer is configured correctly, please contact your system administrator.

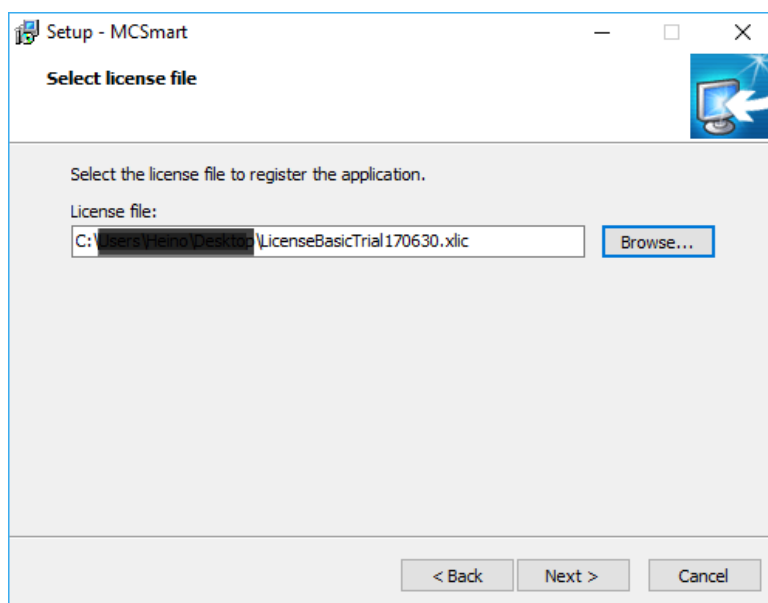
Also see chapter 6.

6.1.2 Installation

Execute the setup file and follow the instruction on the screen



At a certain moment you will be requested for a license file. Use the browse button and select the trial license file you have received together with the setup file of MCSmart Basic



Press next to finalize the installation

6.2 Standard edition

The standard edition is a full featured version of MCSmart, it comes with MCTC monitoring functions and is suitable for process optimization or trouble shooting. The Standard edition is completed with recipe- and material file management and a powerfull reporting function. With MCSmart Standard up to 25 MCTCs can be connected simultaneously.

6.2.1 Standard requirements

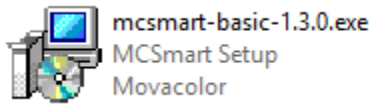
Be sure you have a valid trial license file available, in doubt, please request your trial license file at your Movacolor representative.

It is important that all network settings your computer and the MCTC's are configured properly. They need to be configured in the same subnet. If you're in doubt about if your computer is configured correctly, please contact your system administrator.
Also see chapter 6 for further network configuration

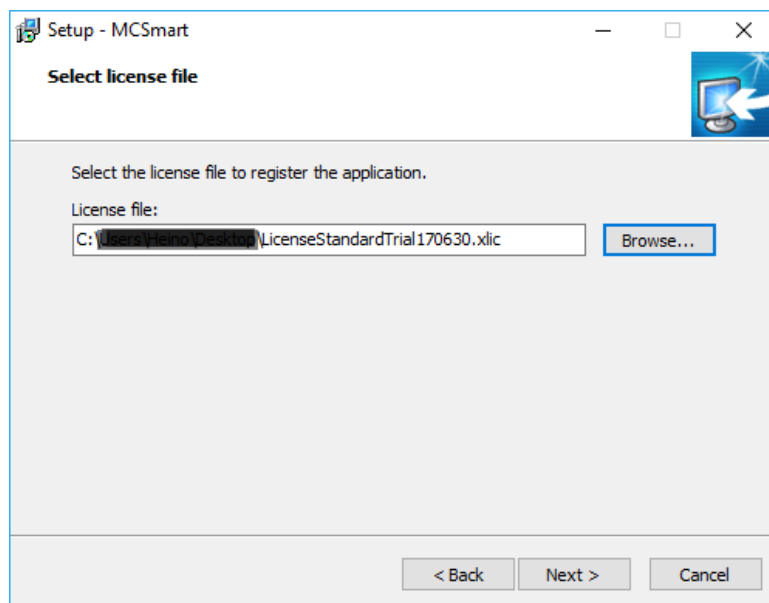
6.2.2 Installation

MCSmart Basic and MCSmart Standard are using the same setup file, the type of license determines which functionality will be available

Execute the setup file and follow the instructions on the screen.



At a certain moment you will be requested for a license file. Use the browse button and select the trial license file you have received together with the setup file of MCSmart Standard



Press next to finalize the installation

6.3 Advanced edition

The Advanced installation consist of a “server part” and a “client part”

To have full advantage of the Advanced edition installation and its features, it is required to use an external database. Movacolor supplies a free PostgreSQL database which can be installed on a local Desktop computer or on a server. For 24/7 logging and optimum performance a server is recommended. Next to the PostgreSQL db server, a Microsoft SQL (MSSQL) can be used.

6.3.1 Advanced Requirements

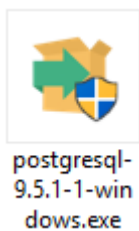
It is important that all network settings of your computers (server and desktop clients) are configured properly. They need to be configured in the same subnet. If you’re in doubt about if your computer is configured correctly, please contact your system administrator.

6.3.2 Installing the server part

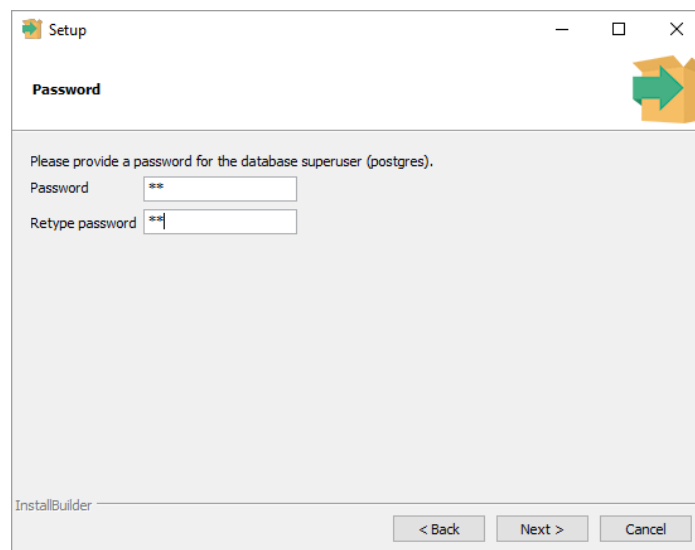
Installation of the PostgreSQL db server.

❶ PostgreSQL database server installation is NOT required when MSSQL is used.

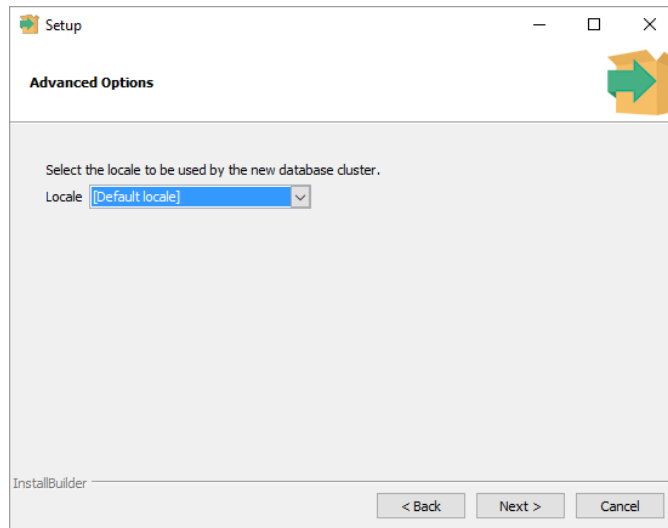
Execute the PostgreSQL setup file and follow the instruction on the screen



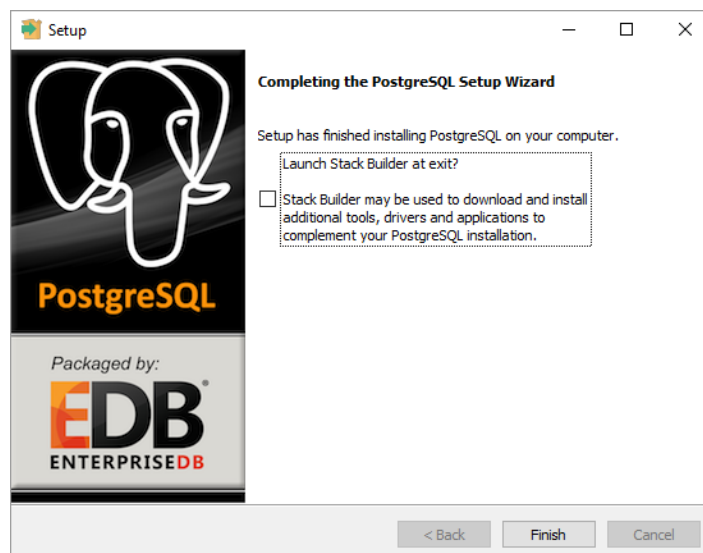
When requested for the database password fill in any password of your choice (remember it) and continue.



When asked for localization, pick your country from the list and continue



Now the PostgreSQL database server will be installed, this might take a few minutes. Once installed, a question will be shown, asking to install further database tools; these tools are not required, so disable this feature by unchecking the checkbox and click Finish.

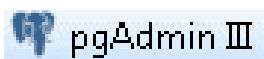


The database server is installed to your system now, and will automatically be launched as background process during windows startup.

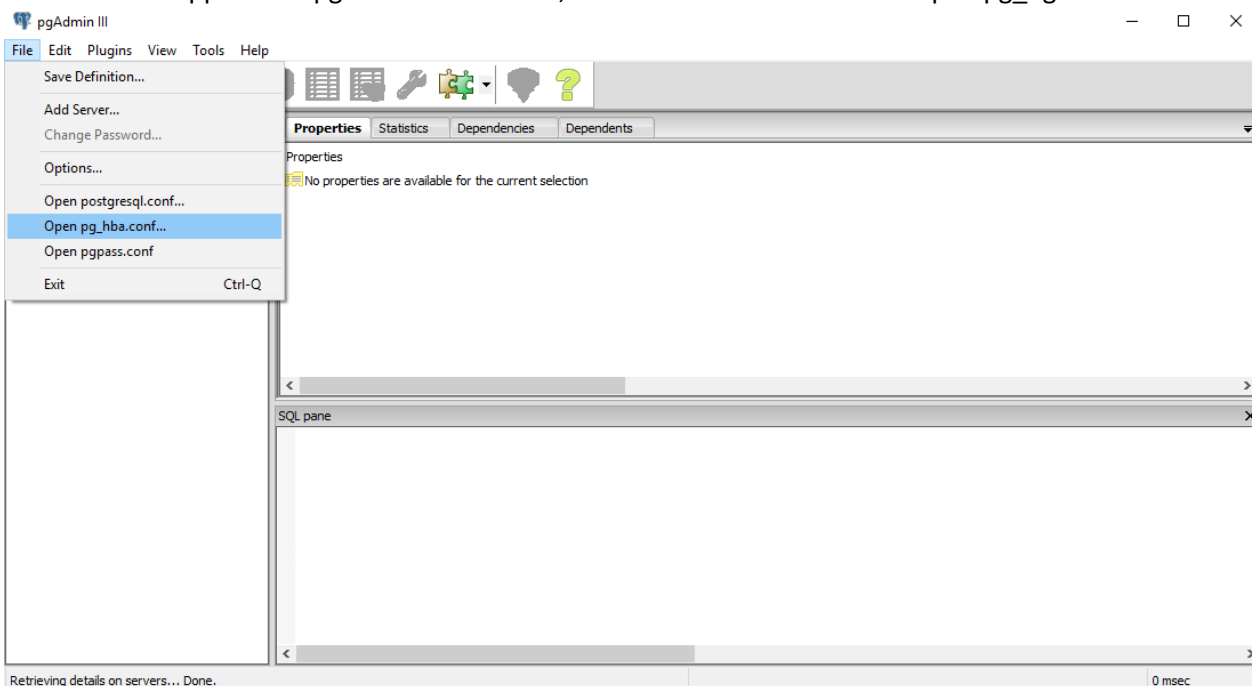
Granting external database access

The PostgreSQL server is by default configured to refuse any incoming request from other computers. To be able to use the multiple MCSmart desktop clients functionality we need to grant them access to the database. To do so a configuration has to be changed.

From the windows start menu choose pgAdmin III application from the PostgreSQL folder.

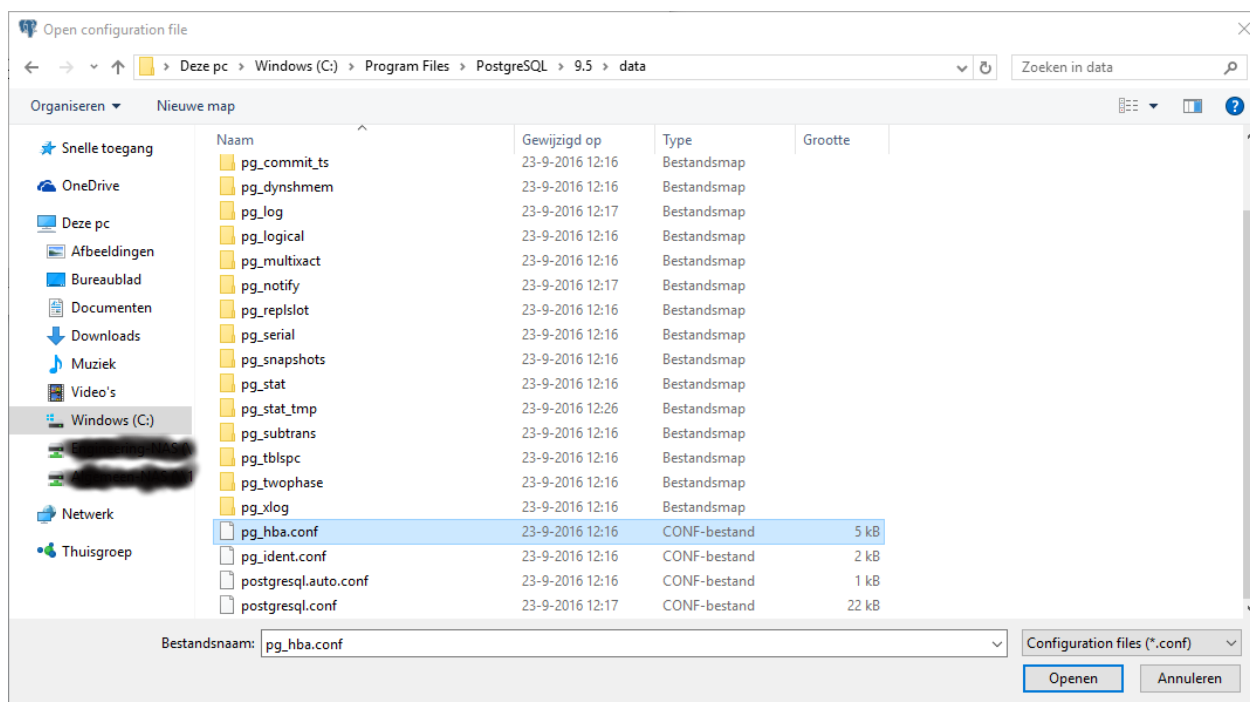


The application pgAdmin III will start, from the File menu choose “Open pg_hba.conf”

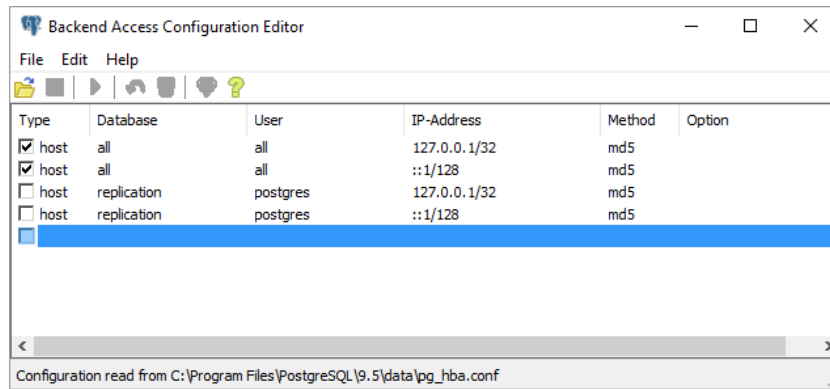


The file browser will be shown, navigate to the pg_hba.conf file and open it.
Normally the file is located at the following location:

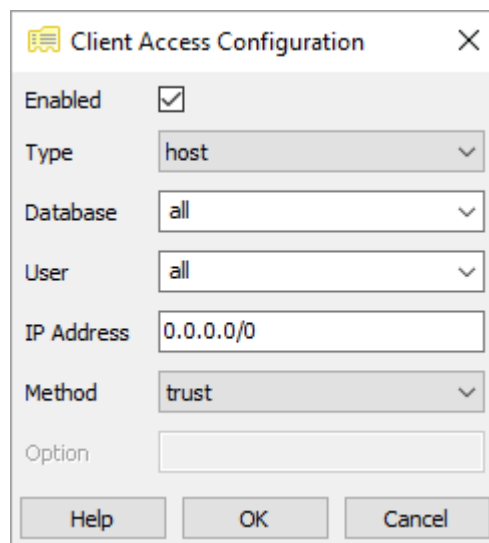
C:\Program Files\PostgreSQL\9.5\data\pg_hba.conf



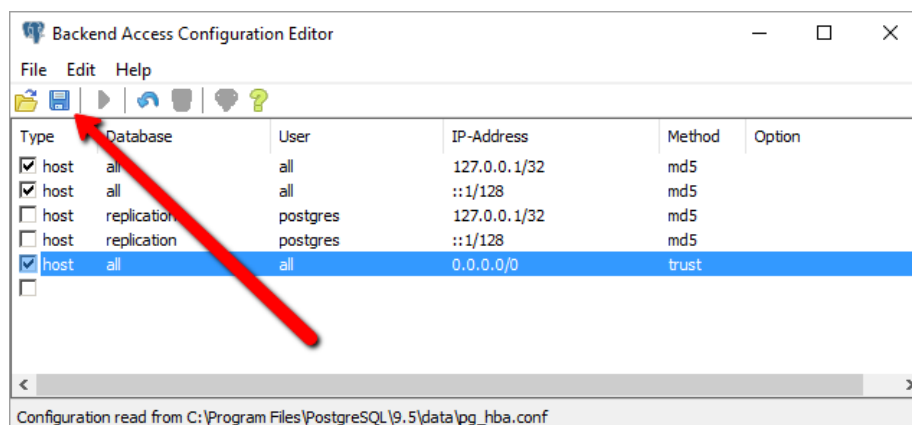
Within the editor double click on the empty line



Modify the file as shown below and click OK



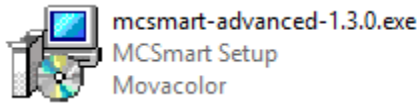
Save the configuration by clicking the save button



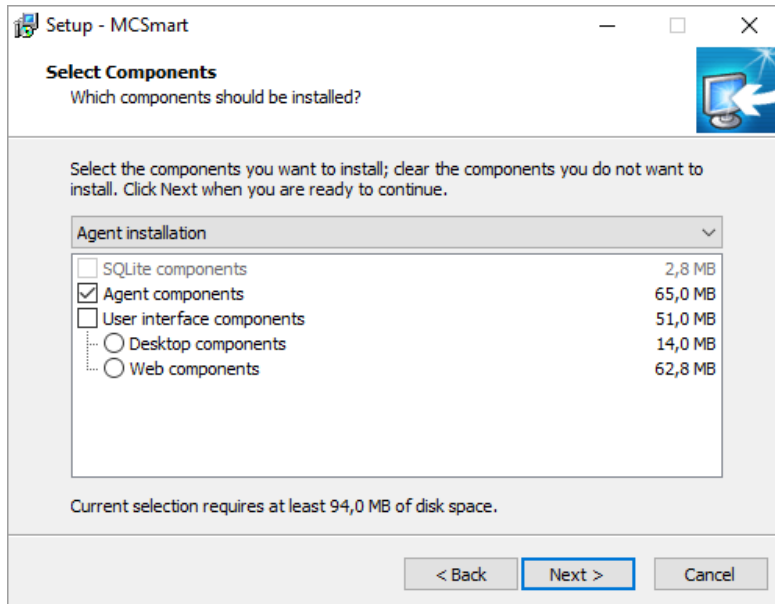
Close the editor and the pgAdmin III application

Installation of the MCSmart server

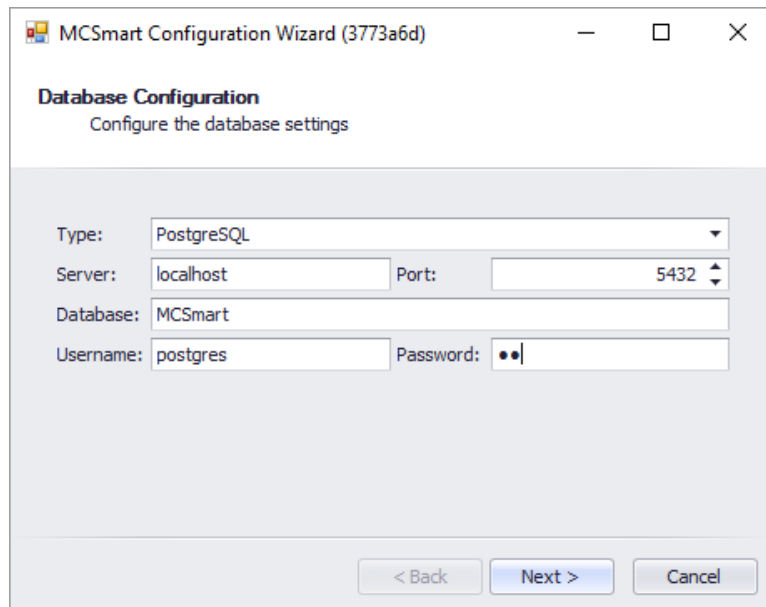
Execute the MCSmart full setup file and follow the instruction on the screen.



When asked for the type of installation choose “Agent installation” from the drop down list and click next (in case a web interface is required, choose “Web installation” from the drop down list)



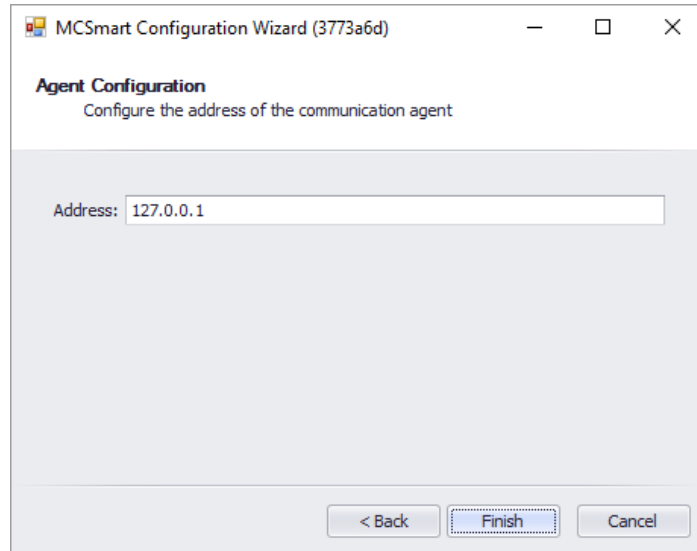
After continuing the installation the parameters for the database connection will be asked, fill in like shown below:



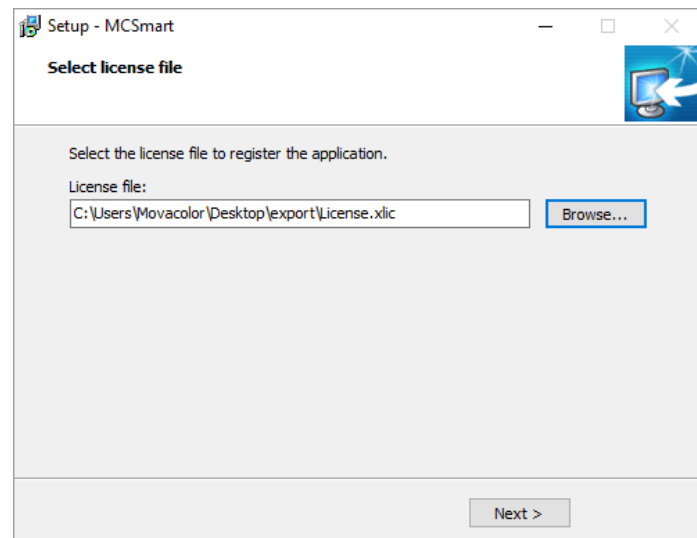
Use the password you have chosen during the installation of the PostgreSQL database server in the previous paragraph.

In case a MSSQL server is used, please contact your network administrator for login details

The next question will be the network address of the Agent application, which is already pre-filled with the correct value, click finish



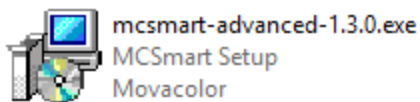
As last step of the server part installation the license file has to be selected. Navigate to the received license file and choose open.



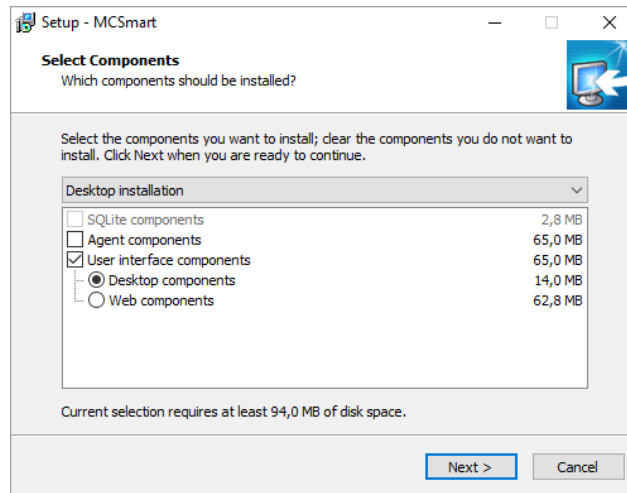
Installing server part has finished

6.3.3 Installing the client part

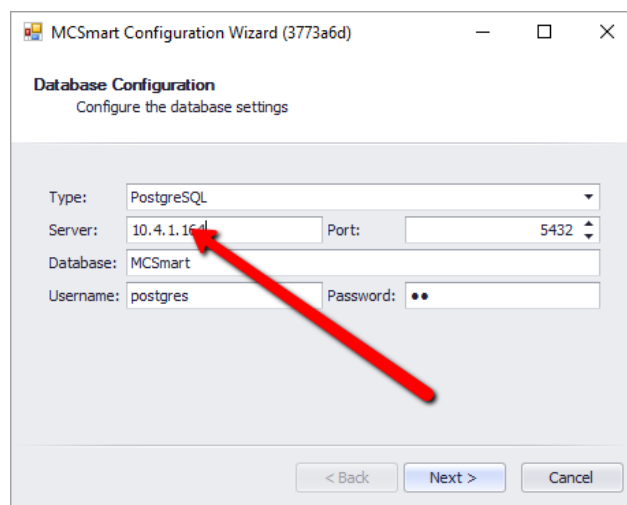
On the desktop station to be used execute the MCSmart full setup file and follow the instruction on the screen.



When asked for the type of installation choose “Desktop installation” from the drop down list and click next.



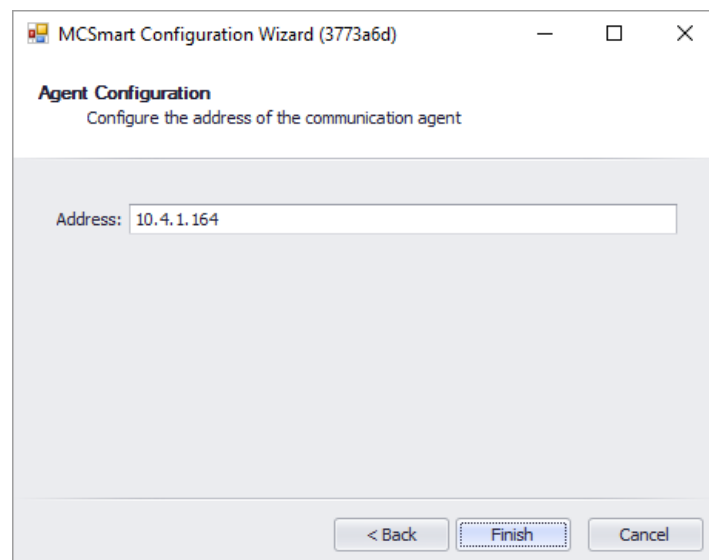
After continuing the installation the parameters for the database connection will be asked. Now you need to fill in the network address (IP address) of the computer where the server part is installed on



Use the password you have chosen during the installation of the PostgreSQL database server in the previous paragraphs.

In case a MSSQL server is used, please contact your network administrator for login details

The next question will be the network address of the Agent application, which is already pre-filled with the correct value, click finish



Installing server part has finished

7 MCTC configuration

It is very important that the network settings of your MCTC correspond with the network setting of the computer where the MCSmart agent (server) is running on.

If in doubt, please contact your system administrator for correct settings.

7.1 MCSmart Basic/Standard computer IP address discovery

Discovering the right IP settings for MCSmart Basic and MCSmart Standard can be done in different ways, depending on the version of Windows MCSmart is installed on. This chapter describes how to find the IP address of your computer assuming you are using an Ethernet cable connection between your computer and the network where the MCTC is connected to. However, info shown can differ from what you will see on your own computer due to software and/or hardware differences.

- ① Be sure the network cable is plugged in.
- ① When using a notebook, recommended to turn off the wireless connection

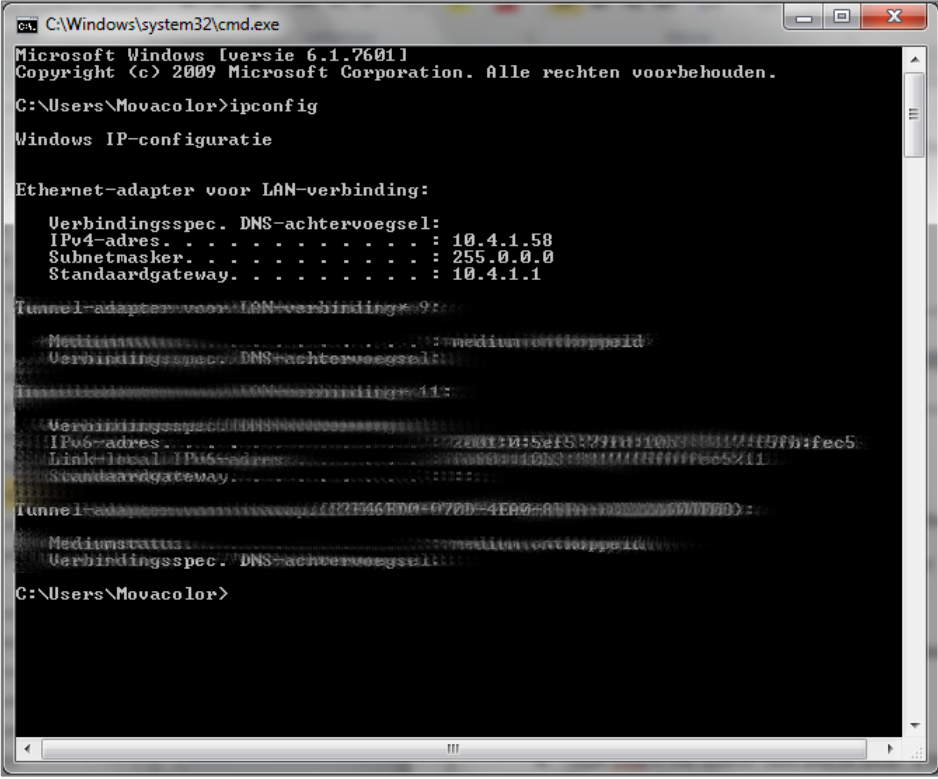
Windows 7

- Click start;
- Type cmd in the search field and hit enter, a black window appears;
- Type ipconfig and hit enter.

Windows 10

- Click start;
- Just start typing the word cmd and hit enter, a black window appears;
- Type ipconfig and hit enter.

A list of network adapters appears. Read the IP address and gateway of the used network adapter.



```
C:\Windows\system32\cmd.exe
Microsoft Windows [versie 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. Alle rechten voorbehouden.

C:\Users\Movacolor>ipconfig

Windows IP-configuratie

Ethernet-adapter voor LAN-verbinding:
    Verbindingsspec. DNS-achtervoegsel:
    IPv4-adres. . . . . : 10.4.1.58
    Subnetmasker. . . . . : 255.0.0.0
    Standaardgateway. . . . . : 10.4.1.1

Tunnel-adapter voor LAN-verbinding 9:
    Mediumstatus . . . . . : mediumverloren
    Verbindingsspec. DNS-achtervoegsel:

Tunnel-adapter voor LAN-verbinding 11:
    Verbindingsspec. DNS-achtervoegsel:
    IPv6-adres. . . . . : 2001:0:5f5:27ff:fe03:0000:0000:0000
    Link-local IPv6-adres . . . . . : fe80::10b3:8311:1111:1111%11
    Standaardgateway. . . . . :

Tunnel-adapter voor LAN-verbinding 12:
    Mediumstatus . . . . . : mediumverloren
    Verbindingsspec. DNS-achtervoegsel:

C:\Users\Movacolor>
```

Remember the IP(v4)-address, the Subnetmask and if shown the gateway displayed with the ipconfig command.

7.2 MCTC Network settings

Login to the MCTC system using Supervisor level or higher. Navigate to the Advanced configuration menu and scroll down to the network settings part.



Fill in the right settings as received from your system administrator.

IP address, Subnetmask, Gateway. Screenshot below is for illustration purpose only



Image is for illustration only, do not copy the values to your setup

For MCSmart Basic and MCSmart Advanced:

The “IP address” should not be the same as your computers IP address, the last digit should be different.

Example

You figured out with the previous chapter that the IP address of your computer is 10.4.1.115. Now you can set the MCTC “IP Address” to 192.168.1.116 (the next MCTC should be set to 192.168.1.117 and so on). The “Netmask” will set automatically when you set the “IP address”, and is in most cases acceptable.

7.3 MCSmart server IP address setting

In the Advanced configuration menu, scroll down further to the “MCSmart IP Address” parameter. Fill in the network address (IP address) of the computer where MCSmart agent is installed on.



Image is for illustration only, do not copy the values to your setup

For MCSmart Basic and MCSmart Advanced:

The “MCSmart IP Address” setting should be equal to the IP address of your computer.

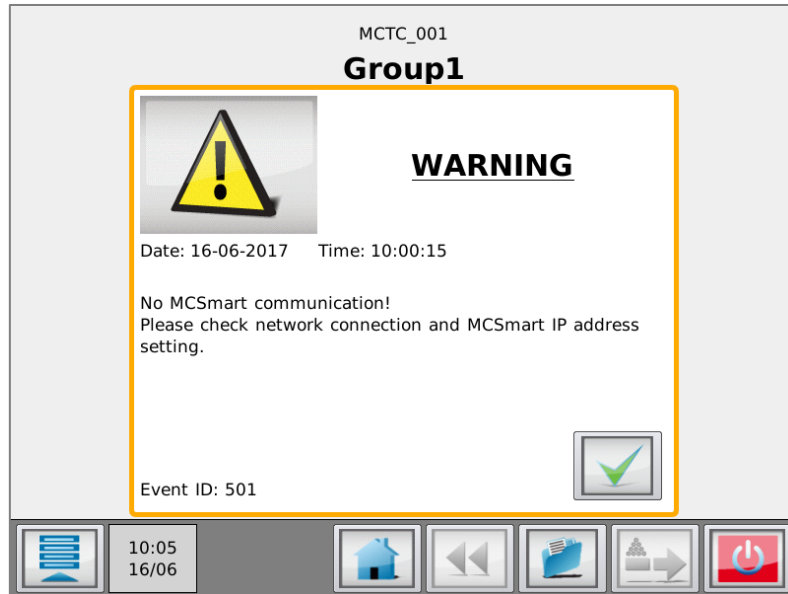
Example

You figured out with the previous chapter that the IP address of your computer is 192.168.1.115. Now you can set the “MCSmart IP Address” setting to 192.168.1.115 (in case of multiple MCTC’s connected to MCSmart, they should all have the same “MCSmart IP Address” setting).

Your MCTC is now connected to MCSmart!

7.4 MCSmart connection error

When the MCTC is not capable of connecting to the MCSmart agent software, it will display an error event. Please check the network connection and IP address settings



① There is a detection period of about 30 seconds before this message appears.

8 MCSmart Desktop application

8.1 Starting the Application

Start the MCSmart application by double clicking the icon on your Desktop, or by choosing it from the Windows start menu

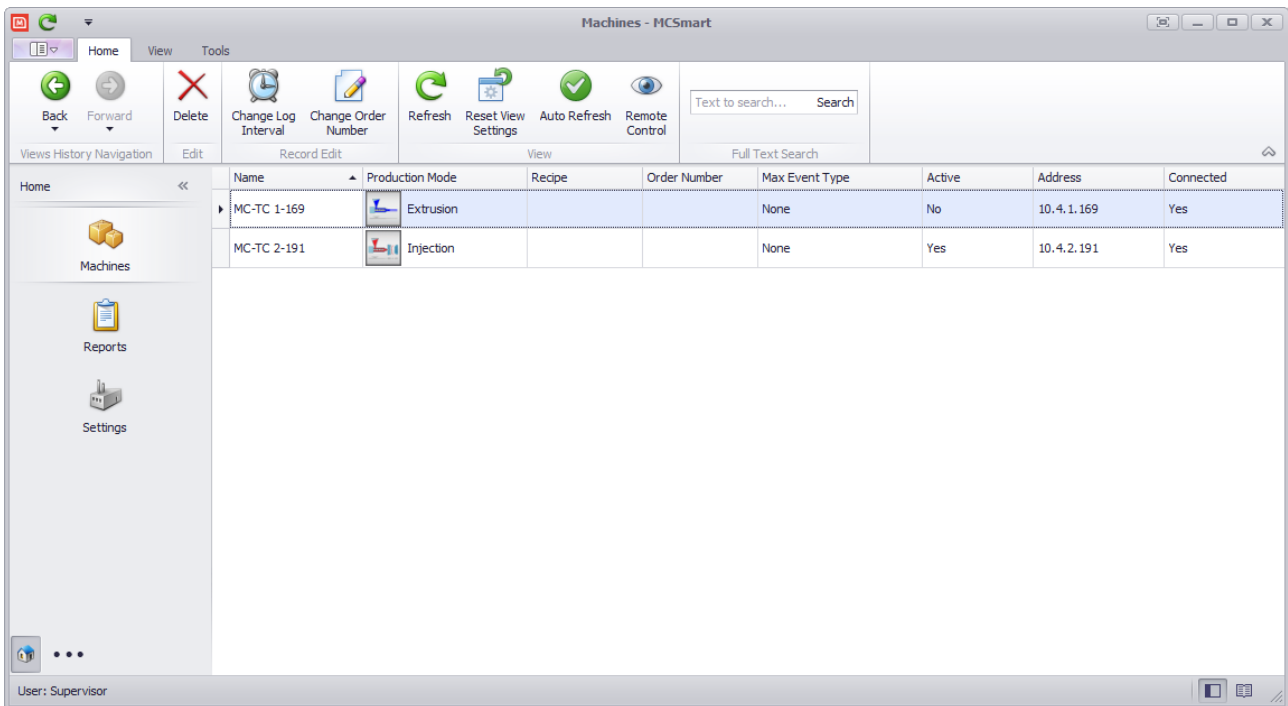


The application will ask for login credentials

Username	Password
User	No password required
Supervisor	2222

Once the application is loaded, connected MCTC devices will be shown.

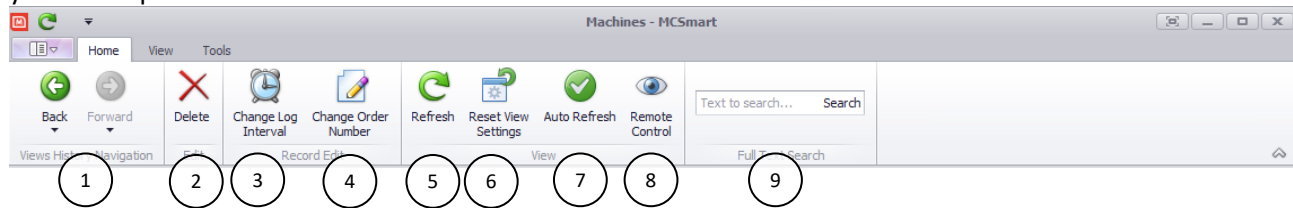
The desktop application retrieves its content from a database (local or remote). Data shown in tables and graphs will be updated each 30 seconds.




8.2 Main menu buttons ribbon

On each window the main menu buttons ribbon is shown. This menu contains the basic functions of the application.

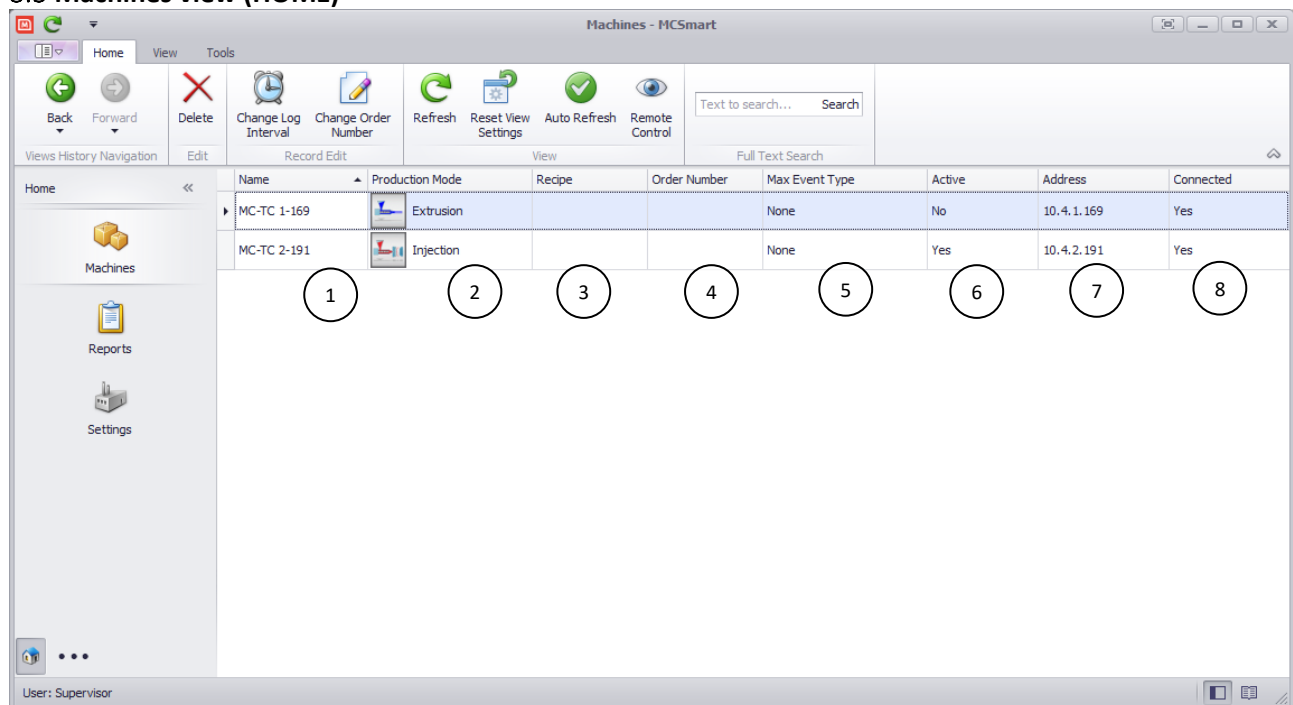
This menu ribbon however is context sensitive, and will have more or less buttons depending on the screen you have opened.



1	Views History Navigation	Browse through the Home screen navigation history
2	Delete	Delete current selected MCTC from database
3	Change Log Interval	Change log interval of current MCTC, Extrusion only
4	Change Order Number	Change Order number on selected MCTC
5	Refresh	Update currently opened table (overrides 30s automatic refresh)
6	Reset View Settings	Reset MCSmart UI to default (remove table filters etc.)
7	Automatic Refresh	Disable/Enable the 30s automatic table refresh
8	Remote Control	Open a copy of the UI of the selected MCTC (VNC connection)
9	Full Text Search	Search for text in displayed table

 With the “Remote Control” option you are able to fully operate the MCTC. Be sure the machine is in safe state while using the Remote Control option.

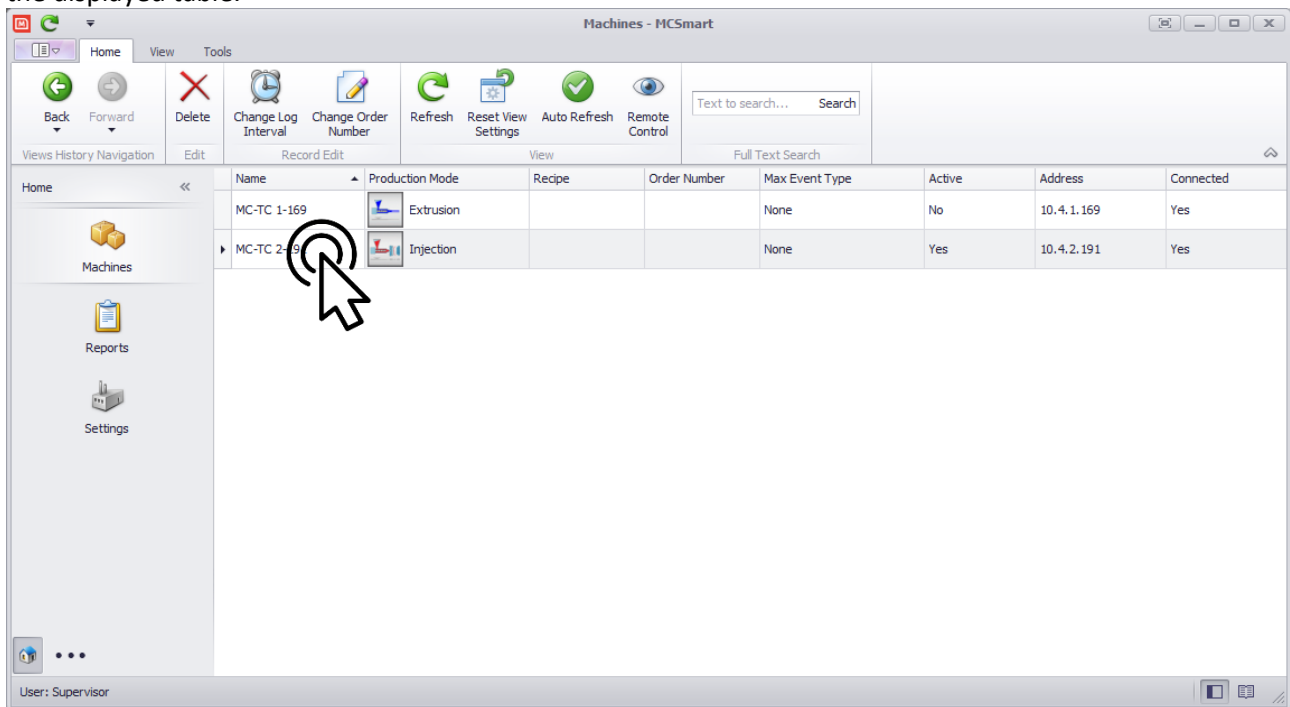
8.3 Machines view (HOME)



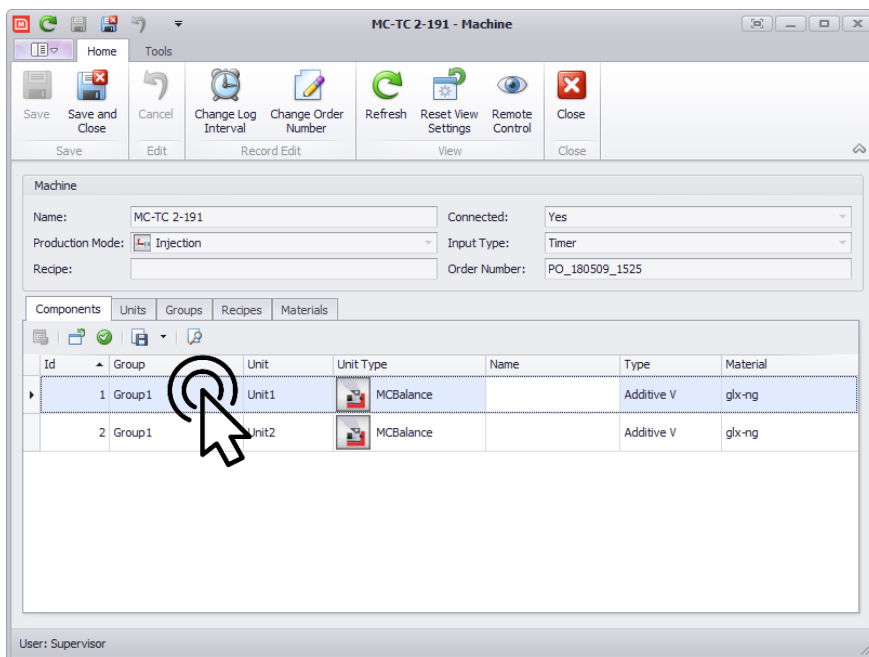
1	Name	MCTC device name (can be changed via MCTC configuration)
2	Production Mode	Configured production mode, Injection molding or Extrusion
3	Recipe	Current activated recipe
4	Order number	Current active order number running on the MCTC
5	Max Event Type	Active event (Warning or Alarm)
6	Active	MCTC active (RUN, Dosing)
7	Address	IP address of MCTC
8	Connected	Current status of MCTC connection to MCSmart

8.4 Navigating through the application

Navigating through the application, for example opening a MCTC, is done by double clicking on the row in the displayed table.



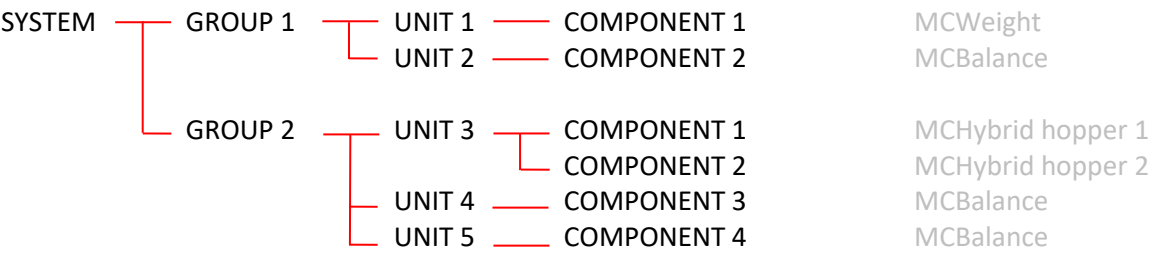
This action will open a new window, displaying “system level” of the selected MCTC (machine).



Double clicking on a row will open a new window with the next level.

8.4.1 MCTC data structure

The MCTC configuration can be displayed as followed, example co-extrusion:



MCSmart is using a quite similar structure to navigate through the application.

8.4.2 System Level

1

Machine

Name: MC-TC 2-191

Connected: Yes

Production Mode: Injection

Input Type: Timer

Recipe:

Order Number: PO_180509_1525

2

Components

Units

Groups

Recipes

Materials

3

Id	Group	Unit	Unit Type	Name	Type	Material
1	Group1	Unit1	MCBalance		Additive V	glx-ng
2	Group1	Unit2	MCBalance		Additive V	glx-ng

1	System level configuration and activated recipe and Order number
2	Quick level navigation tab
3	Content table (component view shown)

At system level, the Group, Unit and component levels can be viewed by selecting the corresponding tab (2)

8.4.3 Group level

1

Machine

Name: MC-TC 2-191

Connected: Yes

Production Mode: Injection

Input Type: Timer

Recipe:

Order Number: PO_180509_1525

2

Components

Units

Groups

Recipes

Materials

3

Id	Name	Production Mode	Active	Max Event Type	Consumption (kg)
1	Group1	Injection	Yes	None	0,367

4

1	System level configuration and activated recipe and Order number
2	Quick level navigation tab
3	Content table (group view shown)
4	Total consumed material by this group for the current Order number

Group level displays the status of all configured groups, multiple groups are used for co-extrusion setups

8.4.4 Unit level

Machine

Name: MC-TC 2-191 Connected: Yes

Production Mode: Injection Input Type: Timer

Recipe: Order Number: PO_180509_1525

Components Units Groups Recipes Materials

Id	Group	Name	Type	Dosing Mode	Max Event Type	Status
1	Group1	Unit1	MCB...	Gravimetric	None	Dosing
2	Group1	Unit2	MCB...	Gravimetric	None	Off

1	System level configuration and activated recipe and Order number
2	Quick level navigation tab
3	Content table (group view shown)
4	Group where the unit is member of.

The Unit level shows all configured units, in case of multiple groups the group name (4) indicates which group the unit is member of.

8.4.5 Component level

Machine

Name: MC-TC 195 Connected: No

Production Mode: Extrusion Input Type: Relay

Recipe: MCTC_REC_001 Order Number: PO_170613_1125

Components Units Groups Recipes Materials

Id	Unit	Unit Type	Name	Type	Material
1	Unit1	MCWeight		Virgin	MCWEIGHT
2	Unit2	MCBalance		Additive V	a8-ng
3	Unit3	MCBalance		Additive V	glx-ng

1	System level configuration and activated recipe and Order number
2	Quick level navigation tab
3	Content table (component view shown)

8.5 Component details level

Log data is sent to the MCSmart database based on a time interval. For extrusion data is sent at a fixed time base, by default 30 seconds. For injection molding each dosing shot results in sending log data to the database.

This data can be analyzed using 2 view options, “Table view” and “Chart view”

8.5.1 Table view

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Date Time	Order...	Recipe	Material	Consumption...	Unit Status	Machine M...	Gross Weight (g)	Act Motor Speed...	Set Capacity...	Act...	Set Dosing Percentage...	Act Dosing Percenta...	Set Dosing Time (s)	Act Dosing Ti...	Shot Weight (g)
9-5-2018 15:59:46	PO_1805...	MCTC...	glx-ng	0,797	Dosing	None	1.865	53,0	0,625	0,618	5,000	4,946	2,0	2,0	25,0
9-5-2018 15:59:43	PO_1805...	MCTC...	glx-ng	0,797	Dosing	None	1.866	53,0	0,625	0,618	5,000	4,946	2,0	2,0	25,0
9-5-2018 15:59:47	PO_1805...	MCTC...	glx-ng	0,799	Dosing	None	1.869	53,0	0,625	0,618	5,000	4,946	2,0	2,0	25,0
9-5-2018 15:59:44	PO_1805...	MCTC...	glx-ng	0,870	Dosing	None	1.870	53,0	0,625	0,618	5,000	4,946	2,0	2,0	25,0
9-5-2018 15:59:31	PO_1805...	MCTC...	glx-ng	0,789	Dosing	None	1.871	53,0	0,625	0,618	5,000	4,946	2,0	2,0	25,0
9-5-2018 15:59:25	PO_1805...	MCTC...	glx-ng	0,789	Dosing	None	1.873	53,0	0,625	0,618	5,000	4,946	2,0	2,0	25,0
9-5-2018 15:59:22	PO_1805...	MCTC...	glx-ng	0,785	Dosing	None	1.875	53,0	0,625	0,618	5,000	4,946	2,0	2,0	25,0
9-5-2018 15:59:19	PO_1805...	MCTC...	glx-ng	0,785	Dosing	None	1.876	53,0	0,625	0,618	5,000	4,946	2,0	2,0	25,0
9-5-2018 15:59:16	PO_1805...	MCTC...	glx-ng	0,785	Dosing	None	1.877	53,0	0,625	0,618	5,000	4,946	2,0	2,0	25,0
9-5-2018 15:59:13	PO_1805...	MCTC...	glx-ng	0,785	Dosing	None	1.878	53,0	0,625	0,618	5,000	4,946	2,0	2,0	25,0
9-5-2018 15:59:10	PO_1805...	MCTC...	glx-ng	0,781	Dosing	None	1.879	53,0	0,625	0,618	5,000	4,946	2,0	2,0	25,0
9-5-2018 15:59:04	PO_1805...	MCTC...	glx-ng	0,781	Dosing	None	1.882	53,0	0,625	0,618	5,000	4,946	2,0	2,0	25,0
9-5-2018 15:59:01	PO_1805...	MCTC...	glx-ng	0,777	Dosing	None	1.883	53,0	0,625	0,618	5,000	4,946	2,0	2,0	25,0
9-5-2018 15:58:58	PO_1805...	MCTC...	glx-ng	0,777	Dosing	None	1.885	53,0	0,625	0,618	5,000	4,946	2,0	2,0	25,0
9-5-2018 15:58:55	PO_1805...	MCTC...	glx-ng	0,777	Dosing	None	1.886	53,0	0,625	0,618	5,000	4,946	2,0	2,0	25,0
9-5-2018 15:58:52	PO_1805...	MCTC...	glx-ng	0,773	Dosing	None	1.887	53,0	0,625	0,618	5,000	4,946	2,0	2,0	25,0
9-5-2018 15:58:49	PO_1805...	MCTC...	glx-ng	0,773	Dosing	None	1.888	53,0	0,625	0,618	5,000	4,946	2,0	2,0	25,0
9-5-2018 15:58:46	PO_1805...	MCTC...	glx-ng	0,773	Dosing	None	1.890	53,0	0,625	0,618	5,000	4,946	2,0	2,0	25,0
9-5-2018 15:58:43	PO_1805...	MCTC...	glx-ng	0,773	Dosing	None	1.891	53,0	0,625	0,618	5,000	4,946	2,0	2,0	25,0
9-5-2018 15:58:40	PO_1805...	MCTC...	glx-ng	0,769	Dosing	None	1.892	53,0	0,625	0,618	5,000	4,946	2,0	2,0	25,0
9-5-2018 15:58:37	PO_1805...	MCTC...	glx-ng	0,769	Dosing	None	1.893	53,0	0,625	0,618	5,000	4,946	2,0	2,0	25,0
9-5-2018 15:58:34	PO_1805...	MCTC...	glx-ng	0,769	Dosing	None	1.894	53,0	0,625	0,618	5,000	4,946	2,0	2,0	25,0
9-5-2018 15:58:31	PO_1805...	MCTC...	glx-ng	0,764	Dosing	None	1.895	53,0	0,625	0,618	5,000	4,946	2,0	2,0	25,0
9-5-2018 15:58:25	PO_1805...	MCTC...	glx-ng	0,764	Dosing	None	1.898	53,0	0,625	0,618	5,000	4,946	2,0	2,0	25,0
9-5-2018 15:58:19	PO_1805...	MCTC...	glx-ng	0,760	Dosing	None	1.901	53,0	0,625	0,618	5,000	4,946	2,0	2,0	25,0

The table view is a list of log entries, by default displayed in chronological order. Depending on the type of dosing unit to be analyzed, the shown columns might differ.

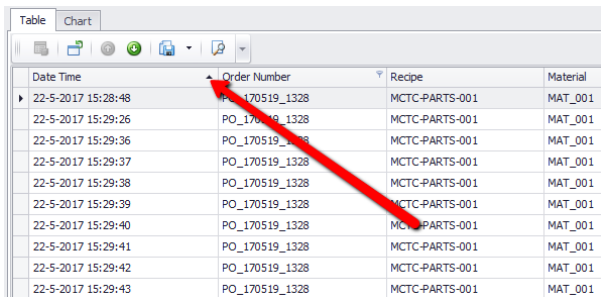
1	Date time	Date/time the log entry is send by the MCTC to MCSmart database
2	Order number	Active order number at the moment the log entry is send
3	Recipe	Used recipe at the moment the log entry is send
4	Material	Used material
5	Consumption	Material consumption at specified date/time
6	Unit status	Status, Dosing, Standby, OFF, etc.
7	Machine Max Event Type	Maximum Active event (Warning or Alarm) of the MCTC
8	Gross Weight	Hopper weight at the moment the log data is send
9	Act Motor Speed	Used motor speed during the dosing
10	Set Capacity	Dosing capacity setpoint used for the dosing (gram per second)
11	Act Capacity	Actual dosing capacity (gram per second)
12	Set Dosing Percentage	Dosing capacity setpoint used for the dosing (% of total)
13	Act Dosing Percentage	Actual dosing setpoint (% of total)
14	Set Dosing Time	Dosing time setpoint (Injection molding)
15	Act Dosing Time	Actual dosing time (Injection molding – Relay)
16	Shot Weight	Setpoint Shotweight (Injection molding)

Sorting and filter options

Within the MCSmart Table view (any table within MCSmart) gives the opportunity to adjust the shown data by sorting and filtering options

Sorting

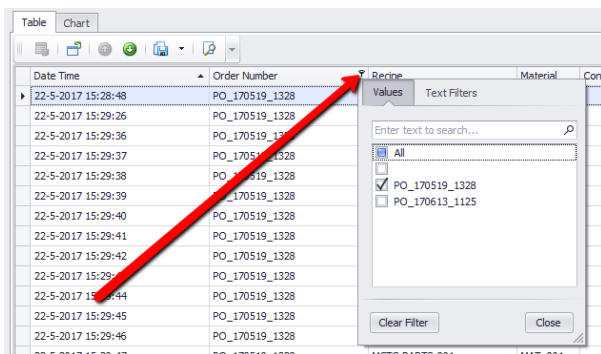
Sorting of the shown data can be inverted by pressing the small triangle in the title of any column



Date Time	Order Number	Recipe	Material
22-5-2017 15:28:48	PO_170519_1328	MCTC-PARTS-001	MAT_001
22-5-2017 15:29:26	PO_170519_1328	MCTC-PARTS-001	MAT_001
22-5-2017 15:29:36	PO_170519_1328	MCTC-PARTS-001	MAT_001
22-5-2017 15:29:37	PO_170519_1328	MCTC-PARTS-001	MAT_001
22-5-2017 15:29:38	PO_170519_1328	MCTC-PARTS-001	MAT_001
22-5-2017 15:29:39	PO_170519_1328	MCTC-PARTS-001	MAT_001
22-5-2017 15:29:40	PO_170519_1328	MCTC-PARTS-001	MAT_001
22-5-2017 15:29:41	PO_170519_1328	MCTC-PARTS-001	MAT_001
22-5-2017 15:29:42	PO_170519_1328	MCTC-PARTS-001	MAT_001
22-5-2017 15:29:43	PO_170519_1328	MCTC-PARTS-001	MAT_001

Filter

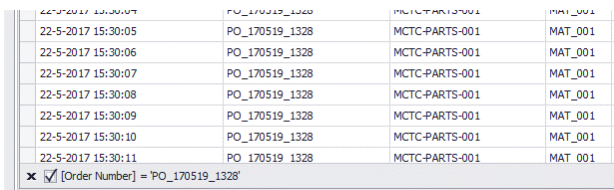
Filtering of show data can be done by choosing a certain value or range of values. The filter dialog can be called by clicking the small



Date Time	Order Number	Recipe	Material	Cons
22-5-2017 15:28:48	PO_170519_1328	MCTC-PARTS-001	MAT_001	
22-5-2017 15:29:26	PO_170519_1328	MCTC-PARTS-001	MAT_001	
22-5-2017 15:29:36	PO_170519_1328	MCTC-PARTS-001	MAT_001	
22-5-2017 15:29:37	PO_170519_1328	MCTC-PARTS-001	MAT_001	
22-5-2017 15:29:38	PO_170519_1328	MCTC-PARTS-001	MAT_001	
22-5-2017 15:29:39	PO_170519_1328	MCTC-PARTS-001	MAT_001	
22-5-2017 15:29:40	PO_170519_1328	MCTC-PARTS-001	MAT_001	
22-5-2017 15:29:41	PO_170519_1328	MCTC-PARTS-001	MAT_001	
22-5-2017 15:29:42	PO_170519_1328	MCTC-PARTS-001	MAT_001	
22-5-2017 15:29:43	PO_170519_1328	MCTC-PARTS-001	MAT_001	
22-5-2017 15:29:44	PO_170519_1328	MCTC-PARTS-001	MAT_001	
22-5-2017 15:29:45	PO_170519_1328	MCTC-PARTS-001	MAT_001	
22-5-2017 15:29:46	PO_170519_1328	MCTC-PARTS-001	MAT_001	
22-5-2017 15:29:47	PO_170519_1328	MCTC-PARTS-001	MAT_001	

Reset filter

Active filters are shown at the bottom bar of the Table view. Filters can be reset or disabled by clicking either the checkbox or the **X** sign.



Date Time	Order Number	Recipe	Material
22-5-2017 15:30:05	PO_170519_1328	MCTC-PARTS-001	MAT_001
22-5-2017 15:30:06	PO_170519_1328	MCTC-PARTS-001	MAT_001
22-5-2017 15:30:07	PO_170519_1328	MCTC-PARTS-001	MAT_001
22-5-2017 15:30:08	PO_170519_1328	MCTC-PARTS-001	MAT_001
22-5-2017 15:30:09	PO_170519_1328	MCTC-PARTS-001	MAT_001
22-5-2017 15:30:10	PO_170519_1328	MCTC-PARTS-001	MAT_001
22-5-2017 15:30:11	PO_170519_1328	MCTC-PARTS-001	MAT_001

x [Order Number] = 'PO_170519_1328'

① Filters are saved, and reused at reopening the component details view.

8.5.2 Component Log View Entry

Double clicking on a row in the “Component details level” table view will open the Component Log View Entry dialog. An overview of all parameters stored in the database at that specific data/time are shown.

The screenshot shows the 'MC-TC 2-191 - Component Log View Entry' dialog box. It has a 'Home' tab and a toolbar with 'Open Related Record', 'Refresh', 'Reset View Settings', and 'Close' buttons. The dialog is divided into four main sections: Machine, Group, Unit, and Component, each containing various parameters and their values.

Machine	
Date Time:	9-5-2018 16:18:09
Name:	MC-TC 2-191
Events:	
Max Event Type:	None
Input Type:	Timer
Recipe:	MCTC_REC_001
Order Number:	PO_180509_1525
Production Mode:	Injection

Group	
Name:	Group1
Events:	
Max Event Type:	None
Act Dosing Time (s):	2,0
Group Consumption (kg):	1,256
Set Dosing Time (s):	2,0
Shot Weight (g):	25,0

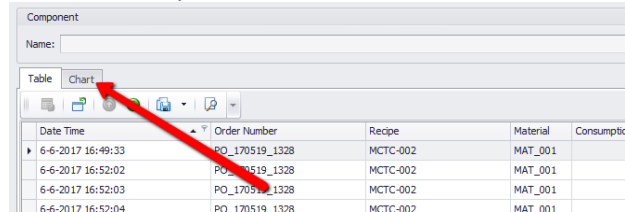
Unit	
Name:	Unit1
Unit Type:	MCBalance
Status:	Dosing
Events:	
Max Event Type:	None
Act Motor Speed (RPM):	53,1
Dosing Tool:	GLX
Gross Weight (g):	1.407

Component	
Name:	
Type:	Additive V
Events:	
Max Event Type:	None
Act Capacity (g/s):	0,607
Act Dosing Percentage (%):	4,856
Consumption (kg):	1,256
Granulate Type:	Normal
Material:	glx-ng
Set Capacity (g/s):	0,625
Set Dosing Percentage (%):	5,

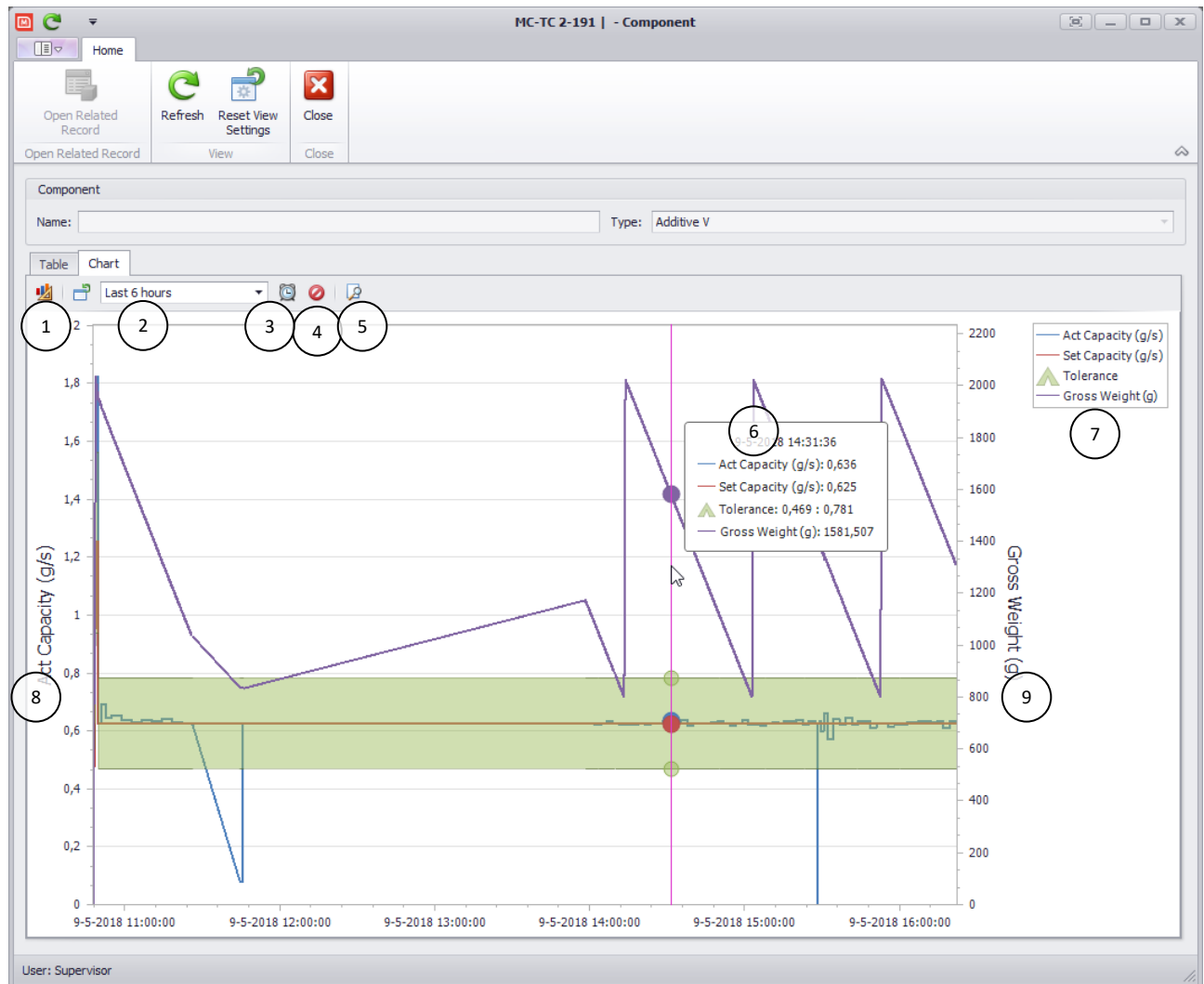
User: Supervisor

8.5.3 Chart view

Form the components detail level view select “Chart”



The Chart tab will open, and display a chart of the last 6 hours of data available in the database.



1	Setup Chart	Select the parameters to be shown at each axis
2	Chart date time range	Select the time period to be shown in the graph.
3	Filter chart range	Select a custom time range
4	Auto refresh	Enable/disable auto refresh of the graph (each 30 seconds)
5	Print preview	Print current chart view, or save as PDF/Image
6	Mouse over info	Shows the details of selected point on the graph
7	Legend	Name and units of the shown parameters
8	Left axis scale	
9	Right axis scale	

ⓘ Selecting a very big range (multiple days) might slow down the application

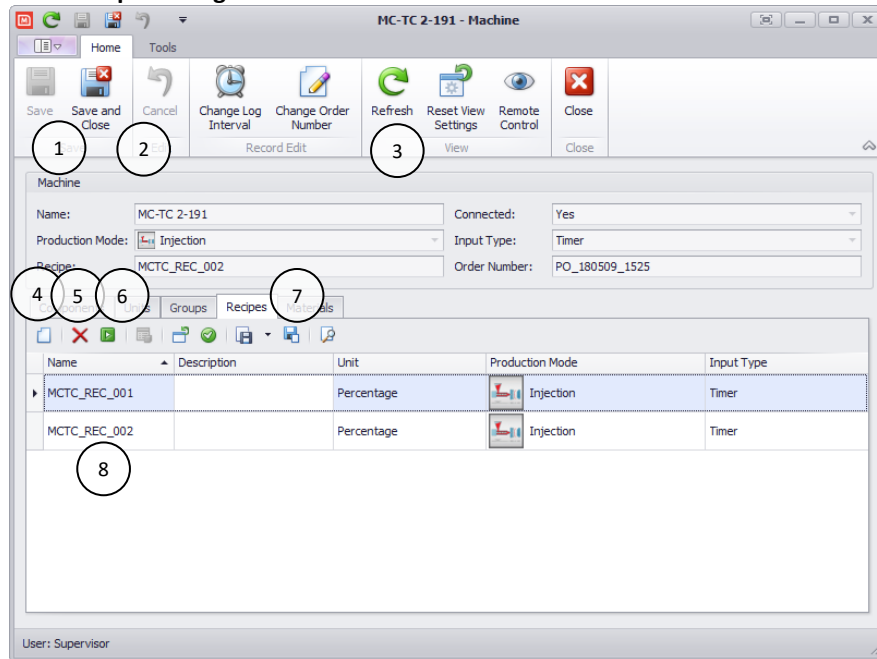
ⓘ When selecting multiple days, it is recommended to disable the Automatic Refresh avoiding slow behaviour on chart operations.

8.6 Recipe management

Within MCSmart it is possible to create, edit and delete MCTC recipes. Recipe management function is available on MCSmart Standard and MCSmart Advanced.

The recipe functions can be accessed from System Level View and requires Supervisor login level.

8.6.1 Recipe management screen



1	Save / Save and Close	Synchronize changes to MCTC
2	Cancel	Discard changes
3	Refresh	Refresh recipe list from MCTC
4	New	Create a new recipe and open recipe editor
5	Delete	Delete recipe from database (Save action required for MCTC sync.)
6	Activate	Set selected recipe as active recipe at the MCTC
7	Export	Export recipe list or export selected recipe to xdoc file
8	Recipe list	List of recipes present at MCTC

All recipe operations need to be synchronized to the MCTC. After creating a new recipe or editing a recipe, the save (save and close) button needs to be used to synchronize the changes to the MCTC.

A recipe can only be activated when the MCTC is in OFF mode (inactive, green button on MCTC User Interface).

8.6.2 Recipe editor

The screenshot shows the 'MCTC_REC_002 - Recipe' window. It features a top toolbar with icons for New, Save, Save and Close, Delete, Validate, Cancel, Open Related Record, Refresh, Reset View Settings, and Close. Below the toolbar is the 'Recipe' section with fields for Name (MCTC_REC_002), Description (Recipe description), Unit (Percentage), Input Type (Timer), and Production Mode (Injection). The 'Components' section contains a table with columns: Group Name, Unit Name, Unit Type, Name, Type, and Material. Below this is a 'Group' section with fields for Name (Group 1), Dosing Order (Descending), Shot Time (2), and Shot Weight (g) (25,0). At the bottom is a 'Component' section with fields for Name (Comp 1), Type (Additive V), Dosing Percentage (1,5), and Material (glx-ng). Numbered callouts 1 through 11 point to specific elements: 1 (New), 2 (Save), 3 (Delete), 4 (Validate), 5 (Name field), 6 (Component overview table), 7 (Group parameters section), 8 (Component parameters section), 9 (Material function dropdown), 10 (Dosing percentage field), and 11 (Material dropdown).

1	New	Create a new empty recipe
2	Save/Save and Close	Save current recipe changes to database
3	Delete	Delete current recipe from database
4	Validate	Check current recipe settings for any mistakes
5	Name	Recipe name (as shown at MCTC)
6	Component overview	Component selection to be edited
7	Group parameters	INJ: Shotweight, Dosing time. EXT: Extruder capacity, Tacho ratio.
8	Component parameters	Material function selection, Material, Dosing percentage
9	Material function	Virgin, Additive or Re grind
10	Dosing percentage	Percentage of total to be dosed by selected component
11	Material	Material (pre-learned curve) selection

① Available group parameters depend on production mode

9 Data Export/Import

9.1 Introduction

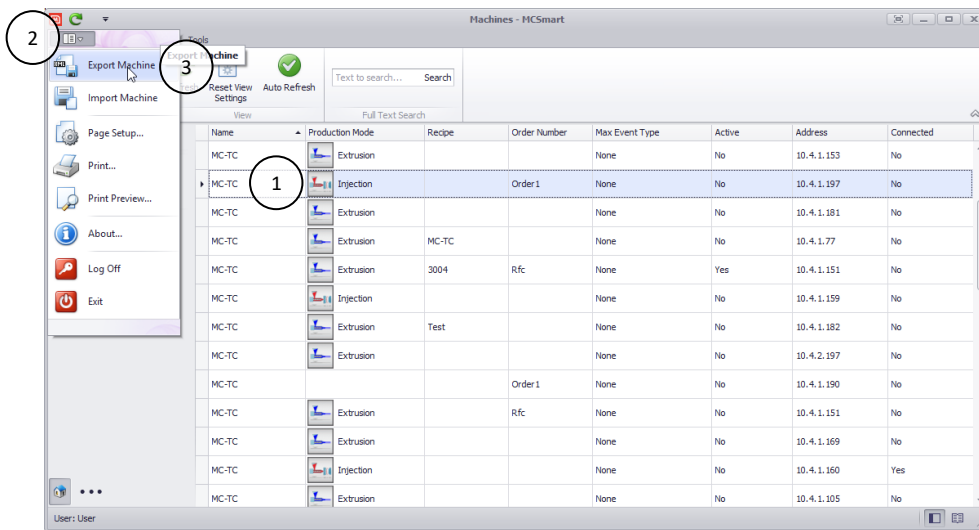
Logdata can be exported and imported for service purposes. Since MCTC software version 2.5.0 log files can also be generated using the USB function of the MCTC. This data can be imported in MCSmart.

Log data of one machine can be exported at the time to a file. This file can be send to your Movacolor representative for further analysis. Up to 7 days of log data can be exported in one file

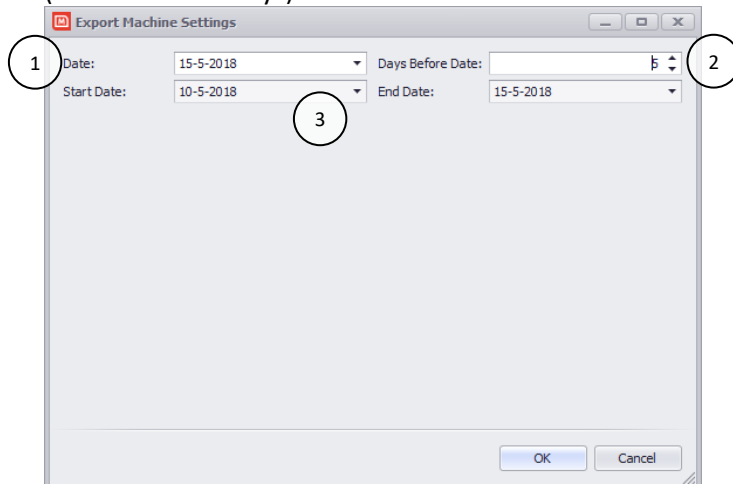
9.2 Export of log data

To export log data of an machine to a file:

- Open MCSmart Desktop application;
- Select the machine you want to export log data from;
- Open the file menu and choose Export Machine.



In the next window, select last day of the data to be exported, and the number of days to be exported (maximum of 7 days)



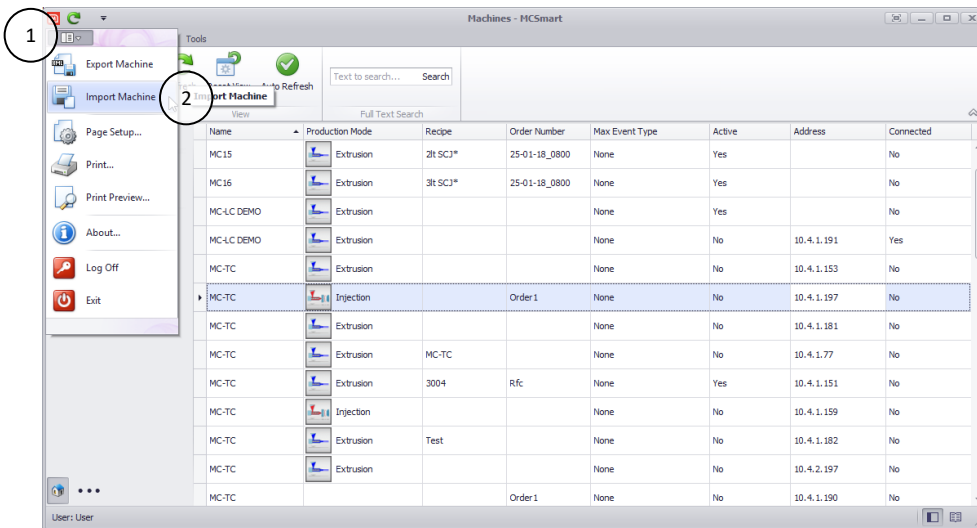
1	Date:	Last day of exported data
2	Days Before Date	Number of days to be exported before the last day entry
3		Display of start data and end date of exported data

In the next screen you can select the filename and location where the data file will be stored. Exporting might take some time, depending on the amount of data to be exported.

9.3 Import of log data

To import data from a file:

- Open MCSmart Desktop application
- Open the file menu and select Import Machine



In the next window browse to the file location and select the file you want to import.

After opening the file a message will be shown the import of data has been started. Importing data can take a while depending on the amount of data to be imported.

As soon the import has finished, a message will be shown again to mention the import has completed. The imported data will be shown in the machine overview, the Machine name is equal to the filename of the imported data.

① Depending on file size and server hardware, importing can take up to several minutes

When you import data from a machine which already exist in the database, the data will be added to the existing machine.

① Only when used MCTC software version is 2.5.0 or higher, otherwise a new machine will be added to the MCSmart database.

10 Reporting

10.1 Introduction

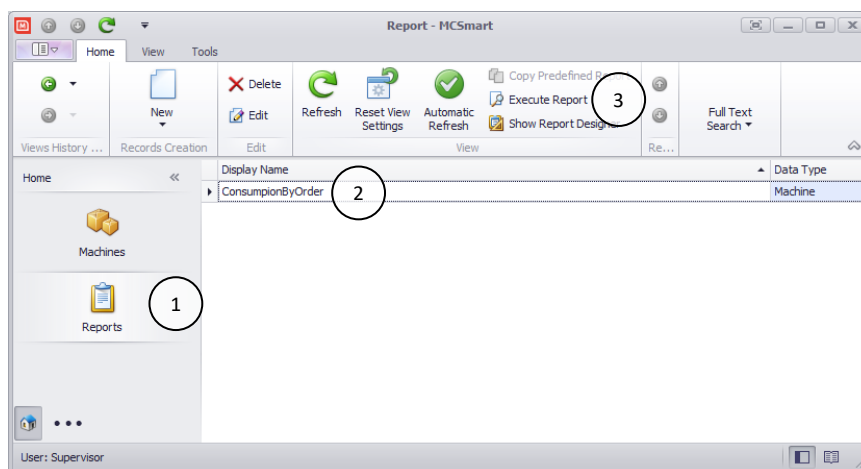
Reporting function is available on MCSmart Standard and MCSmart Advanced. Reports templates can be created and modified to meet customer demands. However, creating a new report requires knowledge about the database structure of MCSmart. There for report templates are available at the Movacolor website (<https://www.movacolor.com/distributors-login.html>) . These templates can be imported in your database and can be modified to meet your corporate identity.

MCSmart will be delivered with some pre-defined reports.

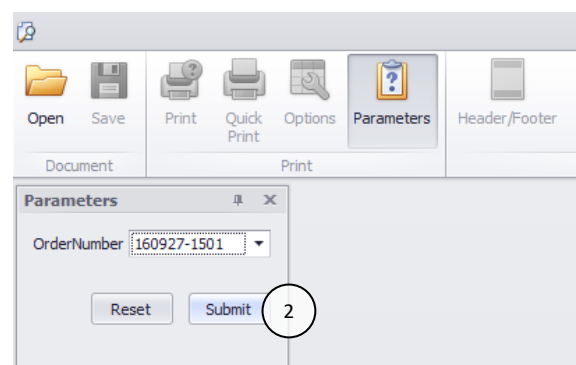
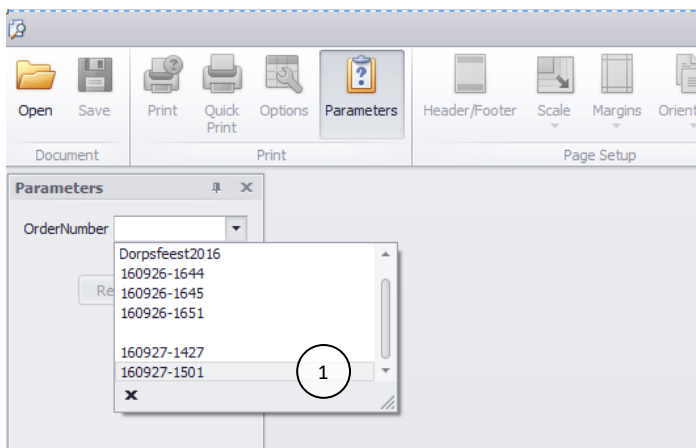
10.2 Executing a report

① This explanation is based on the “ConsumptionByOrder” report template. Screens might have a different layout.

1. From the MCSmart main menu choose reports
2. Select the report you want to run
3. Click “Execute Report”, the “report preview screen” will be opened



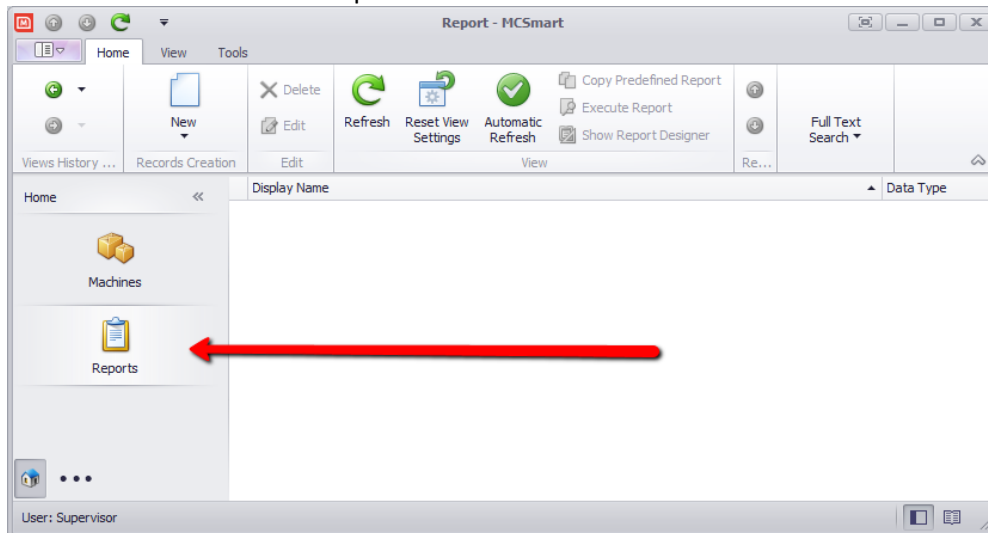
1. From the parameters section select the required OrderNumber from the dropdown list
2. Click “Submit”



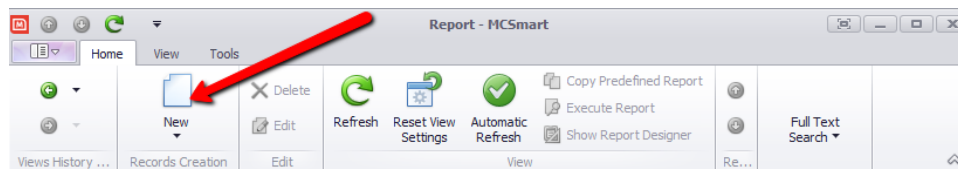
Your report will be generated, next you can choose to print, save, send the report.

10.3 Importing a report template

From the MCSmart main menu choose reports



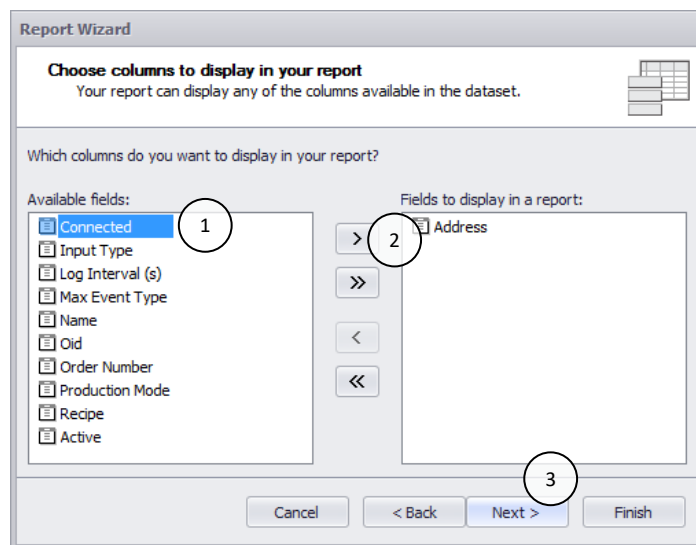
From the menu ribbon choose “New”, the report wizard will start



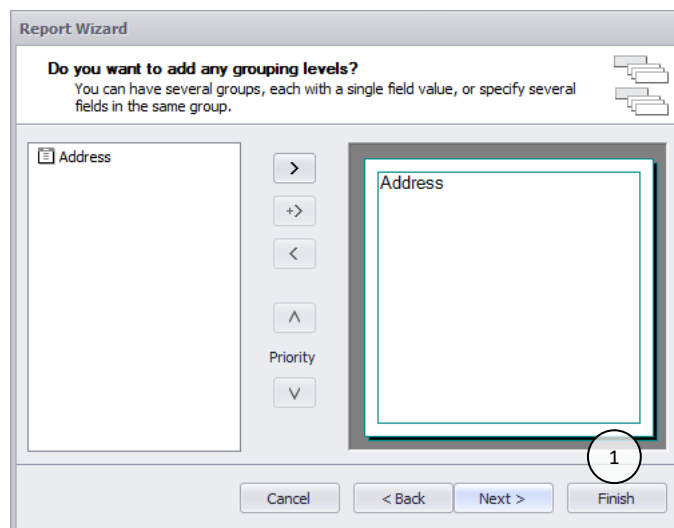
1. Enter a report Display Name: “NewReport”
2. Select a Data Type from the dropdown list: “Machine”
3. Select the Report Type from the dropdown list: “Standard”
4. Click “Next >”

The screenshot shows the 'Report Wizard' dialog box. It contains a text area with instructions: 'To create a new report, please enter a name in the field below and select the primary data type of the report from the list.' Below this are three input fields: 'Display Name' with the value 'NewReport' (circled with a 1), 'Data Type' with the value 'Machine' (circled with a 2), and 'Report Type' with the value 'Standard' (circled with a 3). At the bottom, there are four buttons: 'Cancel', '< Back', 'Next >' (circled with a 4), and 'Finish'. The background of the dialog box features a graphic of a document with a pen and a bar chart.

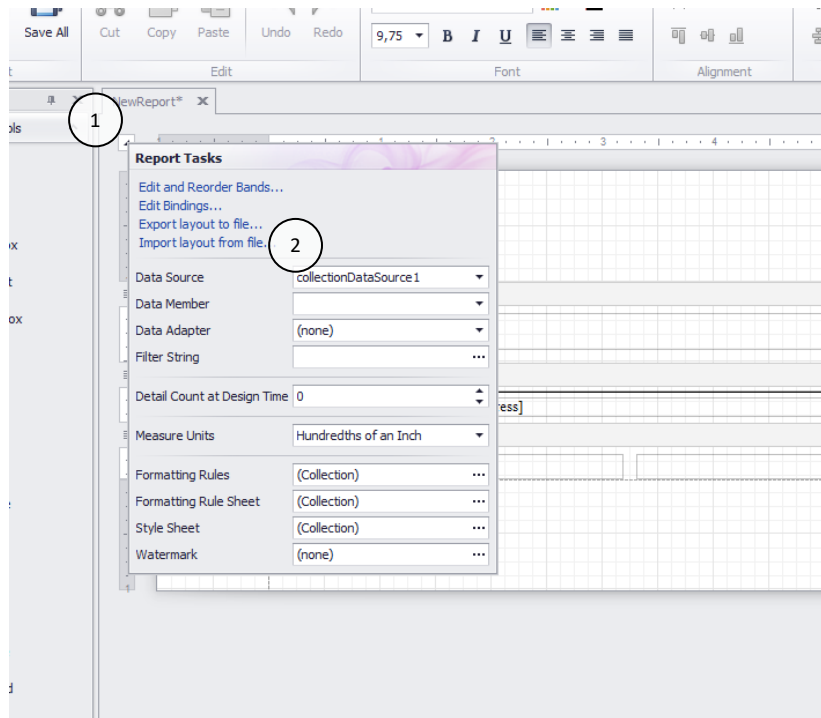
1. Select one item from the “Available fields” list
2. Add the selected item to “Fields to display..” by clicking the single right arrow
3. Click “Next >”



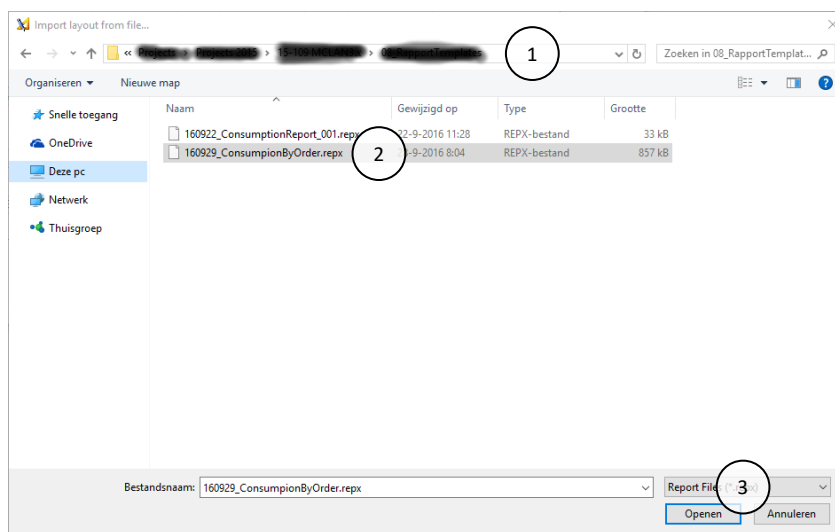
1. Click “Finish”, the “Report Designer” application will be started



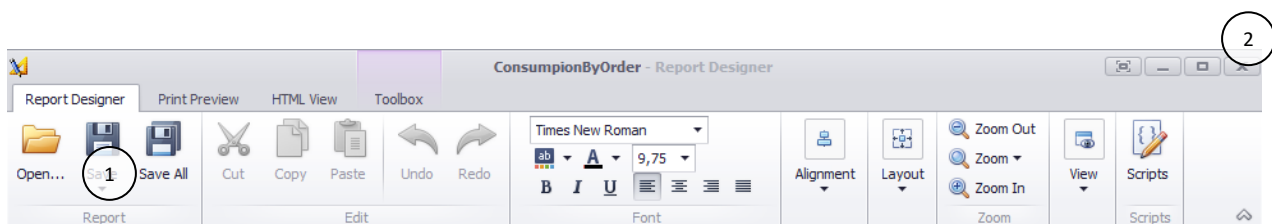
1. Click the small “Report Tasks” button
2. Choose “Import layout from file...”



1. Navigate to the downloaded report template file location
2. Select the downloaded the required report template file
3. Click “Open”



1. From the report designer menu ribbon, choose “Save”
2. Close the “Report Designer” application



11 Troubleshooting

MCTC does not show up in MCSmart machine overview

- Check the ethernet cabling of the MCTC and MCSmart computer(s)
- Check the IP ADDRESS settings of both MCTC and MCSmart computer
 - MCTC and MCSmart should be in the same subnet
 - MCTC and MCSmart computer should not have the same IP ADDRESS
- Check you firewall rules
 - During installation MCSmart adds exceptions to your windows firewall, in case you have installed other firewall software you have to add these rules manually
- Check your license file to be expired (settings menu)
- Check your license file to have the right version, for monitoring multiple MCTC's you need standard or higher.

- END of Document -