USER MANUAL - MOULDFLO TEST RIG SOFTWARE (GUI)

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Copy from the original EF-declaration

Original
EF-Overensstemmelseserklæring

Iht. Maskindirektivet 2006/42/EF

Fabrikant:

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Danmark

erklærer hermed at:

Mouldflo Test Rig (MFTR)

er fremstillet i overensstemmelse med følgende direktiv:

2006/42/EF (Maskindirektivet)

samt følgende harmoniserede direktiver

97/23/EF PED (Pressure Equipment Directive)

og anvendte normer

DS/EN 60204-1 Elektrisk udstyr på maskiner

Bemyndiget person til at samle og stille det tekniske dossier til rådighed for relevant myndighed:

Martin Hansen
Move Innovation APS
Herlev

Herlev, december 2013

Martin Hansen
Direktør

CONTENTS

1. Abbreviations and definitions

MFTR Mouldflo Test Rig

MFCU Mouldflo Calibration Unit

2. General information

This installation-and operating instructions apply to Mouldflo Test Rig measuring wagons abbreviated MFTR.

MFTR may only be used by professionals who are trained in the use of the machine.

MFTR must only be used for the usage scenarios described in this document.

3. General description

Mouldflo Test Rig (MFTR) can be used for measurement and verification of flow in cooling ducts integrated into plastic Moulds.

The manifold is connected to the plastic Mould with one or more suitable sets of tubes, consisting of a departure and a return hose.

The built-in water pump provides a constant pressure in the delivery chamber on the manifold so that the flow in each channel is constant during measurement.

MFTR can test for leaks of a connected plastic Mould by subjecting the manifold that contains the Mould with pressurized water.

Measurement of cooling water flow and pressure is carried out by using automated processes launched and controlled by the user via the user interface on the connected computer screen.

4. Entry into service

Before MFTR is put into use it should be connected to a manifold with appropriate couplers and hoses. It must also be ensured that the MFTR is placed on a flat surface with wheels locked.

The water tank should be filled with water. If MFTR is equipped with a water tank, then this can be filled automatically from a central management system's water supply.

5. Connecting the manifold

The internal thread of the manifold connections are ½ “.

The hoses can be firmly mounted on the manifold by means of couplings.

Note! There must be a valve for each connection on the manifold. Ball valves can be mounted directly on the manifold or couplings with built-in valve can be used towards the item under test.

5.1 Hoses/Tubes

Hoses that connect to the manifold must be approved for 10 bars pressure. It is recommended to use tubes having an internal diameter of 1cm or more.

6. Electric Connection

6.1 Supply

There is mounted a red three-phase 400 V CEE-intake, used to supply the MFTR from the mains.

6.2 Grounding

It is very important to ensure that the MFTR is grounded through the installation cable. Proper grounding must be ensured by an authorized electrician.

Warning! Lack of grounding of MFTR can ultimately result in serious injuries for the user of the machine.

6.3 Outlets for supply of Mouldflo accessories

There is a blue 230 V CEE socket for connecting the Mouldflo Calibration Unit or other Mouldflo device.

It features a 10A circuit breaker that trips off on faulty current,

Note! Under no circumstance any equipment other than the Mouldflo product series should be connected to 230V CEE socket.

6.4 On/off and the emergency stop

There is an On/Off switch and an emergency stop on top of the MFTR next to the drip tray.

Power on/ Turn off	When the contact points towards the drip tray, the pump is disabled (turned off). When the contact points away from the drip tray, the pump is activated and ready for use.
Emergency stop	Activation of the emergency stop causes immediate interruption of the pump. Emergency stop will remain activated until the user manually disables it, by turning the emergency stop.

7. Compressed air connection

Compressed air is connected via the mounted compressed air coupling, which is located towards the left of the blue CEE power outlet.

The compressed air is restricted internally by a throttle valve to 1.0 bar.

Note! Under no circumstance should a compressed air with more than 8.0 bars be let into the system.

8. Usage scenarios

MFTR is exclusively designed for usage scenarios described below.

8.1 Qualification of Mould

During the development and testing of the Moulds, users can use the configuration screen as described below.

The user has the ability to start and stop the pump, as well as specify the pressure to which the flow in the channels are to be measured.

Limit values for flow in the individual channels can be specified manually, or by using a current ongoing measurement.

Each channel on the Mould can be described with a text.

Pressure, limit values, channel descriptions and a comment can be saved by an authorized user, so that these can be retrieved for later use.

8.2 Flow measurement on pre-qualified Mould

Automatic testing of a pre-qualified Mould is performed by downloading the configuration for that specific Mould. Then, follow instructions to connect the Mould to the manifold. Once this is mounted correctly, start the test.

8.3 Leak test of pre-qualified Mould

Automatic leak test can be performed on a pre-qualified Mould by the user by retrieving the configuration of the connected Mould and following the appropriate instructions.

9. Mobility and transport

MFTR is equipped with four wheels. One set of wheels is fixed. The other set of wheels are rotatable. The rotatable wheels are fitted with brakes.

Note! The brakes have to be enabled when the MFTR is not being transported.

10. Maintenance

10.1 Service door

There is a service door that allows the user to access the pump, drain valve, control cabinet and other built-in components.

Note! The service door must be closed during operation.

10.2 Control cabinet

The control cabinet contains the electronics and pneumatics for controlling valves and measurement of pressure and flow.

Note! Maintenance of electronics and control electronics must only be carried out by one of the manufacturer's approved technician.

WARNING! The control cabinet must never be opened during operation.

WARNING! The control cabinet must be opened only when the electric connection to the machine has been disconnected for at least 5 minutes.

10.3 Calibration and adjustment

Please refer to section 15.

10.4 Filter

A filter is installed between the water tank and the pump's intake.

The filter can be accessed through the service door, and is located under the water tank.

The filter can be unscrewed and cleaned.

The tank must be emptied of water before the filter is removed and cleaned.

MFTR software displays a reminder when it is time for maintenance of the filter. A super user should confirm the execution of this.

10.5 Water pump

The pump is maintained in accordance with the maintenance instructions given by the pump manufacturer.

10.6 Water replacement

Water in the water tank must be changed regularly. This should be done at least once a week.

MFTR can be equipped with water replacement system that can perform automatic water change when the MFTR is connected to a central water supply.

11. Technical Data

11.1 Water pump

MFTR is equipped with a pressurized water pump that regulates the pressure in the outlet chamber of the manifold so that the latter is kept constant regardless of flow in each of the measurement channels.

The pump is designed to deliver 20 litres/min on all eight channels on the manifold at a constant pressure of 4.0 bar.

11.2 Water tank

MFTR has a built-in water tank.

The water tank can be drained by opening the ball valve, which is located behind the service door at the bottom left. The water from the tank then runs out on to the floor underneath the wagon.

The water reservoir is filled by pouring water into the drip tray.

11.3 Drip tray

A drip tray with drainage is mounted on the manifold connection holes. This drip tray is connected to the water tank. A filter is placed over the drain, so that larger objects unintentionally does not get into the water tank. The filter can easily be removed and cleaned.

11.4 Compressed air

The compressed air is limited by a pressure regulator to around 1.0 bar. The pressure regulator is located inside the control cabinet.

The compressed air is activated by the control electronics.

Note! The pressure on the regulator must not be set higher than 1.0 bar, as this may damage the sensors while emptying the water from the Mould.

11.5 Water replacement process

MFTR can be equipped with a water replacement system which can empty, fill and rinse the water tank when it is connected to a central water supply.

12. Other technical data

12.1 Sound pressure level

The maximum sound pressure level measured in relation to ISO 3743 is 64 dB (A).

12.2 Disposal

This product or parts of this are to be discarded in an environmentally sound manner, in accordance with the legislation applicable at the time.

13. Connection guides

13.1 Connection-Normal use

This guide only deals with the connection of compressed air, water connectivity and electricity supply to the MFTR, and does not cover any other connectivity.

1. MFTR is placed on a level surface with the movable wheels being locked.
2. Compressed air is connected to the pressure regulator inside the control cabinet.
3. The water inlet and outlet are connected to the central water supply.

Note! Only for MFTR equipped with water replacement process.

4.The electric cable is connected to a red 5-pin CEE connection on MFTR. **Note!** The connection cable must not be carrying any current while making the connection. MFTR must never be fitted through the blue 3 pin CEE outlet.

5. The power must be turned on only when both the compressed air and electric connections are connected properly. The computer and the built-in electronics are switched-on automatically when the power is turned on from the power supply.
6. The pump can be switched on by the turning the On/Off switch [which should be pointing away from the drip tray] after the Mouldflo software has started up.

MFTR is now ready for use. The Mouldflo software user interface and operation are described in section 14.

The pump can be deactivated by turning the On/Off switch towards the drip tray.

Note! The pump can be stopped immediately by pressing the round red emergency stop button.

13.2 Connection-Calibration

This guide describes how to properly connect the Mouldflo Calibration Unit (MFCU) with the MFTR.

1. The instructions for “Connection – Normal use” is followed and executed until point 3.
2. The MFCU is correctly placed on a flat surface near the MFTR.
3. The MFCU supply cable is connected to the device connector input on the MFCU.
4. The other end of the MFCU supply cable is connected to a blue CEE outlet on the MFTR.

5. The instructions for “Connection-Normal use” is followed and executed from point 4.

The calibration process is described in section 15 below.

Note! MFCU must not be used with MFTR unless the power is provided via a blue CEE outlet on the MFTR.

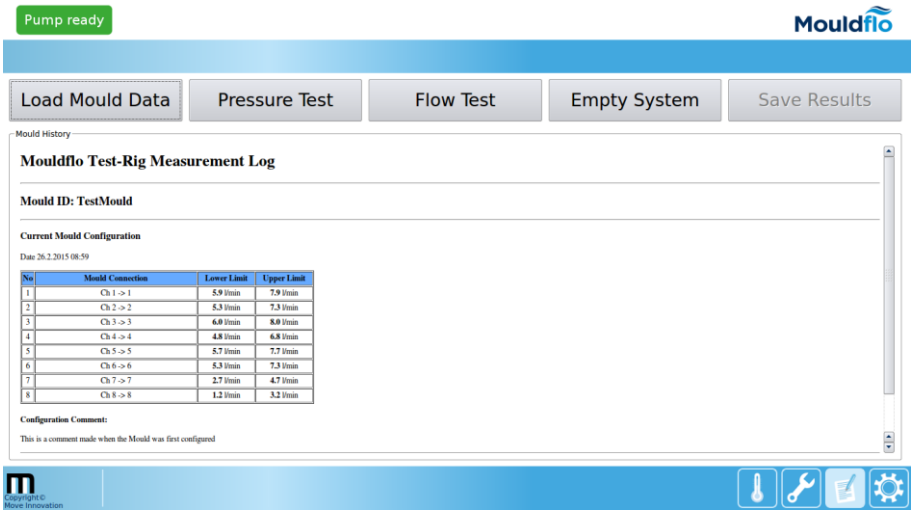
14. User interface

The user interface consists of four screens: Test screen, Configuration screen, Flow monitor and Maintenance screen.

The software will automatically start up with the Test screen. Switching between the different screens is done by using the four icons at the bottom right of the screen.

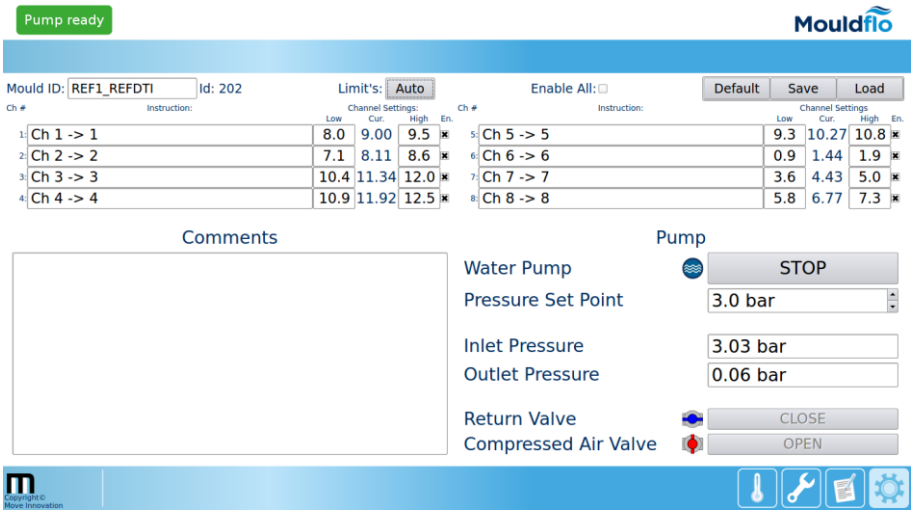
14.1 Test screen

The test screen can be used by an ordinary user to perform automatic pressure/flow tests on Moulds that are already configured and created. The functionality of this screen is discussed in detail in section 14.6.



14.2 Configuration screen

The configuration screen is used to test and configure the Moulds.



Here it is possible to adjust the pressure in the outlet chamber on the manifold, and to set the allowable limits for flow in each channel. Mould name and installation description can also be entered.

Power users have the ability to set up and save the configuration for a specific mould. The configuration can then be used to perform the automated tests that are performed on the Test screen.

The pressure in the outlet chamber on the manifold can be set by changing the value of the Pressure Set Point field.

The water pump is started by pressing the START-button and stopped again by pressing the STOP button. Pump status is displayed with an icon. See legend below.

It is possible to manually open and close, the return valve and the compressed air valve by pressing the buttons next to the Return Valve and the Compressed Air Valve. The buttons show the action performed by pressing them. the Status of the valves is displayed with two symbols. See legend below.

Note! There are a number of built-in safety mechanisms that prevent the user from pressurizing the system with air. In addition, it is not possible for the user to close the return valve (or) open the compressed air valve when the pump is active.

The below sets of symbols highlights the functionality/status of the MFTR:

 Indicates that the pump is active

Indicates that the pump is stopped

Shows that the valve is open

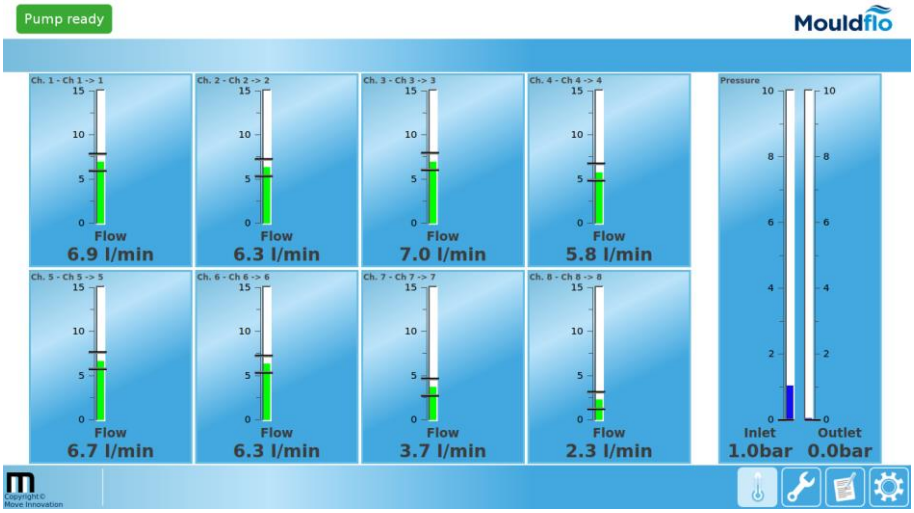
Shows that the valve is closed

The pump is ready

The pump is turned off

14.3 Flow monitor screen

This screen is used to get an overview of the current measurements of flow and pressure of the connected Mould.



The flow in each channel is displayed as a coloured bar. The limits are marked as two black lines in each channel.

If the flow is within limits, then the column is displayed in" GREEN" colour.

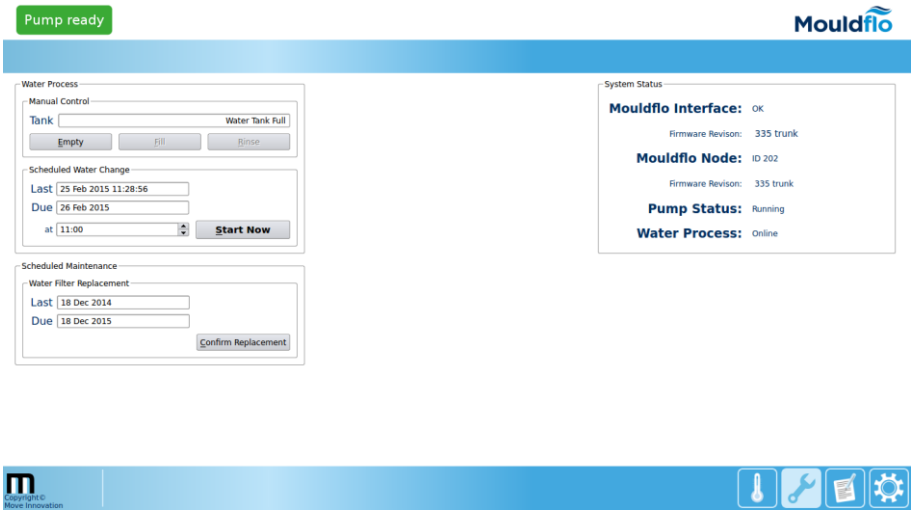
If the flow is just above the limits, then the column is displayed in" YELLOW" colour.

If the flow is outside the limits, then the column is displayed in" RED" colour.

Note! The colour coding described above applies only for flow indicators. It is not applicable for the two bars indicating pressure in the inlet /outlet chambers. These bars are always displayed in" BLUE" colour.

14.4 Maintenance screen

The maintenance screen is used whenever water replacement is to be carried out or maintenance of filter is to be registered.



The automatic water replacement process is described in detail in section 14.7.

The maintenance screen is divided into three sections, namely: water process, scheduled maintenance and system status.

Water Process can be done either manually or the system can perform an automated water replacement. The automatic process starts when the scheduled time exceeds and the MFTR has not been in use for long enough time.

The number of days that must elapse between water replacements, can be set by a super user. The time during the day when water replacement must happen, can also be set on this screen.

Scheduled maintenance (**Scheduled Maintenance**) shows when it is time to change or clean the water filter. A super user must confirm the date the maintenance work is performed. This will be registered in a log.

System State (**System Status**) can be used to get an overview of the system. Any bugs/errors in the system can be noted here.

Note: The automated water exchange performs a check to prevent water wastage. This check will not be carried out when the system is operated manually.

14.5 Guide-configuring new Mould

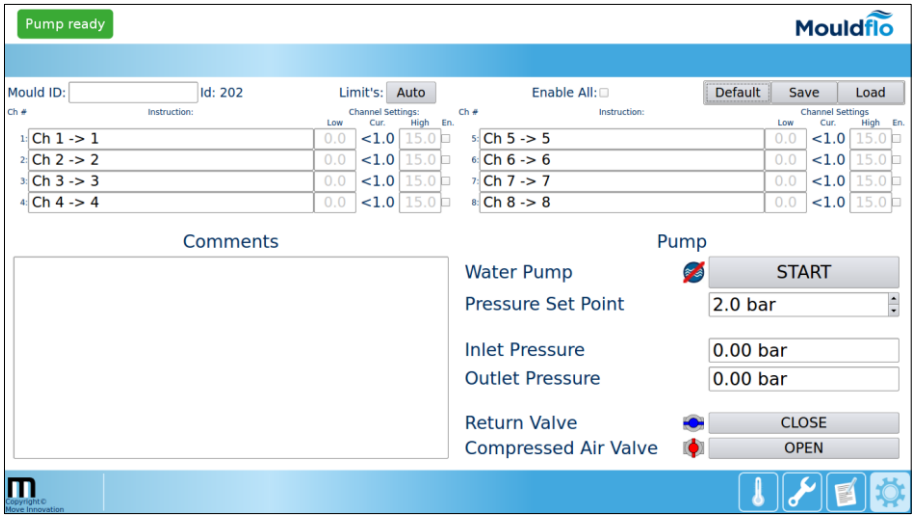
In this section a step by step detail on how to configure and save a new Mould is illustrated.

It is assumed that the Mould is connected to the appropriate hoses and couplings and the pump is switched ON. It is also ensured that the MFTR is properly connected to the compressed air valve, electrical cabinet and computer monitor.

The below mentioned steps illustrates the process of configuring a new Mould:

1. Go to the configuration screen by pressing the gear icon in the lower-right corner of the screen.

   If this is the first time MFTR is used, account shall be taken as a starting point in a default configuration. If MFTR has been used previously, the default configuration is retrieved again by pressing the **Default** button.



2. Give a name to the Mould ID.

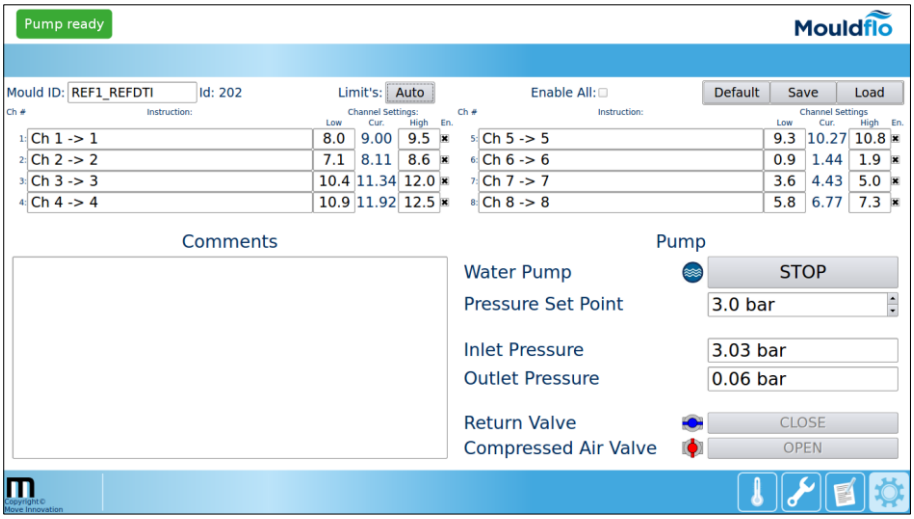
3. Activate the channels to be used by checking a tick box next to each channel. Then enter the connection information for each of the enabled channels.

4. Set pressure in the outlet chamber, by typing this in the Pressure Set Point field, to be used during the testing of the Mould.

5. Flow-limit values can be configured for each channel by entering the lowest (**Low**) and highest (**High**) allowable flow next to each channel. Limit values can be configured quickly based on current measurements.

6. When the Mould is properly connected, start the pump by pressing the **START**-button. The pump starts and the button changes its name to **STOP**. The pressure in the outlet chamber on the manifold increases until the pressure reaches the desired value, and kept constant.

The current pressure in departure and return chamber on the manifold can be read in the **Inlet Pressure** and **Outlet Pressure** fields.



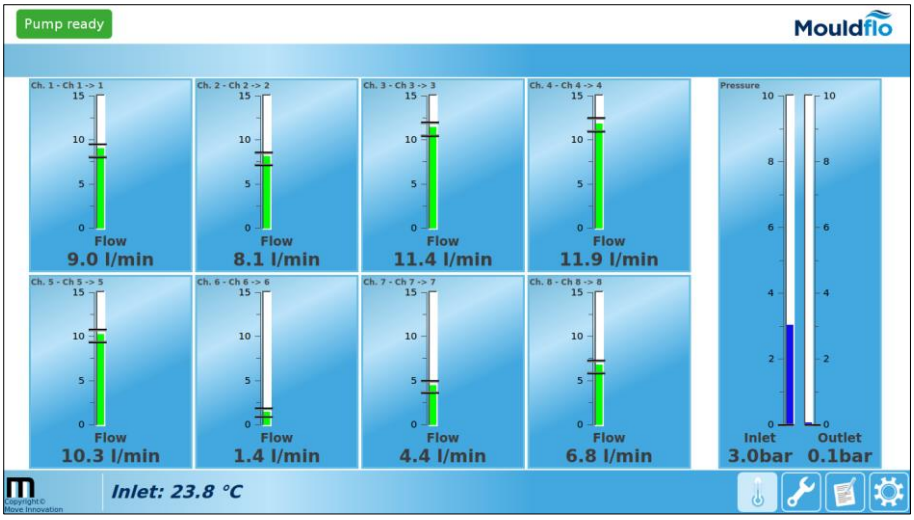
7. Wait for the pressure in the chamber to the desired output value. It takes some time before the measured flow rate for each channel has stabilized. The current flow for each channel is displayed on screen between high and low limit values.

It is possible to use the measuring screen to get a graphical overview of flow and limit values for all 8 channels as well as the outlet and return pressures in the chamber.

The Measuring screen is selected by pressing the thermometer down in the right corner of the screen.

The flow rate for each channel appears in either GREEN or RED bar, depending on whether the flow in the relevant channel is within the specified limit values.

You can return to the configuration screen by pressing the gear icon at the bottom right of the screen.



8. The pressure in the outlet chamber can be adjusted if this is not optimal for the measurement of flow, by changing the Pressure Set Point field. The pump automatically adjusts to the desired pressure, as soon as changes are made in this field.

9. The flow-limit values for each channel can be easily configured during measurement, by selecting one of the predefined limit values in the **Limit** field. This sets the limit values for each channel relative to the current flow in the duct.

10. When the pressure and flow are configured correctly, the setup can be saved on to a file by pressing the **Save** button which is situated at the right hand corner of the configuration screen. While saving the configuration, the user is prompted with a Password dialog wherein the user feeds in the super user password. When the correct password is entered, the configuration is successfully saved on to the file.

Note that it is not possible to save a Mould that has already been created in the system. However, it is possible to save the corrections to an already downloaded configuration.

The Mould is now configured and set up in the system. The automatic flow and pressure tests can be performed on this Mould from the Test screen. For further details, refer the guide below.

14.6 Guide-automatic testing of Mould

This guide describes the step by step process of performing an automatic test of a Mould.

It is assumed that the manifold is mounted on to the MFTR with suitable hoses and couplings. It is also assumed that proper electric and compressed air valve connections

are made to the MFTR. With proper connections in place, the MFTR is connected to a computer monitor running the Mouldflo software. Finally, it is also ensured that the pump is switched ON.

In order to run through the automatic testing process, it is mandated that there be an existing Mould configuration in the system. If this is not the case, then please create a Mould configuration using steps mentioned in section 14.5.

The automatic testing process is illustrated below:

1. Go to the Test screen and press the **Load** button. A dialog box pops up.

2. Select the configuration file for the Mould that needs to be tested and press on the **Open** button. A dialog box pops up displaying the ways the Mould is connected to the manifold.

3. Enter your name in the **Test Person** field and press on the **OK** button.

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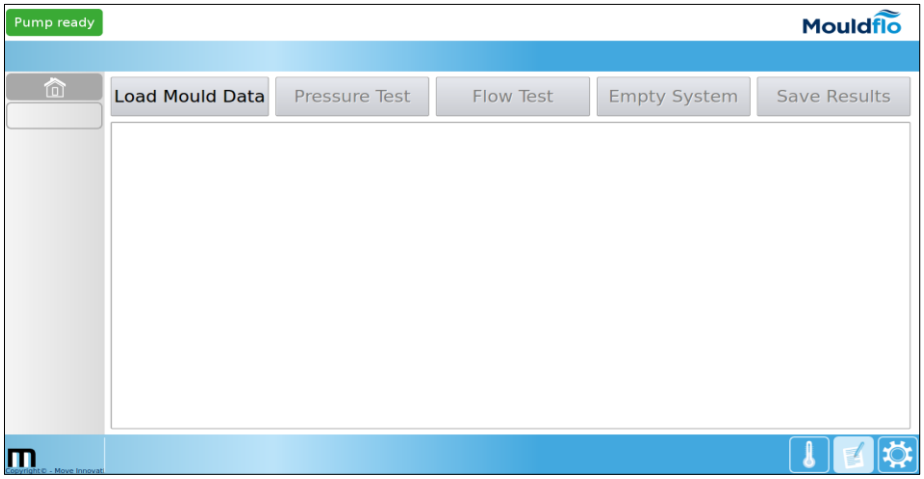
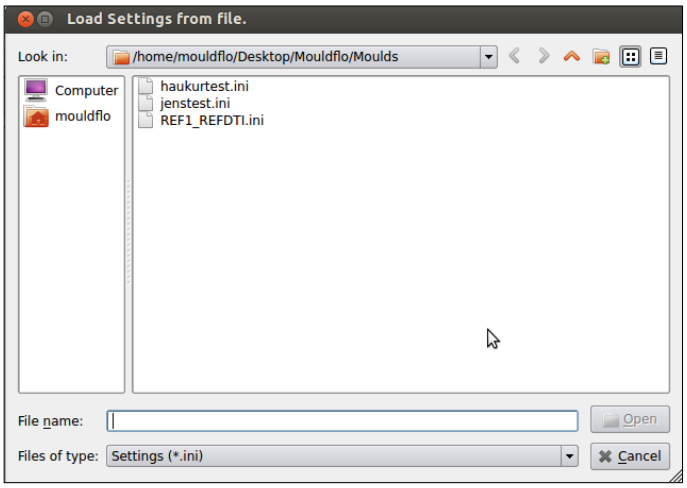
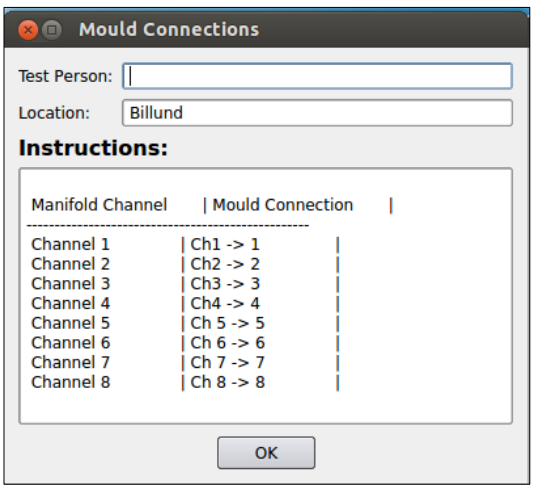
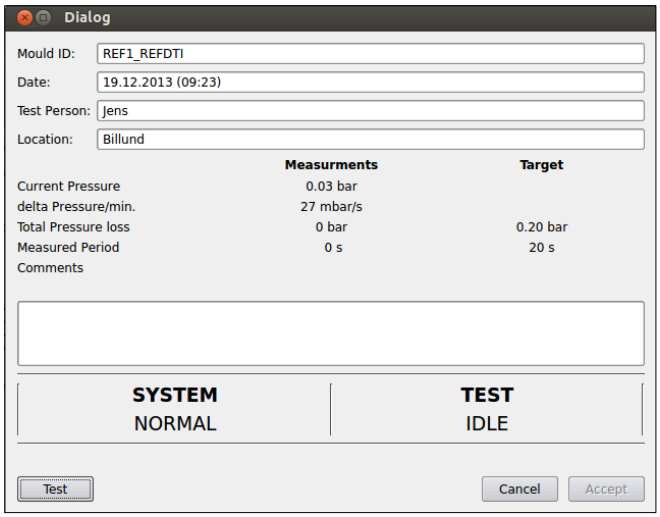






4. Press the **Pressure Test** button to open the pressure test window.

The four fields with information about the test are automatically filled in, but can be corrected manually as needed.



5. Start the pressure test by pressing on the **Test** button. The pump starts automatically and the software performs the automatic pressure test.

In the automatic pressure test, the Mould is first filled with water. Then the water pressure is built up slowly in the Mould to about 4 bars. The pump is stopped, and the software waits for the pressure in the system to stabilize, after which the measurement is carried out based on the parameters specified in the Mould configuration file.

Note! Pressure test can be cancelled any time by pressing the **Stop** button. Once the **Stop** button is pressed, the pressure is removed from the system.

6. When the pressure test completes, the appropriate results are displayed on screen. [Note: A Test Pass / Fail result is displayed].

The Mould remains pressurized until the user pressure either the **Stop or Save** button.

7. When the results of the pressure test is displayed on screen, you have four options:

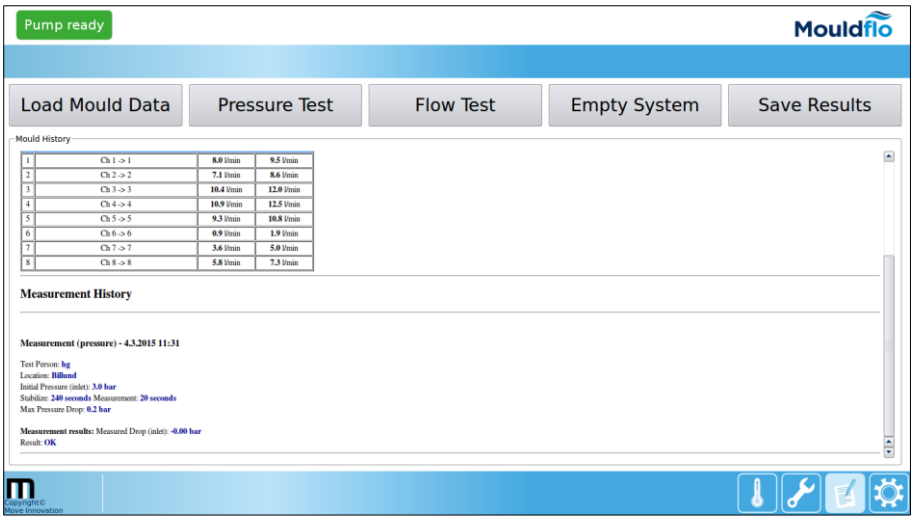
- If you want to accept the results, then you can press the **Save button.** This saves the test results on to a test log which is visible on the screen.
- If you want to reject the results, then you can close the pressure test window by pressing the **Cancel** button.
- Any leaks in the Mould can be examined by allowing the Mould to remain pressurized. Once leaks are identified press the **Cancel** button. The pressure is

removed from the Mould, and it is now possible to remove the Mould and repair the leaks

- If you want to redo the pressure test, then you can press the **Retest** button.

8. When the results of the pressure test are accepted and saved, these are displayed in the log on the Test screen.

The results can now be saved in a Mould log (See the guide in this regard) or a flow test can be performed.



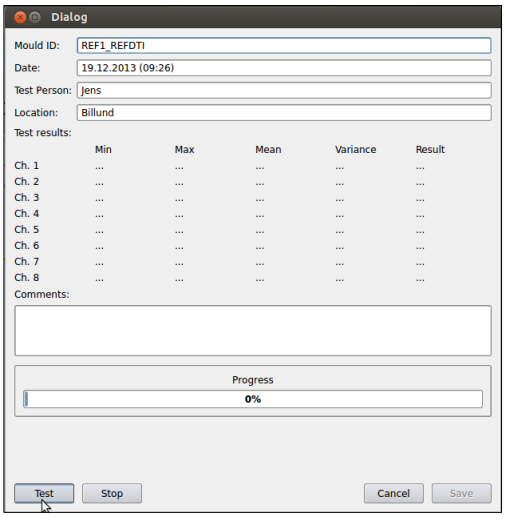
9. Flow test is started by pressing the **Flow Test** button on the Test screen. When the Flow Test button is pressed, a flow test dialog pops up.

10. The fields in the flow test dialog are filled in automatically, but can be changed manually as needed.

11. The flow test is initiated by pressing the **Test** button. The pump starts up automatically and the pressure in the manifold outlet chamber is adjusted to a preconfigured value.

Flow test starts when the flow on all channels is stable. The flow rate is measured over the period that is specified in the Mould configuration file.

The measurement values are updated continuously during the test.

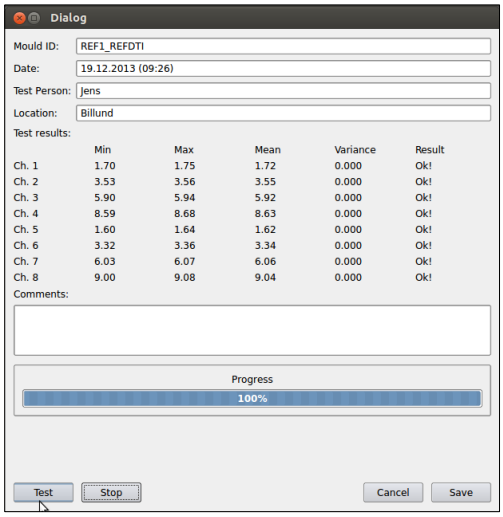


12. When the flow test is performed, flow rate of individual channel is displayed on screen regardless of whether the flow rate is within the specified boundary or not.

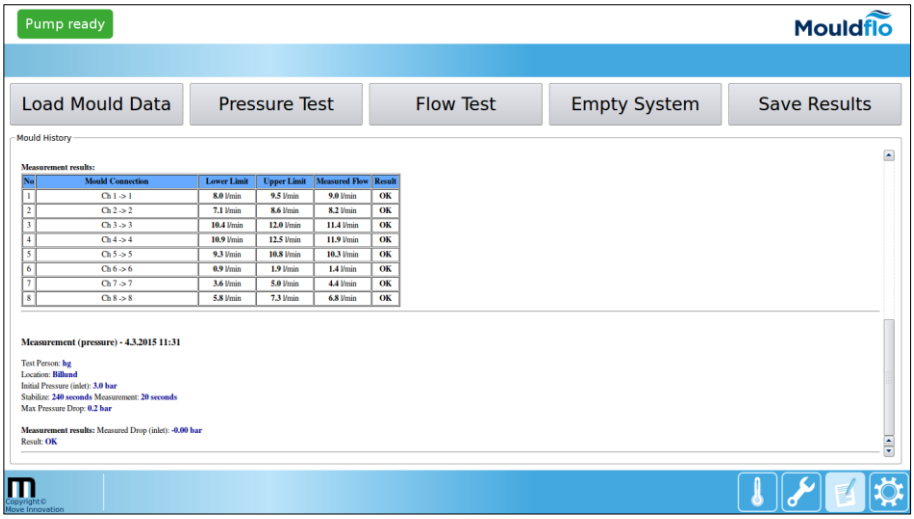
Note! The flow in the Mould continues until the test is interrupted by pressing the **Stop** button or one of the options suggested below.

13. When the flow test completes, there are three options for the user to choose from. They are:

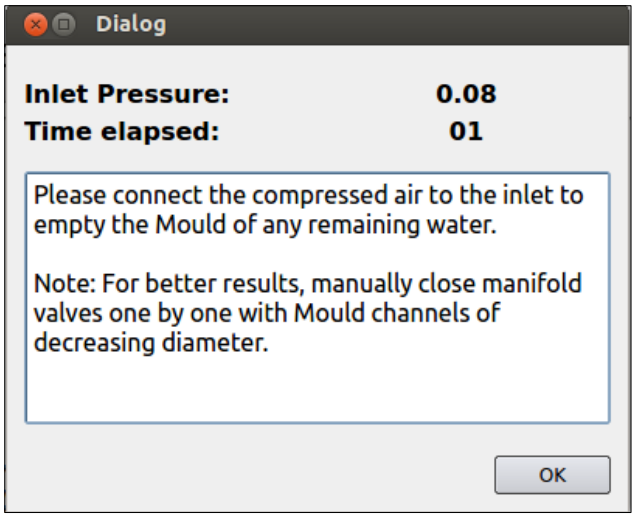
- The test results can be accepted and stored by pressing the **Save** button. When the **Save** button is pressed, the pump stops automatically, flow test dialog closes and the measured results are transferred to a results window on screen.
- The test results can be rejected by pressing the Cancel button. When this is done, the pump automatically stops, the flow test dialog closes and the Mould is automatically emptied of water.
- The test can be redone by pressing the **Test** button again.



14. After doing the above mentioned tests, the water can be drained out of the tubing and the connected Mould by using a semi-automatic emptying function. This can be activated by pressing the **Empty System** button.



During emptying function the return valve is opened and the compressed air supply is activated. This squeezes the water out from the tubes and the Mould.



For best results, it is recommended to start with all channels being opened simultaneously. Then the user can close all channels and empty one channel at a time. It is thus possible to empty both large and small channels.

15. The results of pressure and flow tests are collected in the results field on the test screen.

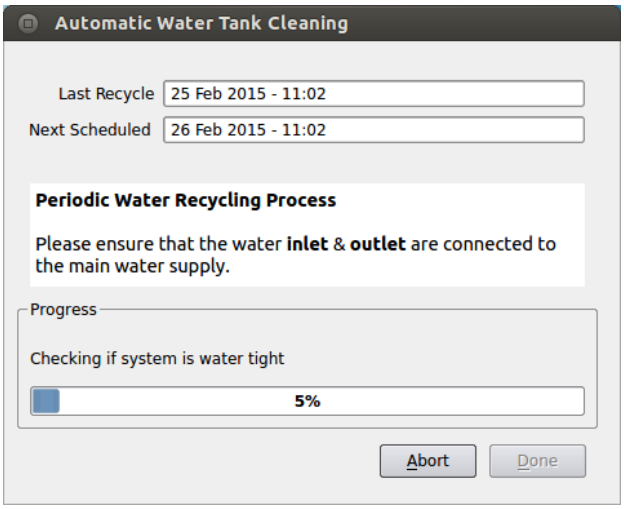
The results can be saved in the Mould log by pressing the **Save Results** button. When this button is pressed a dialog pops up saying that the data has been saved.

The test screen is now reset and is ready for a new test, starting from point 1.

14.7 Guide-automatic water replacement

A new window for automatic water replacement (**Automatic Water Tank Cleaning**) pops up when the user presses the '**Start Now** ' button or when the MFTR has not been in operation for a long time after the scheduled time has exceeded.

Note: If the emergency stop is activated or the On/Off switch is in an off position, then the system may not change water.



The automated water exchange takes place as described in the table below:

1	**Preparing water tank cleaning**	When the window opens, the water process starts in 60 seconds. This allows the user to postpone the exchange of water.
2	**Checking if the system is water tight**	The process stops and reports an error if the system cannot hold the pressure. This is a sign of water wastage.
3	**Checking if connected to water supply**	Before the task is emptied, the system takes care of the central water system interfaces.
4	**Emptying water tank**	The tank is emptied by pumping out the water to the central water system with a pressure of 4 bars. The pump is stops and the process reports an error if the tank is not emptied within a certain time. Note: Under no circumstances should the hoses be connected while the pump is running.

5	**Rinsing system**	The tank is emptied by pumping out the water to the central water system with 4 bars of pressure.
6	**Filling water tank**	The pump switches off and the water filling begins. How long this takes depends on the pressure of central water-supply.
7	**Water tank is ready**	The system is ready for general use.

The user can interrupt the process at any time by pressing the **Abort** button. If the process detects an error, the user can try again by pressing the **Retry** button after the error has been corrected. Subsequent error situations may occur:

Error message	Proposed Action
Please check the Pump	Make sure that the emergency stop is not enabled and the On/Off button is pointing away from the drip tray. When the above mentioned points are setup correctly Pump ready will be shown on screen.
Water Leak Detected!	Make sure all hoses are connected and/or all ball valves are closed.
Flow Detected, Check Return Valve!	The system has detected water flow though the return valve which is set to closed. This can happen if MFTR has not been used for a long time. Try opening and closing the valve a few times to get it loosened.
Please check the water inlet	The system cannot get any water input. Make sure that the MFTR is connected to the central water supply.
Please check the water outlet	The system cannot pump water out. Make sure that the MFTR is connected to the

	central water supply.

15. Calibration and Adjustment

Mouldflo Calibration Unit (MFCU) is used to calibrate (determine the measurement error) the flow measurement channels of the manifold mounted on the MFTR.

Each flow channel on the manifold is measured individually using the MFCU, and the flow measurements are entered into the supplied worksheet, after which the measurement error for each channel is calculated.

The instructions on the calibration process is illustrated below.

If the calibration shows measurement errors, which are outside the acceptable range, an adjustment should be made to the corresponding channel on the Mouldflo Manifold.

Kindly refer to the adjustment instructions below.

It is assumed that the MFCU and the associated spreadsheets "**Mouldflo Calibration Template"** are used to perform calibration and adjustment. The worksheet should be copied and renamed, so that file matches the serial number or similar identifier for the concerned MFTR.

15.1 Calibration Guide

1. Start by making a copy of the" Calibration Template" sheet by right-clicking the tab and pressing" Move or Copy". Select the sheet, tick on "Create or Copy" and rename the sheet to date.

2. Connect channel 1 on the manifold to the MFCU and make sure that the valve is completely open.

3. Close the valves on all other channels.

4. Start the pump and set it to 4 bars.

5. Wait for the flow measurements to stabilize at both MFTR and MFCU.

6. Read the measured flow and enter the readings in the corresponding green fields in the worksheet.

CU: Calibration Unit (Calibration Device)

TR: Test Rig

7. Repeat the test with pump pressure of 2.8,1.5 and 1.1 bars and enter the corresponding measurements. Calculate the error for each measuring point and the median of these for the channel.

8. Repeat steps 2-7 for the remaining 7 channels, if applicable.

The MFTR is now calibrated.

15.2 Alignment guide

Note! Adjusting the MFTR should only be carried out by a person with adequate insight on how the configuration files for the software changes.

1. Laptop or PC: Start by making a copy of the "Default" sheet by right clicking on the tab and pressing "move or copy". Select the sheet and tick "create a copy" and rename the sheet to the current date.
2. MFTR: Close Mouldflo software down by pressing **ALT** and **F4** keys simultaneously.
3. MFTR: Use the Ubuntu file system to open the configuration file that is located in the path: **~/Mouldflo/settings/settings_MFIO.ini**
4. Reset the adjustment values in the file as follows:
   (a) All eight Chx_gain (x is the channel number from 0 to 7) parameters must be set to 1.0.
   (b) All eight Chx_offset parameters must be equal to 0.0.
   (c) Restart the Mouldflo software by pressing on the Mouldflo software icon on the launcher on the left hand side of the screen.
5. Calibrate all the eight channels on the manifold using the guide above while using the adjustment worksheet for entering data points.
6. Calculate two alignment values for each channel when the five measurement points have been entered. The two alignment values indicate a gain and offset. Each channel has a unique set of adjustment values.

   For each channel an error is specified, after every value. The measurement error is corrected with adjustment values. Check if the measurement errors is a percentage within the acceptable range. If a set of values displays a large percentage of errors, these measurements should be displayed.
7. When adjustment values are calculated for all the channels, the configuration file is updated with the new values for amplification (gain) and offset (offset) in the same way as these were reset in points 2-4.

Note that the channel numbers in the configuration file goes from 0 to 7: i.e. the alignment parameters of channel 1 is Ch0_gain and Ch0_offset. Similarly, the alignment parameters of channel 8 equal Ch7_gain and Ch7_offset.

8. Mouldflo software is restarted as in point 4c.

MFTR has now been calibrated and adjusted, so that measurement errors are minimized.

16. Contact us

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