Software manual

MILLCONTROL

PULVERISETTE 7 *premium line*

Read the instructions prior to performing any task!

Translation of the original software manual

Fritsch GmbH
Milling and Sizing
Industriestraße 8
D - 55743 Idar-Oberstein
Telephone: +49 (0)6784/ 70-0
Fax: +49 (0)6784/ 70-11
email: info@fritsch.de
Internet: www.fritsch.de

Certifications and CE conformity

Certification

Fritsch GmbH has been certified by the TÜV-Zertifizierungsgemeinschaft e.V.

TGA-ZM-05-08-00

An audit certified that Fritsch GmbH conforms to the requirements of the DIN EN ISO 9001:2008.

CE Conformity

The enclosed Conformity Declaration lists the guidelines the FRITSCH instrument conforms to, to be able to bear the CE mark.

Table of contents

1 Introduction

1.1 Information

Read this manual carefully. The users of this program must be familiar with the contents of this manual. The copyright of this technical document is owned by Fritsch GmbH. The reprint and reproduction of this operating manual requires the permission of Fritsch GmbH.

1.2 Safety information

WARNING!

When using this MillControl software the control system of the connected mill is deactivated. Therefore the control of the mill is the sole responsibility of MillControl or the user. MillControl can identify and intercept certain faults, e.g. an imbalance when starting, incorrect bowl types or a blockage in the mechanism. If the USB connection is interrupted because the cable was (consciously or unconsciously) disconnected, MillControl will also identify this problem after a few seconds and then switch to a pause mode, to give the user the opportunity to rectify the problem. For safety reasons, MillControl should not be operated unsupervised. If unforeseen exceptions occur, it may be necessary to switch off the mill directly at the main switch to prevent damage occurring.

WARNING!

The user is personally responsible for ensuring that the EasyGTM system batteries are sufficiently charged. Failure to ensure this could cause the GTM system to fail during grinding and thus no longer transmit real values. MillControl can then no longer respond if threshold values are reached. If the software or the PC crashes during operation while the mill is running, it is possible to restart MillControl and switch to direct control. As long as there is no problem in the COM interface, MillControl detects that the mill is running and can then stop it.

1.3 Brief program description

The "*premium line*" planetary ball mills can be applied universally for the fast, dry or wet grinding of inorganic and organic samples for analysis, quality inspection or material testing.

The planetary ball mills are controlled either at the device using a touch display or with the MillControl software. The program enables direct access to the mill for performing identical grinding cycles quickly as well as grinding using SOPs (Standard Operating Procedure). These SOPs allow grinding operations to be standardised for recurrent grinding tasks under identical analysis conditions.

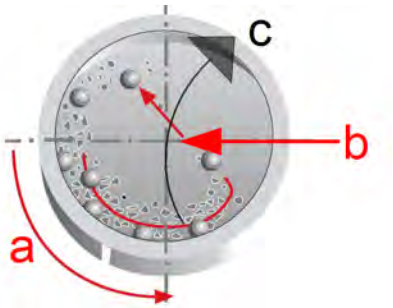
The evaluation of the grinding operations as well as the graphical display of the results can be defined so that standardised reports with the relevant parameters can be created.

MillControl is a file system-based program, i.e. all grinding protocols, SOPs, exports or reports are saved in XML files. This enables all data to be accessed quickly and in a clear manner. Furthermore there is no need to install a database server.

1.3.1 The physical basics

The grinding stock is crushed and ground by grinding balls in a grinding bowl. The centrifugal forces from the rotation of the grinding bowls around their own axis and from the rotating support disc have an effect on the contents of the grinding bowl consisting of material to be ground and grinding balls. The grinding bowl and the support disc have opposite directions of rotation, so that the centrifugal forces alternate in the same direction and in the opposite direction.

The result is that the grinding balls run down the inside of the bowl's wall providing a friction effect and the grinding balls hit the opposite wall of the grinding bowl providing an impact effect.



a Rotation of the grinding bowl
b Centrifugal force
c Movement of the support disc

1.3.2 Definitions

The following table explains the terms used in this manual:

SOP	A SOP is a "Standard Operating Procedure". It defines the processes of a grinding operation using a list of commands. Grinding using a SOP is more flexible than grinding by direct control.
Command	Describes one element of an SOP. Each SOP is made up of one or several commands. These are grouped into program commands and mill commands (which have a direct influence on the mill).
Grinding protocol	The grinding protocol is both the program-internal object structure that manages the raw data for a grinding operation, and the XML file in which the raw data is saved in the archive.
Report	A report is a PDF file created from the raw data. It can be configured roughly to suit individual needs.
Archive	Describes on the one hand the location on the storage medium where all MillControl files are saved, as well as the program item that gives the user access to all the saved grinding reports or allows him to compare two grinding operations with each other. The archive structure is similar to that of the familiar Windows Explorer.
(Grinding) cycle	A grinding cycle in MillControl is a single grinding pass including a subsequent pause (optional).
Operator	Describes the person who conducts the grinding operation. MillControl uses the name of the user who is currently logged in as the standard setting. This name can be modified again when setting the grinding parameters and protocol information. (this is necessary if different users are using the same standard login on a laboratory PC)

2 Installing MillControl

2.1 System requirements

Recommended requirements: Windows 7, Core i5 or better, 8GB system memory, screen resolution 1920 x 1020 pixels

Minimum requirements: Windows XP, Core 2 Duo processor or better, 4GB system memory, 1280 x 800 pixels screen resolution, program space requirements, approx. 10MB (not including disk space for PDF reports, grinding protocols, exports and SOPs)

2.2 Installation

Administrator permissions are required to install MillControl. MillControl is installed in just a few steps. First the Fritsch licensing terms must be accepted. Please read these carefully and in full. Then select the installation directory for MillControl. The setup program first installs necessary components like NET-Framework 4.0, if not already installed. Then the actual program is installed. A quick start icon is created on the desktop and a Fritsch program group is created in the program menu.

Following installation the program language is set to English as standard. The following steps are required to switch MillControl to a German-language interface. Start the program, set the language to German in the configuration screen and then restart the program.

NOTICE!

When installing the optional Prolific USB driver, it is recommended to install the driver first via setup and only then connect the respective mill to the PC using USB. It should then be easy to assign the USB port to a COM port. **Attention:** It can take a few minutes to assign the COM port after the USB cable is connected.

2.3 Addition to the licensing terms

This software is subject to the general terms of use of Fritsch Gmbh. The graphics for the visual display were designed in-house. In some cases free resources were used, which require a reference to their sources. MillControl uses graphic elements (icons) from the Crystal Icon Project, which are subject to the GNU Lesser General Public License (LGPL). In order to fulfil LGPL requirements, the created graphics are located in a subdirectory of the MillControl program directory. According to LGPL regulations, the graphics can be modified or replaced as desired. However, the modified graphics must be the same size as the originals, as otherwise there will be display errors in the software. Free graphics were also used from the website *www.visualpharm.com*. Their use is subject to the Creative Commons 3.0 licence and requires a reference to the website.

3 Overview of the MillControl user interface

3.1 Overview

Firstly, this manual deals with the operation of MillControl and gives each "area" of the program its own subitem. Subsequently it deals with the area of SOPs, including the creation of new SOPs and editing existing SOPs. That is followed by the chapter on automatic grinding using SOPs, which details what the operator needs to know when starting to grind using SOPs.

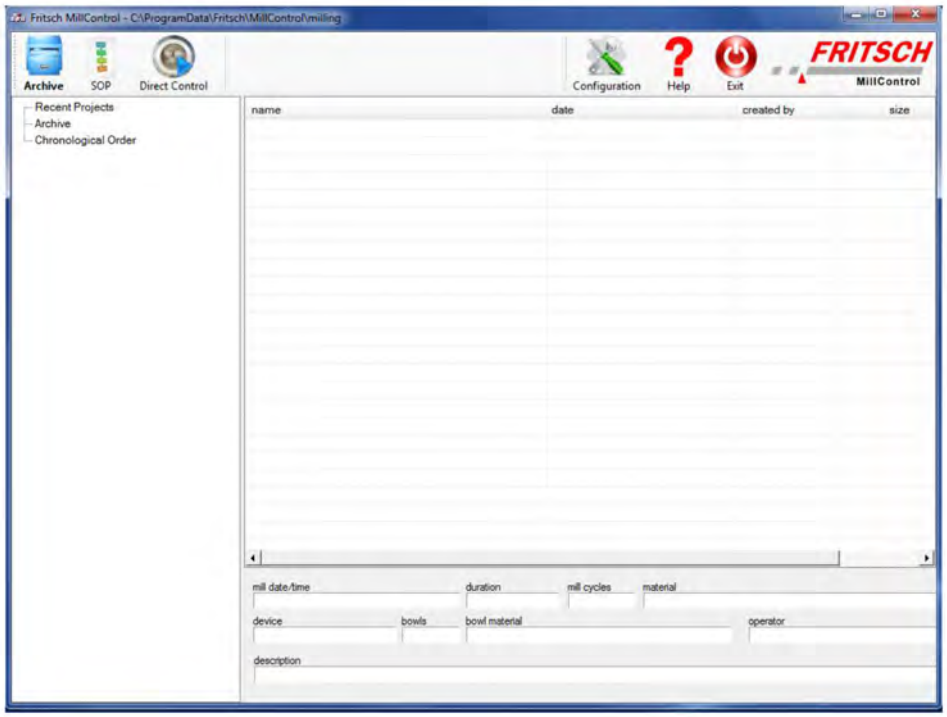
3.2 The start screen

Based on the MillControl start screen, the operation of the software is explained in detail here. ↳ *The following image* shows the MillControl interface directly after starting the program. The quick access toolbar to all areas of the program is at the very top. The functional areas are located on the top left, while the more "administrative" areas are on the right. The Fritsch logo on the top right opens a dialogue window with information about the Fritsch company and the program version number (in the format: Version 1.0 build 4800 rev. 21534). This version number should be communicated with all queries or error descriptions.

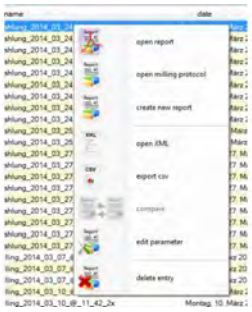
3.3 Archive

The archive gives the operator easy access to all previous grinding protocols or the reports created from them. This makes it possible to view the protocols or compare them with each other with hindsight. The archive is shown in *the following image*. The tree view of the archive is on the left. This tree structure reflects the structure in the file system on the storage medium. It allows you to assign your chosen folder names and to adapt the archive to the infrastructure in each individual company or laboratory etc. Furthermore two additional display nodes can be activated. These are "Recent Projects" and "Chronological Order". Clicking on "Recent Projects" displays a list of recently opened or edited protocols on the right, regardless of which folder they are located in. The "Chronological Order" node has further subnodes. These are structured chronologically in the format year -> month -> day. This makes it possible to retrieve protocols that were created on a particular date. Here it is also irrelevant, in which "real" directory the protocols were saved. The chronological display for a certain day shows a list of all protocols for that day on the right.

Right-clicking on a node under the Archive node displays a context menu, allowing the operator to create new folders and rename, copy, cut, insert or delete a selected folder. The procedure here is similar to that in the Windows Explorer.



On the right in the centre there is a list of all grinding protocols for the selected date or folder and in the lower section there is an information bar with some important settings for the selected grinding operation.



Right-clicking on an entry in the list displays a context menu (see Fig. 1) with the available commands. The following menu items are activated if one or more entries in the list are selected.

'open report and create new report'

Here the operator can open the report for a grinding operation, he can also create a new report using the current report settings. This makes it possible to create short or long reports.

'open protocol'

Clicking on this menu item starts an internal protocol viewer, that displays the most important information about the grinding operation. However the report is recommended for all the details.

'Export CSV'

The operator can export the selected grinding protocol as CSV (comma-separated values). This can then be automatically opened with its associated program (e.g. Excel).

'edit parameter'

If necessary, the operator can insert or change some more grinding parameters retrospectively. This option can be deactivated, if the operator should not be authorised to make changes.

'compare'

If the operator selects two grinding protocols a window opens in which both grinding protocols are displayed beside each other. The display is then similar to that of one single protocol. The operator is not limited to one date but can select a grinding operation on one date, then change to another date and choose another grinding operation there. This activates the compare command. By clicking, the two grinding operations from different folders are then compared. Following image shows an example of one such comparison. The comparison contains basically the same information as the PDF report.

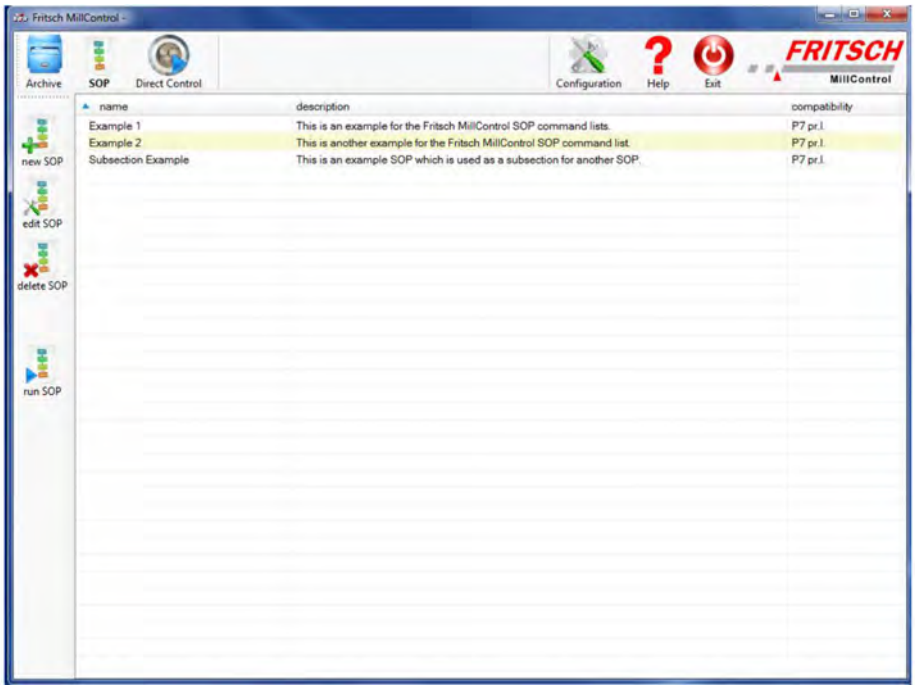
'delete entry'

When deleting entries, the grinding protocol with the raw data is deleted, as well as the corresponding PDF report.

Overview of the MillControl user interface

3.4 SOPs

The SOP section gives the operator a list of all available SOPs in the SOP directory selected. The table contains the name, the description and which device this SOP is compatible with.



As shown in ↪ *the previous image* the list of SOP options is on the left. They include creating a new SOP, and also editing, deleting and performing a SOP that is selected in the list. These items also appear in the context menu when the operator clicks with the right mouse button in the SOP list.

Creating new SOPs and editing existing SOPs is covered in detail in the SOP management section. Performing SOPs as well as information on creating safe SOPs for hazard-free grinding are found in the section '(Semi-)automatic grinding using SOPs'.

3.5 Direct control

The Direct control section gives fast remote access to the mill and to the programming of identical grinding cycles. This area corresponds to a large extent to the control system of the mill itself. The operator can set the same parameters for grinding cycles and for the EasyGTM system, as those set at the mill. Furthermore he can access the location of the grinding bowl and the grinding chamber lock. The information on the grinding bowls that are used is displayed in the top part of the Direct control window. This includes material and bowl type, and the production number is also read from the RFID. If the EasyGTM system is used on a grinding bowl, its current values are also shown.

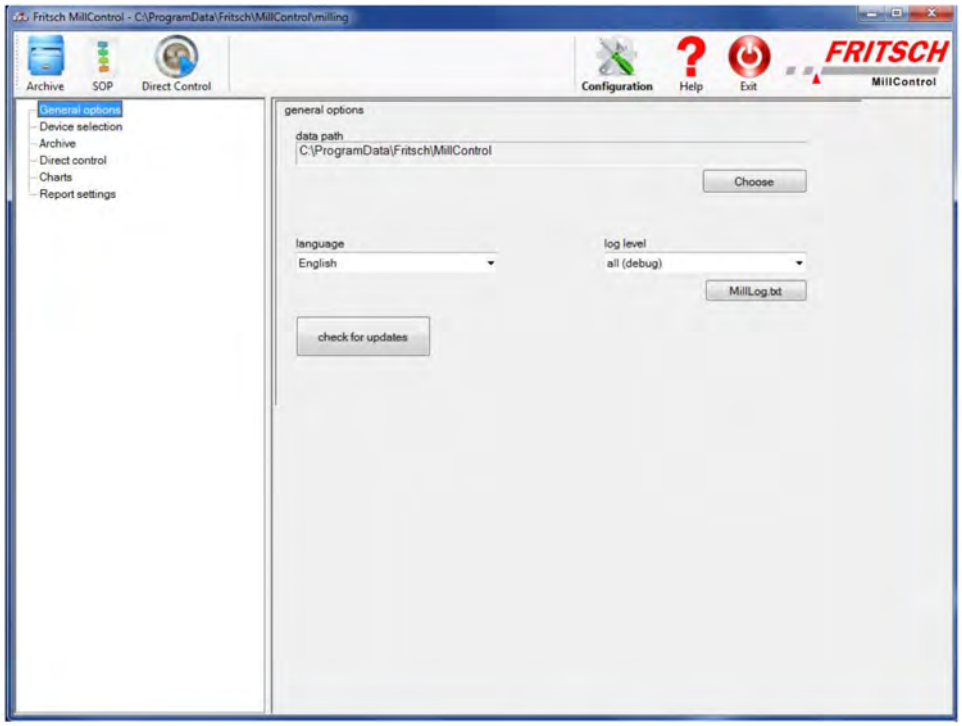
The EasyGTM bowls in Version 1.0 normally display the ambient pressure. By clicking on the 'Tara' button it is possible to tare the sensor on the software side so that only relative pressure increases are shown in the protocol. MillControl memorises the pressure of the relevant bowl at that time and subtracts it during grinding from the current pressure.

E.g. A bowl displays a normal pressure of approx. 1 bar. During grinding the pressure increases to 2 bar, but has only increased by 1 bar in real terms. As a result of taring, the normal pressure is subtracted and a nominal pressure of 1 bar is displayed.

Once all values have been set, the grinding process can be started by pressing the "Start" button on the bottom right. Using the "start offset in minutes" parameter, it is possible to postpone the actual start of the first cycle by a defined time (in minutes). This means a grinding process can be programmed to start at a time when the noise pollution is not disruptive. As soon as a grinding process is started, the same dialogue as for grinding with SOPs appears (see Fig. 4 in Chapter 5.3). This dialogue provides all the important information during the grinding process.

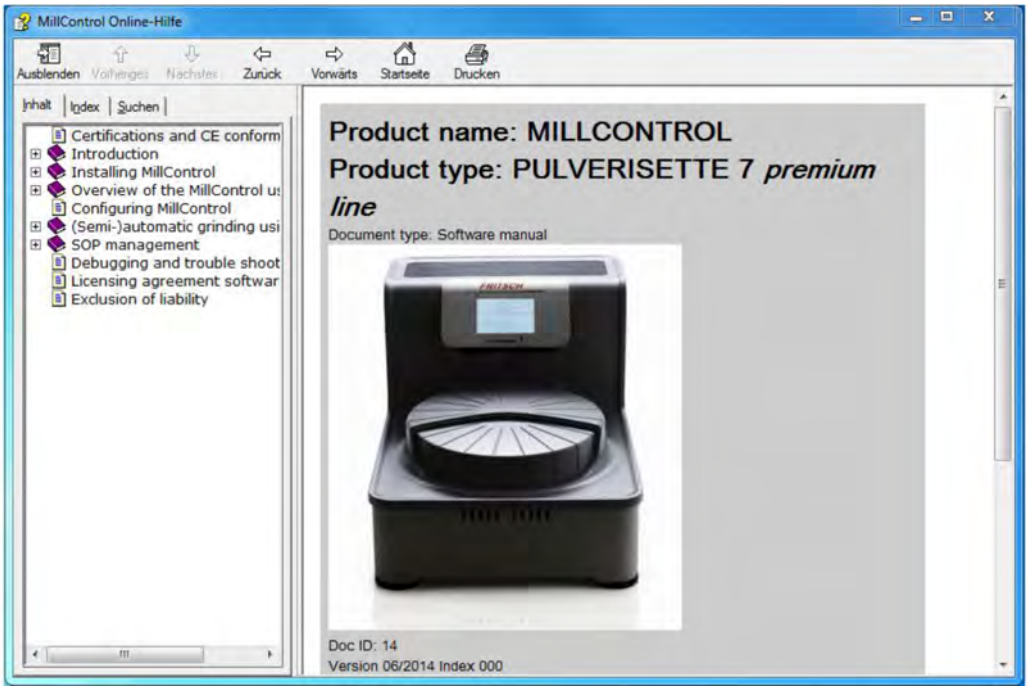
3.6 Configuration

In the Configuration area the operator can adapt several MillControl parameters to his personal preferences. These "setting screws" are arranged in groups that correspond roughly to the program areas. This is partly shown in *the following image*. The available options and their effects will be explained later in the Configuring MillControl section.



3.7 Help

Clicking on the *'Help button'* opens the online help for MillControl. The help has a modular structure. When a section is selected on the left, the description of the section appears on the right. This is basically the same information that is in this manual. The help can also be opened by pressing the *[F1]* key. Some program parts are linked to special sections of the online help. If the operator is in *'SOP management'* and presses the *[F1 key,]* then this section also appears in the online help.

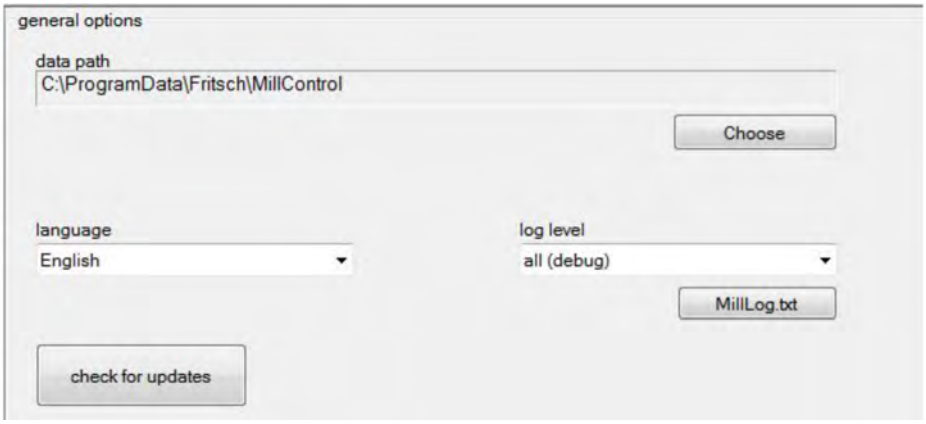


3.8 Exit

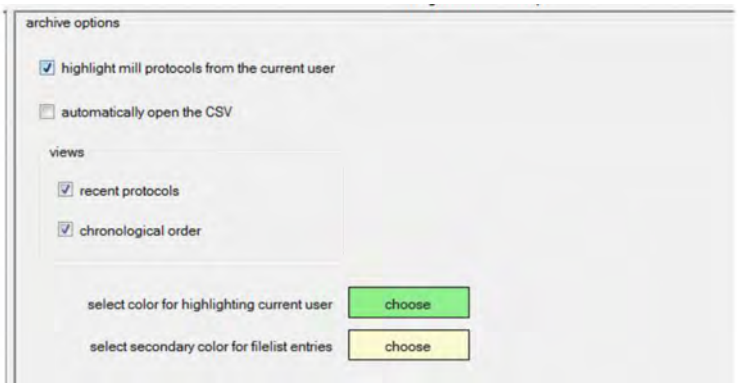
Clicking on this button exits MillControl.

4 Configuring MillControl

The configuration screen of MillControl is divided into the following logical sections:

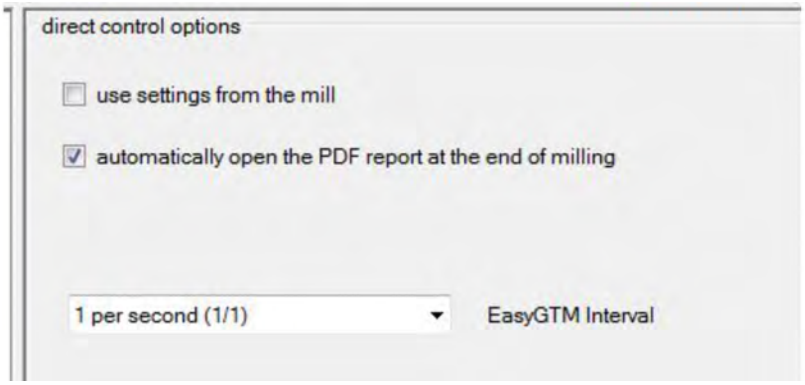


On the one hand there are *'general options'*, where you can specify the path under which MillControl saves protocols, reports, exports and also SOPs. You can adapt MillControl here to regional circumstances by switching to the desired language and restarting MillControl. Furthermore the log level is changed here, i.e. which messages are saved in the log file; only errors encountered that affect the further execution of the program, only warnings that do not prevent further execution, or all messages. The all (debug) setting is recommended if reproducible problems occur, as a complete log file enables an exact error analysis to be carried out. If it is necessary to open the log file or send it to Fritsch customer support, the folder can be accessed by clicking on the *'MillLog.txt'* button.

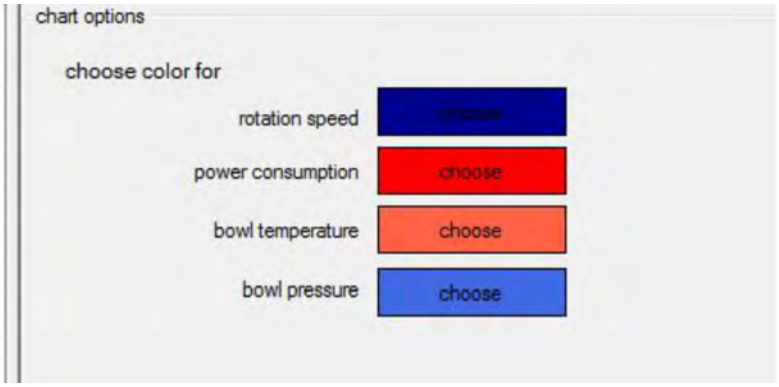


In *'archive options'* you can set, whether the current user's grinding protocols should be colour-highlighted to differentiate them from all other protocols. This setting is particularly advantageous if several operators are working with MillControl on one laboratory PC. Furthermore the highlighting colour can be specified and also the secondary colour for the list of grinding protocols. This colour helps to make the list clearer. Every

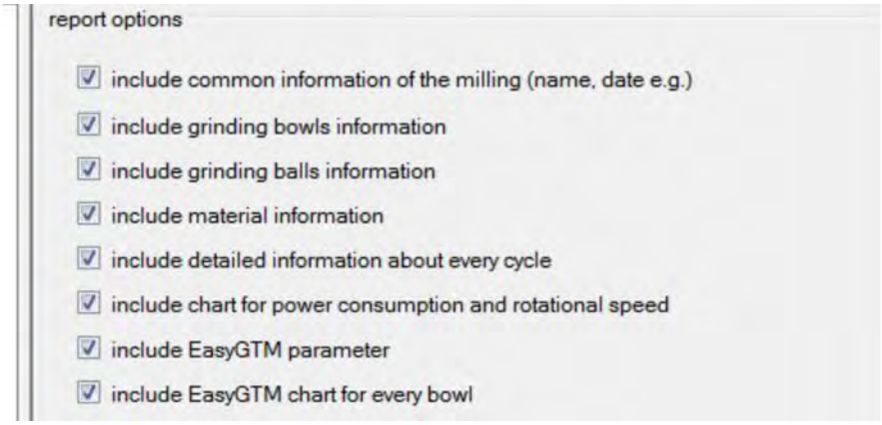
second line has a different colour. If the 'automatically open the CSV' option is activated, the system program linked to CSV files is opened directly after export. The view selected directly affects the display in the archive. The archive view, which is the actual directory structure, is always active. The chronological view and the view of the most recently used files can also be activated or deactivated here.



Furthermore in *'direct control options'* it is possible to set whether the PDF report should be opened automatically directly after grinding. If the settings from the mill itself should also be preset for direct control, then this option must be activated. If the option is not activated, MillControl remembers the recent parameter settings and uses them as default for direct control (irrespective of the mill values themselves).



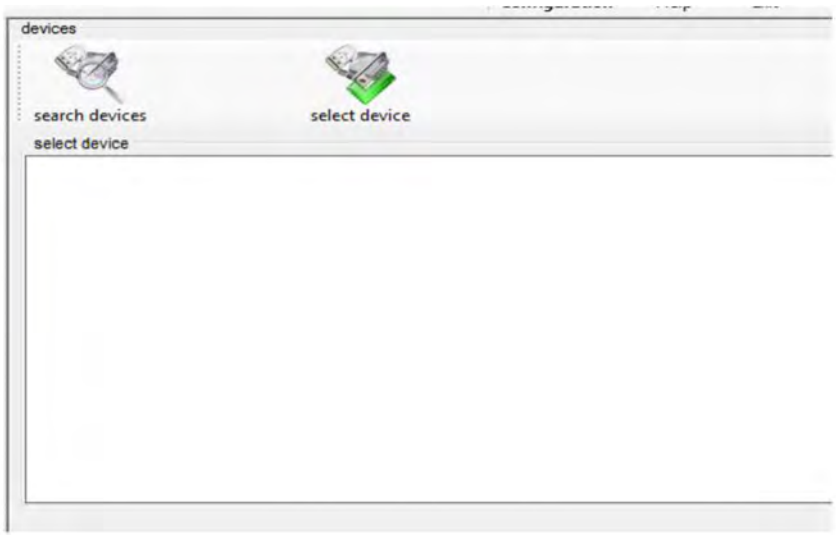
The colours of the lines in the charts can be individually defined for each category in *'chart options'*. The colours for bowl temperature, bowl pressure, rotation speed or power consumption can be adapted as desired. Simply click on the colour box to see a preview of the current colour setting.



In *'report options'* you can define which items should appear in the PDF report. Every activated item, whether it is a chart, table, etc. appears in the report. If a short report is required, the unnecessary sections can be simply deactivated.

The 'select device' section is helpful if several mills are connected to a laboratory PC or if different mills (even at different COM ports) are often controlled by the same PC. Here the operator sets the mill to be used at least once.

When starting MillControl all the COM ports found are tested for the availability of compatible devices. If a mill is not connected or is switched off at the start of the program, then the 'select device' section is initially empty. As soon as the mill has been connected or switched on, the *'search devices'* button can be clicked to start a new search for connected devices.



A connected mill can be selected as the "active" mill by double-clicking it or by selecting it and clicking the *'select device'* button. All subsequent access and grinding processes (also using SOP) then apply to the selected mill.

5 (Semi-)automatic grinding using SOP

5.1 Overview

Performing grinding operations using SOPs gives great flexibility when choosing suitable speeds for certain grinding tasks. SOPs can be created, to carry out recurrent identical grinding tasks with minimum operating effort and to log them at the same time. Another major benefit of SOPs is the option to mix different cycles with various speed, time and pause parameters in one grinding operation. If several operators work with MillControl on one laboratory PC, they can run their own grinding programs using SOPs without having to change the values at the mill every time. This means the operators achieve a high level of flexibility and productivity. The automatic logging of all necessary key figures makes it possible to retrieve certain grinding tasks or to compare results with each other.

In automatic grinding most commands are represented by a dialogue window. In the simplest case, this dialogue just gives information about the executed command, waits for a user action or gives interactive control over the grinding operation. Other commands have no dialogue, i.e. no user interaction is required in order to execute these commands. These commands are described briefly below.

5.2 SOP commands with no dialogue

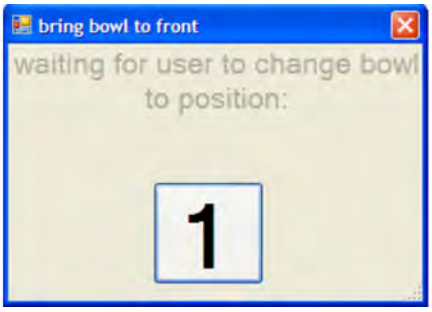
If an *EasyGTM thresholds* command was defined in the SOP, then the operator would usually also have defined the thresholds at that time. For this reason this command has no dialogue and does not wait for operator input. The values set in the SOP are simply adopted in the current configuration and taken into account for the next grinding process.

Furthermore there is no dialogue for the *subsection* command in the real sense, as all this command does is execute a selected SOP. However its SOP commands in turn could have dialogues.

5.3 SOP commands with a dialogue

NOTICE!

Clicking on the corresponding button or clicking on "X" aborts the current command. Aborting a command will abort the SOP completely.



The dialogue in the left image is for the *'set bowl position'* command and is waiting for user input in the example, i.e. for the operator to click on the *'1'* button to bring bowl 1 to the front position.

This dialogue window (see Fig. on the left) appears for the *'pause'* command. The waiting time that is set is shown at the top and underneath that a timer is running with the elapsed time. At the bottom there is a large *'abort'* button, which, when clicked, ends the pause and the further execution of the complete SOP.

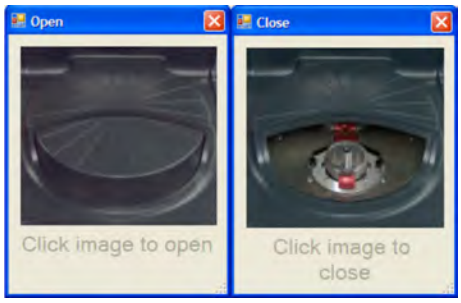
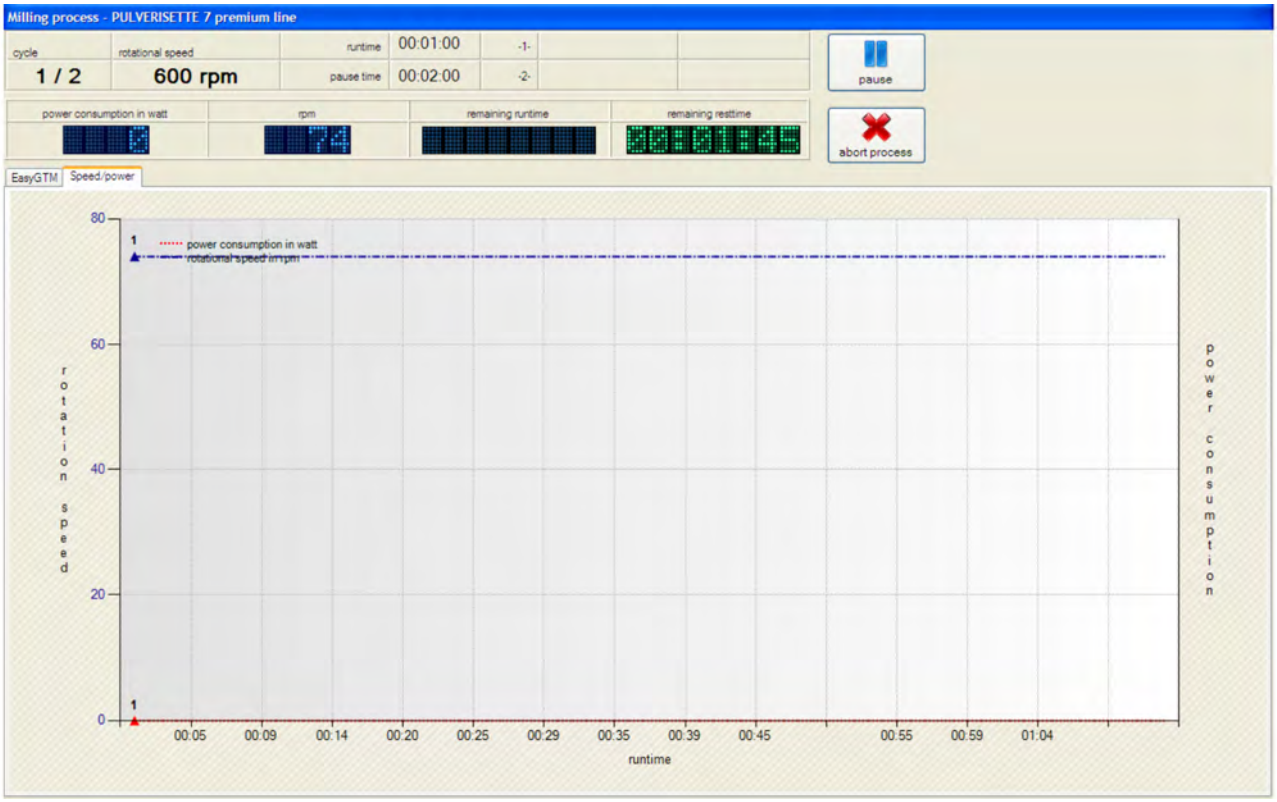


Fig. 1: Opening and closing the grinding chamber

The dialogues to *'open'* and *'close'* the grinding chamber are almost identical apart from the images and text (see Fig. 1). Here both dialogue windows are waiting for user input. The operator must click on the image to manually activate the individual command. Clicking is not necessary if the command is defined as automatic (no user input).

The *'millcycle'* command has a full-screen-sized dialogue (see the following image), with all the important parameters for the current grinding process at hand. This dialogue window is also used for grinding by direct control. All the parameters set are shown in table format at the top. The displays showing the current values from the mill are directly underneath. These include the rotational speed, power consumption and two stop watches for run time and pause time. To the right of that there are buttons for interrupting the grinding cycle. With *'abort process'* the current grinding cycle and the SOP are aborted. By clicking on *'pause'* the mill is stopped if necessary and the operator can directly access the grinding chamber or the bowl positions. A grinding chamber can even be accessed in this way during a cycle to, for example, check the tensioning of the bowls. Clicking again on *'pause/continue'* continues the grinding process.



There are two tabs for the charts in the lower section. For improved clarity, the mill key figures, rotational speed and power consumption, are separated from the bowl key figures, temperature and pressure. If the EasyGTM system for the grinding process is switched on, the chart for bowl data appears, otherwise the chart for mill data is visible.

The charts are divided into the following sections as standard. The time axis is on the X-axis and displays the time dynamically for the data points. The bowl pressure or the rotational speed of the mill is on the left Y-axis, while the bowl temperature or the power consumption is visualised on the right Y-axis. Every new grinding cycle in a grinding process is numbered on the chart and displayed in enlarged form. This means that the individual grinding cycles in the chart can be quickly distinguished from each other.

6 SOP management

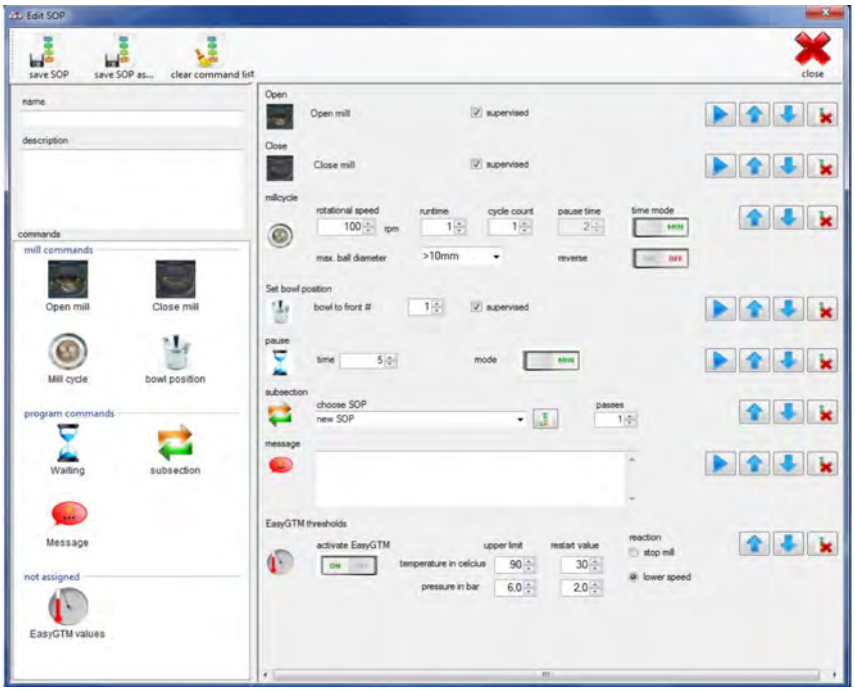
6.1 Editing SOPs

If a new SOP is created or a SOP selected from the list is edited, the Edit SOP dialogue appears. The structure of this dialogue is shown in ↯ *the following image*. The menu for saving the created or edited SOP is at the top. Using *'save SOP as'*, an open SOP can be saved under a new name. The menu item *'clear command list'* deletes all the existing commands in the command list.

NOTICE!

Attention: The command list is deleted without any further query!

When you *'close'* the dialogue, any changes made to the SOP are checked for (e.g. new commands added or deleted). Then the program warns that the SOP must be saved before closing it.



There are free text fields in the left section of the editing dialogue to give the SOP a name and a short description. These two details appear later in the SOP overview and are therefore designed to illustrate the function of each SOP to the operator at first glance. Take the time to make these details as concise as possible.

It is recommended to change the naming convention for subsections, so that they can be more easily distinguished in SOP management (e.g. "SUB_xxxxxxx"). However this is not mandatory and depending on circumstances may not be desired, as the subsections by their nature can also be opened directly.

The command list, summarising all available commands, is underneath the text fields. A graphic look was chosen for the commands to facilitate intuitive editing. Each command is represented by an intuitive graphic and a name. Commands can be added to the command list in two ways. On the one hand the commands can be dragged and dropped into the command list area. On the other hand simply double-clicking on a command will add it to the end of the command list.

If the mouse pointer remains on a command for a short time, a tool tip appears with a description of the command.

The added commands appear in the command list as boxes designated by the corresponding graphic for the command and its setting options, if available. The options offered by each individual command are explained clearly in *Chapter 6.2 'SOP command elements' on page 24*.

Each command in the command list has three or four buttons on the right. On the one hand there are the *'up'* and *'down'* buttons, to move a command within the command list. On the other hand there is the *'delete'* button, to delete an individual command from the list. The *'run'* button, is only activated for some commands, to give a preview of the command action.

6.2 SOP command elements

The command elements available are explained in detail below. The look of the command elements in the command list is also shown or described and the effects of their parameters. Every SOP command is represented by a special icon. This is shown in the list of available commands (on the left of the editing dialogue) and appears again in the display of options for each command.

The first command element for the SOPs is the *'subsection'*. This command element is designed to execute any list of commands (SOP). Thus the root element of each SOP is simultaneously a subsection-type element. Furthermore in each SOP, any other SOP can be opened as a subsection and even processed several times as a loop.

In this way standard tasks can be packaged in individual sub SOPs, that can then each be opened by other "work" SOPs. An example would be the process directly after grinding. The following command elements would be used for this: Open the grinding chamber, move bowl 1 to front position and bowl 2 to front position according to operator input. These three commands would be packaged in a sub SOP called "After grinding" and at the end of each SOP the subsection with this sub SOP would just have to be added. This saves time when creating SOPs and prevents possible errors during creation.

If a *'subsection'* is added to the command list, a graphic representation of the command is added to the command list. The distinctive command icon is on the left, followed by a list of all selectable SOPs for the subsection, with information on how often it should be repeated. The command button directly after "choose SOP" allows you to edit the selected SOP or create a new SOP if "new SOP" is selected.

NOTICE!

Attention: MillControl does not check a SOP for logical errors. If, when using a subsection, SOP A opens itself or another SOP B, which in turn opens the original SOP A, this results in an infinite loop. Therefore the subsection command should be used with caution.

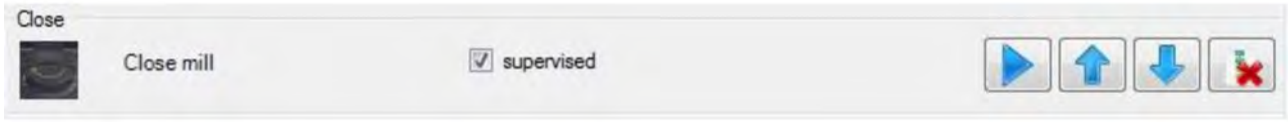
If the operator adds the *'millcycle'* command, he can program identical grinding cycles. All the necessary parameters for one (or several identical) grinding cycles can be set here. They include rotational speed, runtime, pause time (for several cycles only), time mode (minutes or seconds), reverse on/off and max. ball diameter.

NOTICE!

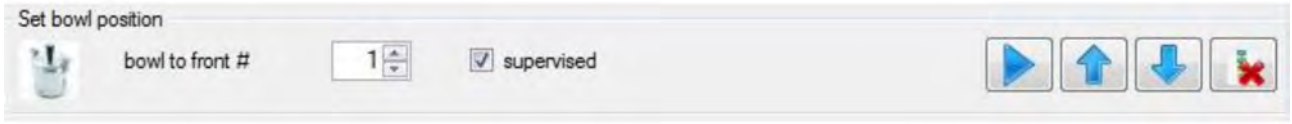
If activating "reverse" in a grinding cycle, note that a maximum runtime of five minutes is permitted. If the option is activated, MillControl reduces values higher than 5 min automatically and does not permit longer running times.

Note that the "pause time" only becomes visible if the user sets more than one cycle. There is no further pause after the last cycle (or after just one single cycle either). A manual pause must be inserted there if one is desired. (see below)

The *'pause'* command allows specific pause times to be programmed during the cycles. This makes sense if several different grinding cycles should be programmed. A pause can be inserted after a cycle, before a further grinding cycle command is executed. The mode (minutes or seconds) and also the length of the pause can be set.



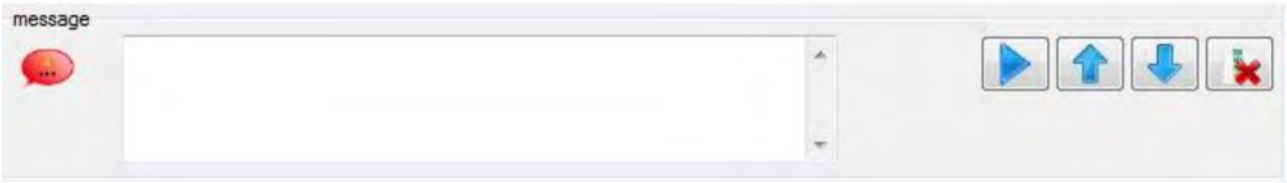
The commands to *'open'* and *'close'* the mill look identical. They contain just the icon, the command name and the switch allowing opening or closing via active user input. For user input, the program waits to execute the command until the operator gives his OK.



The *'set bowl position'* command may also wait for the operator's input. This is necessary, for example, if bowl 1 is brought forward first and the program should bring bowl 2 forward after that. Here the program would have to wait until the operator removes bowl 1 from its holder and then change to bowl 2 by user input. Of course the bowl, that should be moved to the front position, is also specified.

Using the *'EasyGTM thresholds'* command, the operator can activate the monitoring of the grinding process and set the temperature and pressure thresholds, at which the system should react. However to do this the command must be inserted before a grinding cycle command in the list, as it only has an effect on subsequent commands.

The corresponding reaction if the upper threshold is reached can also be defined. The mill can be stopped or can continue to turn slowly to ensure optimum cooling of the grinding bowls. This command can, if necessary, be reselected before every *'millcycle'* command so that either different thresholds or another reaction can be set for every grinding cycle. If desired, the EasyGTM system can also be switched off again with this command after a grinding cycle.



The purpose of the "message" command is to display information during an SOP. An information field opens, depending on the position of the command in the SOP.

7 Debugging and trouble shooting

MillControl has been tested extensively. However if unforeseen errors or program crashes occur, the first step is to clarify the constraints, in order to exclude possible operating errors. You can also consult the table below, which gives explanations or troubleshooting suggestions for the most common error messages.

Once operating errors have been ruled out, the next step is to repeat the grinding process under the same conditions to reproduce the error that occurred. First the log level should be changed from the standard "only errors" setting to "All (debug)". MillControl normally writes all error messages into a separate text file, which in this case is all the information which, in the event of an error recurring, makes it easier for customer service to reproduce the grinding process or the error and find a solution.

If the log level is set to "All (debug)", where possible repeat the grinding process that led to the relevant error. If the error recurs, contact Fritsch customer service and forward the logging protocol (e.g by email). You will find the logging protocol file in the directory that was set when MillControl was configured. The file is called "MillLog.txt".

Attention: *In some cases the log file can be quite large. The file must be compressed into a ZIP archive in order to send it by email. If you require help with this, please contact your administrator. After debugging don't forget to reset the logging level to "only errors".*

Fault description	Cause	Remedy
Message "The COM x port is not present"	Mill is switched off.	Switch mill on.
	USB cable not plugged in.	Check USB connection at the PC and the mill.
	Communication connection "crashed"	Switch mill off and on again. Restart MillControl/Windows.
Message "Long waiting time for answer from serial port..."	Mill is switched off.	Switch mill on.
	USB cable not plugged in.	Check USB connection at the PC and the mill.
	Communication connection "crashed"	Switch mill off and on again. Restart MillControl/Windows.
Graphics and icons are not shown at all or only partly. Instead "Image not found" is displayed.	The directory containing the graphics for MillControl was possibly deleted or moved to another place by mistake.	Check the existence of the "Images" or "Images\Icons" directory in the MillControl program directory.

Fault description	Cause	Remedy
	Lack of access rights could possibly prevent access to the directories.	Check the access rights for the directories. Contact your administrator about this.
Program only runs in English. Switching to another language does not work.	Here usually incorrect access rights prevent the modified configuration (and also the switchover to another language) from being saved. But it is also possible that the directory containing the language capabilities was deleted by mistake.	Check the access rights and the existence of the "language" directory in the MillControl program directory. Contact your administrator about this.
Changes in the configuration are not saved or are acknowledged by an error message.	See explanation on failed language switchover.	See explanation on failed language switchover.
PDF report could not be opened.	Normally occurs if no PDF viewer (e.g Adobe Reader or similar) is installed.	Solution: Install a PDF viewer and link the PDF file type with the viewer.
Recurring communication problems between MillControl and the connected mill.	These problems are often caused by an unshielded or inferior USB cable.	Replacement with a high-quality USB cable with a ferrite core for interference suppression normally solves these problems.
Mill is running but MillControl is not displaying any more mill values and appears to be frozen.	See explanations for recurring communication problems.	See explanations for recurring communication problems.
The mill is no longer reacting to MillControl control commands.	See explanations for recurring communication problems.	See explanations for recurring communication problems.

Error messages also appear in the created report. They are assigned to the individual cycle in which they occurred and are in the grinding cycle table. They consist of, e.g., messages that the grinding process was aborted by the user (and when) or that the grinding process did not take place due to an error. They normally concern errors in the mill, which are also documented. Such errors are, e.g., a stop due to a detected imbalance (Code 1001) or due to a blocked grinding chamber lid (Code 1005).

8 Licensing agreement software copyright

Agreement

The retail customer is only authorised to use the software on the following conditions. Once the software is used, the retail customer accepts these contractual conditions. The following agreement is therefore between the user and FRITSCH GmbH, Idar-Oberstein:

The subject of this agreement is the computer program recorded on data media, the corresponding description and operating manual as well as all other associated written material. It is referred to below as "software".

For the period of the agreement FRITSCH GmbH retains the basic (not exclusive) and personal right - referred to as licence in the following - to use the software on one single computer, i.e with only one central processing unit (CPU) and in only one location. Any additional use is prohibited.

It is prohibited for the licensee to:

- transfer the software or the associated written material to another party without the written consent of FRITSCH GmbH, to give another party access to it, or to transfer the software via a network or a communication channel onto another computer,
- to change, translate, carry out reverse engineering on, decompile or disassemble, or produce derived programs from the software or to copy, translate or modify the written material for another party or to produce derived programs from the written material.
- By purchasing, the licensee acquires ownership of the physical data medium but not the rights to the software itself. The ownership of rights remains exclusively with FRITSCH GmbH. In particular FRITSCH GmbH reserves all rights to publish, process and use the software.
- The software is protected by copyright on the part of FRITSCH GmbH. As licensee you are authorised to make one (1) copy of the program solely as a backup copy. The backup copy must reflect and contain the reference to the copyright of FRITSCH GmbH. You are not authorised to remove existing references to the copyright or the registration number in the software.
- You are expressly prohibited from copying the computer program and the written material or reproducing it in any way, in full or in part, in original or modified form, as a merge program with other software or as a component of another software.
- Any transfer of the software to another party is expressly prohibited. The transfer of the program package to another party is only permitted with the written consent of FRITSCH GmbH.
- This is not a temporary agreement. In the case of non-compliance with the clauses of the agreement you will lose the usage rights. In this case you are obliged on request to destroy or return to FRITSCH GmbH the original program, all existing copies, the recorded computer program including all modified copies and the written material.
- You are liable to FRITSCH GmbH for any damage incurred by FRITSCH GmbH arising from failure to comply with the clauses of this agreement.

- FRITSCH GmbH is authorised to perform updates or create new, revised versions as it sees fit. In this case the replacement or update of the software takes place at your request, only against payment of the amount specified by FRITSCH GmbH for each update.
- FRITSCH GmbH guarantees the licensee that the data medium on which the computer program is recorded on the delivery date is free from material damage under normal conditions of use and service.
- Any further guarantee on the part of FRITSCH GmbH for existing defects is excluded. In particular FRITSCH GmbH does not guarantee that the software works with other programs selected by the purchaser.
- Liability for damages, incurred by the licensee is also excluded, provided that they are not caused deliberately or as a result of gross negligence on the part of FRITSCH GmbH. Any consequential damage arising from this guarantee is not included in the liability.

9 Exclusion of liability

Before using the product, be sure to have read and understood this operating manual.

The use of the product requires technical knowledge; only commercial use is permitted.

The product may be used exclusively within the scope of applications set down in this operating manual and within the framework of guidelines put forth in this operating manual and must be subject to regular maintenance. In case of non-compliance, improper use or improper maintenance, the customer assumes full liability for the functional capability of the product and for damage or injury arising from violating these obligations.

This operating manual has been prepared to the best of our knowledge and checked for accuracy at the time of printing. FRITSCH GMBH assumes no guarantee or liability whatsoever for the accuracy or completeness of the contents of this operating manual, including but not limited to the implied warranties of merchantability and fitness for a particular purpose, unless liability is expressly prescribed by applicable laws or jurisprudence.

FRITSCH GMBH expressly reserves the right to modify and/or update this operating manual without prior notice. The same applies to modifications and improvements to the products described in this operating manual. It is the responsibility of the user to ensure that they have the current version of this operating manual. For more information, please contact your local FRITSCH GMBH distributor or Fritsch GmbH, Industriestr. 8, D-55473 Idar-Oberstein.

Not all parts shown here are necessarily installed in the product. The buyer is not entitled to delivery of these parts. If interested, please contact your local FRITSCH GMBH distributor or Fritsch GmbH, Industriestr. 8, D-55743 Idar-Oberstein.

FRITSCH GMBH takes the greatest care to ensure that the quality, reliability and safety of your products are continuously improved and adapted to the state of the art. The supplied products as well as this operating manual conform to the current state of the art when they leave the sphere of influence of FRITSCH GMBH.

By using the product the customer agrees with this and recognizes that defects, malfunctions or errors cannot be completely excluded. To prevent risk of damage to persons or property or of other direct or indirect damage, resulting from this or other causes, the customer must implement sufficient and comprehensive safety measures for working with the product.

Fritsch GmbH excludes any liability, warranty, or other obligation to compensate for damages, regardless of whether this liability, warranty, or other obligation is explicit or implicit, contractual or arising from unlawful acts or prescribed contractually, by law, or otherwise. In no event shall the buyer be entitled to any compensation from Fritsch GmbH for any special, direct, indirect, coincidental or consequential damage, including but not limited to lost profits, lost savings, lost sales or financial loss of any kind or for compensation of third parties, for downtimes, for lost goodwill, for damage to or replacement of equipment and property, for costs or restoration of materials or goods related to the product or the use of our products, for other damage or injury to persons (including fatal injuries) or similar. The above exclusion of liability is limited by mandatory liability as prescribed by laws or jurisprudence. Liability for negligence is excluded in all cases.

No permission is given expressly, implicitly or otherwise for the use of patents, brands or other copyrights. We also assume no liability for copyright infringements or infringements of the rights of third parties arising from the use of this product.

Neither compliance with this operating manual nor the conditions and methods used during installation, operation, use and maintenance of the product can be monitored by Fritsch GmbH. Improper execution of the installation can result in property damage and thus endanger persons. Therefore, we assume absolutely no responsibility or liability for loss, damage or costs that result from errors at installation, improper operation or improper use or improper maintenance or are in any way connected to these.

10 Index

Fritsch GmbH
Milling and Sizing
Industriestraße 8
D - 55743 Idar-Oberstein
Telephone: +49 (0)6784/ 70-0
Fax: +49 (0)6784/ 70-11
email: info@fritsch.de
Internet: www.fritsch.de