

User manual
Envi logger G1
Version: R1A
Date: 2010-06-16

General

Envi logger G1 is a PC based data logger where all sensor data is stored in a database on the PC. Sensor data is stored in a raw format as measured by, or as sampled immediately after, the sensor. Data for all sensors present at the rig is stored continuously. Thus enabling access to all measure data at any time after drilling is finished.

Data is transferred from sensors to data logger over a CAN bus (CANopen). As a result the system is not sensitive to noise from external or internal sources. In an analogue system all received noise is added to the data as opposed to a digital system.

The user can determine what parameters to look at while drilling and what parameters to include when creating a file.

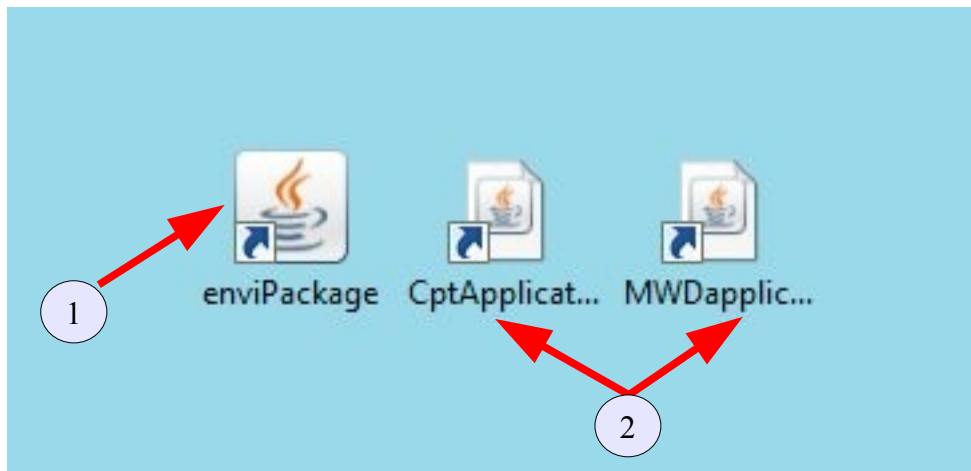
Currently available file formats are SGF/STD format or a tab separated format that is easily imported into Excel or equivalent software. More formats will be added based on customer requests.

All personal settings done by the user are remembered by the system and will be used for future usage until they are changed.

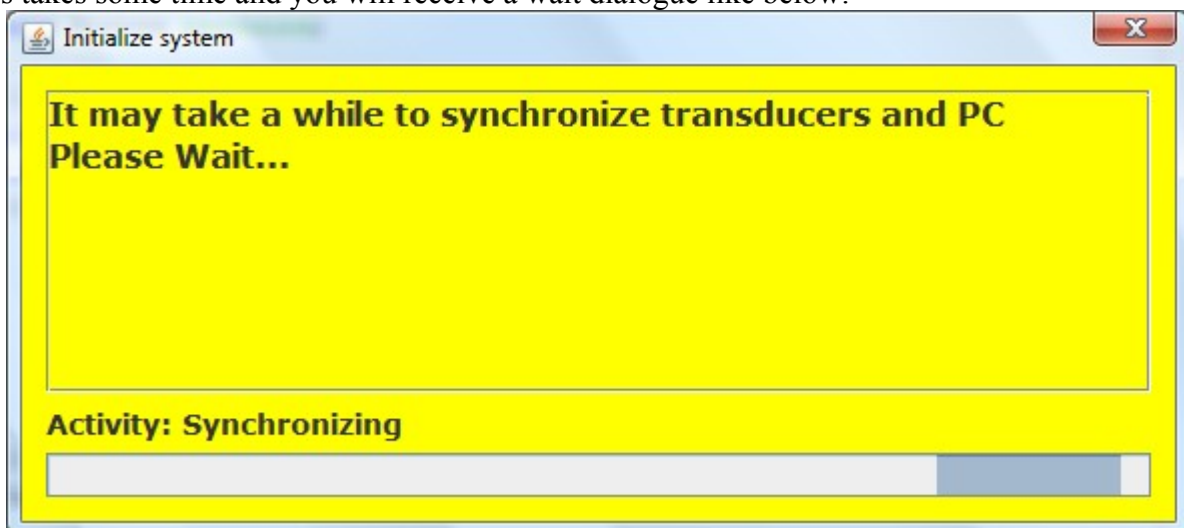
The software is divided into three applications:

EnviPackage	The platform/driver handling sensor readings and database communication
CptApplication	Application started if you want to work with CPT
MWDapplication	Application started if you want to work with MWD

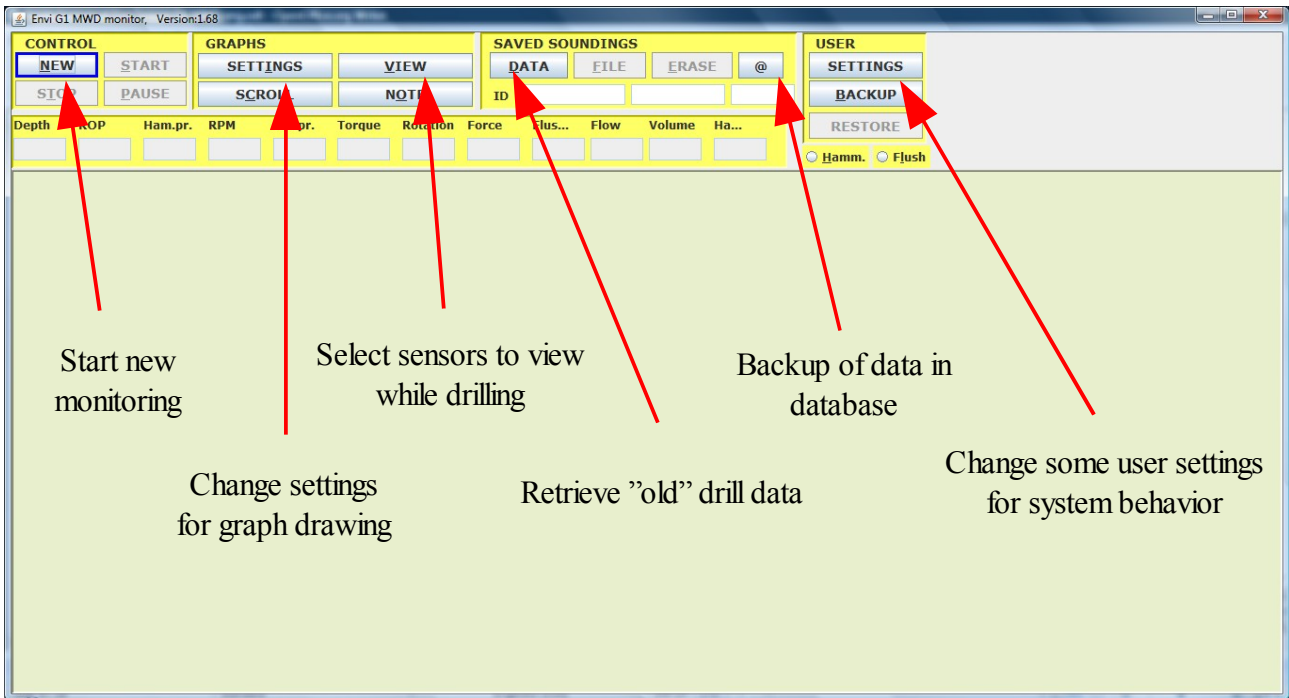
Starting the system



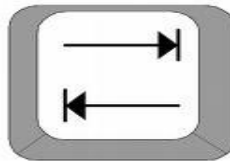
Programs are started by double clicking the icons. If you start one of the applications (only one may be started at any one time) the EnviPackage base program (1) is started first if not already started. If the computer is very busy the start up of the base program may take too long and you must restart by first starting EnviPackage (1) and then start the application (2). When you have started the application by double clicking the icon for it all processes for database handling etc are initiated. This takes some time and you will receive a wait dialogue like below:



As soon as the application is started and ready to use this pop up window is closed and you see the main window for the application (see next page).



Please note that the leftmost button has a blue border. That is an indication saying that button is selected. To change button selected use the TAB-key.



When you press the TAB button focus is changed between the different objects on screen until it once again is back on the object where you started.

There are also keyboard commands for each key. One letter in each button name is underlined marking the key controlling that button. In order to control those keys you press ALT+<the key for the underlined letter>. For the NEW button you shall press ALT+N.

Below is a list of the keyboard commands for each button on main page:

<u>N</u> EW	ALT+N
<u>S</u> TART	ALT+S
<u>P</u> AUSE	ALT+P
<u>S</u> TOP	ALT+T
<u>S</u> ETT <u>I</u> NGS	ALT+I
<u>V</u> IEW	ALT+V
<u>S</u> CR <u>O</u> LL	ALR+C
<u>N</u> OTE	ALT+O
<u>D</u> ATA	ALT+D
<u>F</u> ILE	ALT+F
<u>E</u> RASE	ALT+R
<u>B</u> ACKUP	ALT+B

Any button that is gray (as opposed to black) are non selectable. What buttons that are gray varies

during operation depending on what you are currently doing. Initially buttons for START, STOP, PAUSE and FILE are gray since there is not yet any drilling in progress nor drill data retrieved from database.

There are two basic options for how to proceed:

1. Start new borehole monitoring
2. Retrieve data for earlier boreholes from database

In addition to the above mentioned selections you may also select SETTINGS for for GRAPHS or USER giving you the option to change different parameters. More about this later in this document.

The NOTE button is not gray but has no function at this time. This is true also for SCROLL button since no graph is presented on screen.

If you select “NEW” you get a pop-up where you are expected to define administrative data for the drilling. You are **required** to define at least project name, borehole ID and drill method to be able to save and close this dialogue.

Set identifier data

METHOD
All
Not selected

My methods
MWD

CLIENT
Company
Contact person

BOREHOLE DATA
Project ID * Projekt1
Borehole ID 1
Location Platz1
Company test1
Operator test1
Supervisor Thomas

RIG DATA
Rod type/dim.
Stångvikt
Drill bit
Machine type
Flush media
Hammer type

ENVIRO DATA
Water Table [cm]
Barometric pressure [hPa]
Temperature [C]
Inclination 0 [Degrees]

COORDINATES
X Y Z

SAVE CLEAR ABORT MORE

The other text fields are optional to register.

Presently you are required to manually enter GPS coordinates.

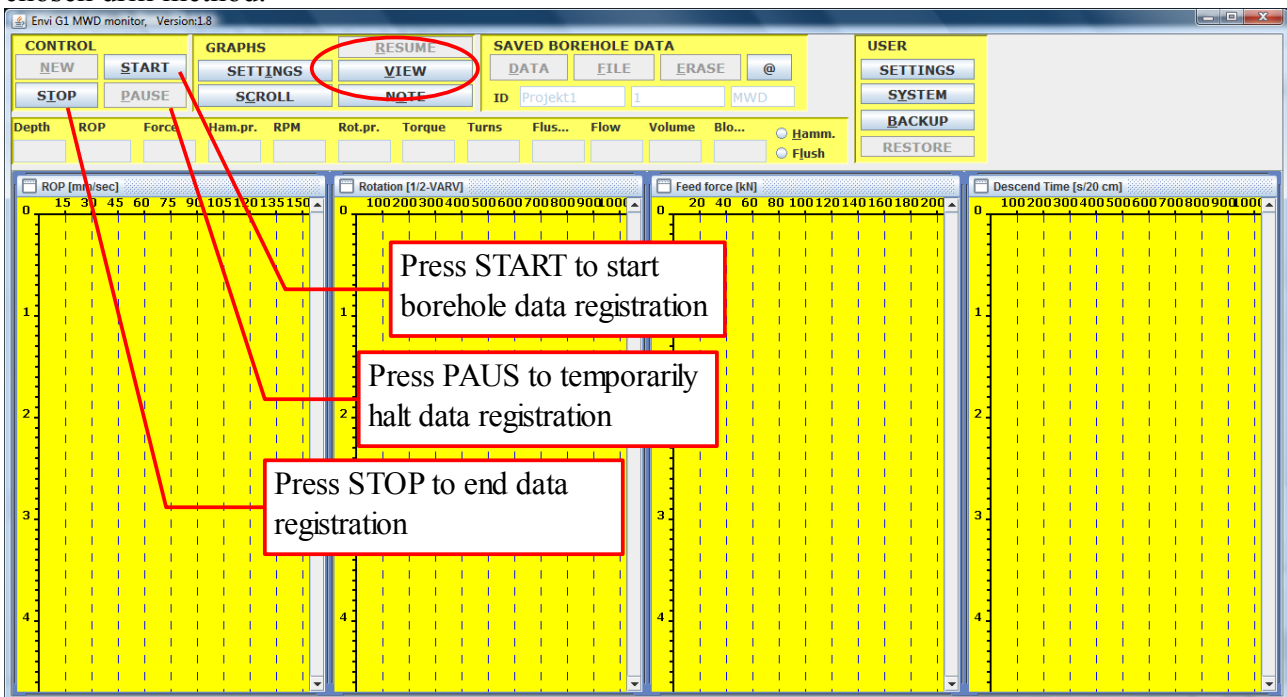
When you open the NEW dialogue fields will be automatically populated with data from previous borehole since it is assumed that data will be pretty much the same from one borehole to the other. When you have entered the data required plus any additional data you press ”SAVE” and you will be transferred to the main window again and the system is ready for drilling.

To erase all data from the form choose “CLEAR”. If you change your mind.

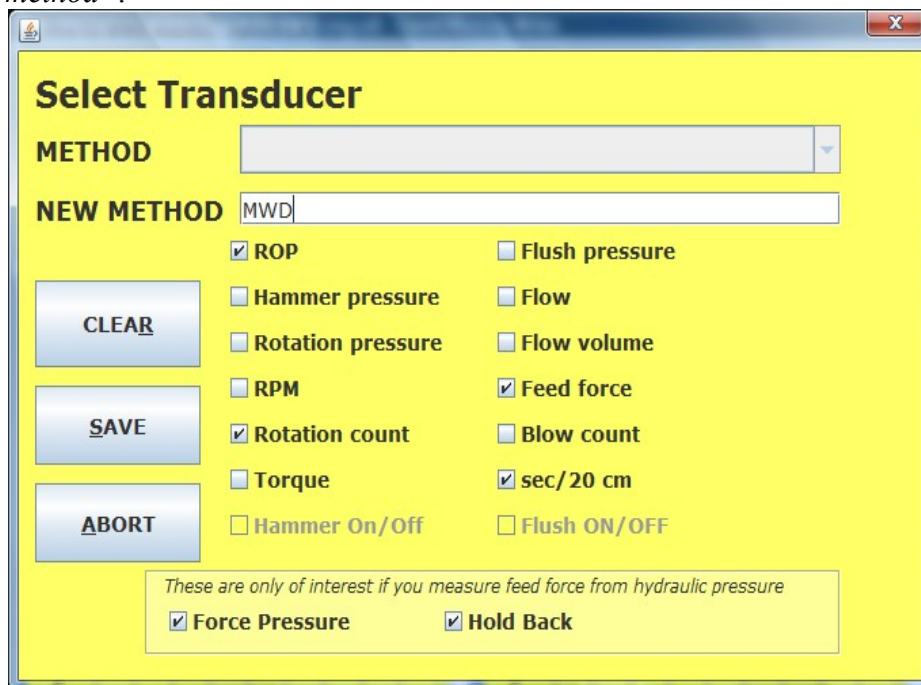
If you change your mind you can select “ABORT” to go back to main frame/window.

Start drill monitoring

The system now presents graphs for the parameters/sensors you have selected to view for the chosen drill method.

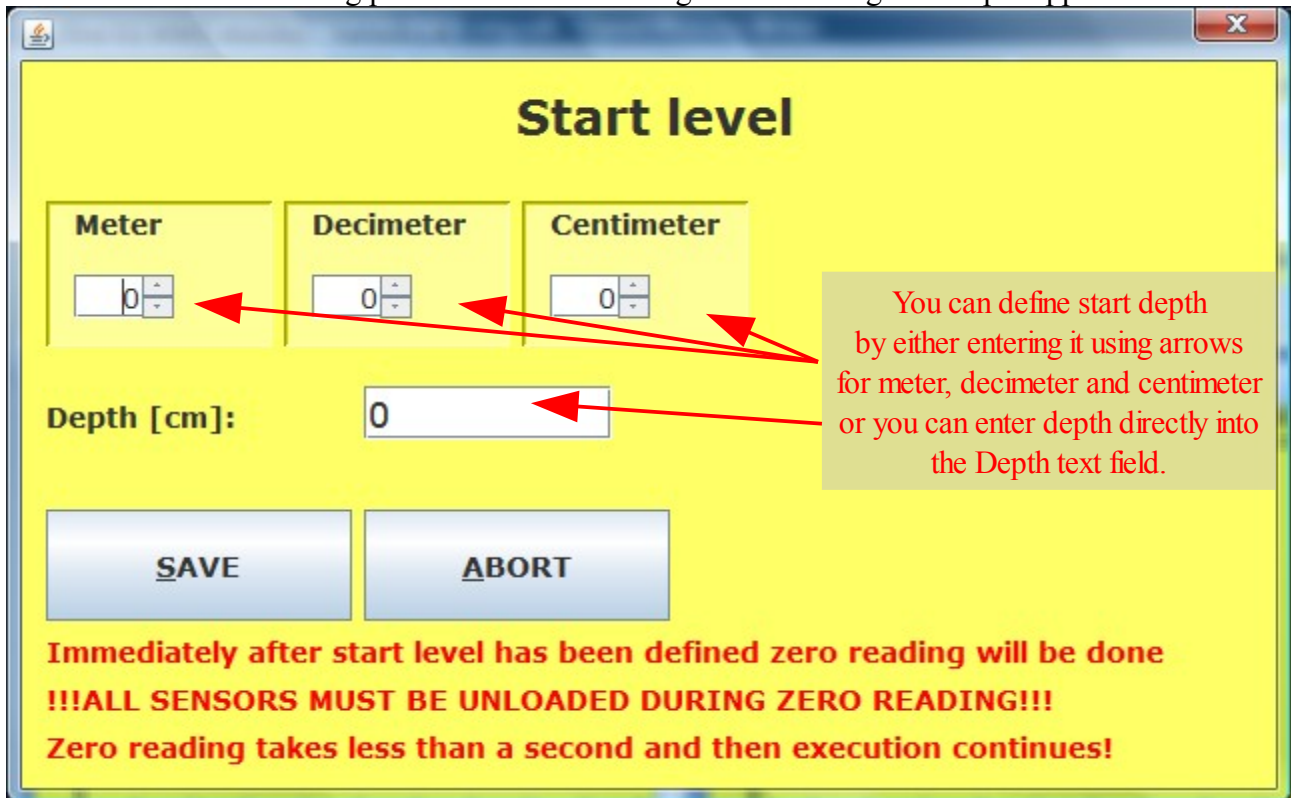


If you want to change parameters to view when drilling press button "VIEW" (see red marking above) and select what parameters to view. Only parameters related to an installed sensor can be viewed, others will be omitted. The ID for a borehole is built up from "Project ID" + "Borehole ID" + "Drill method".



Select the check boxes for the parameters you want to view.

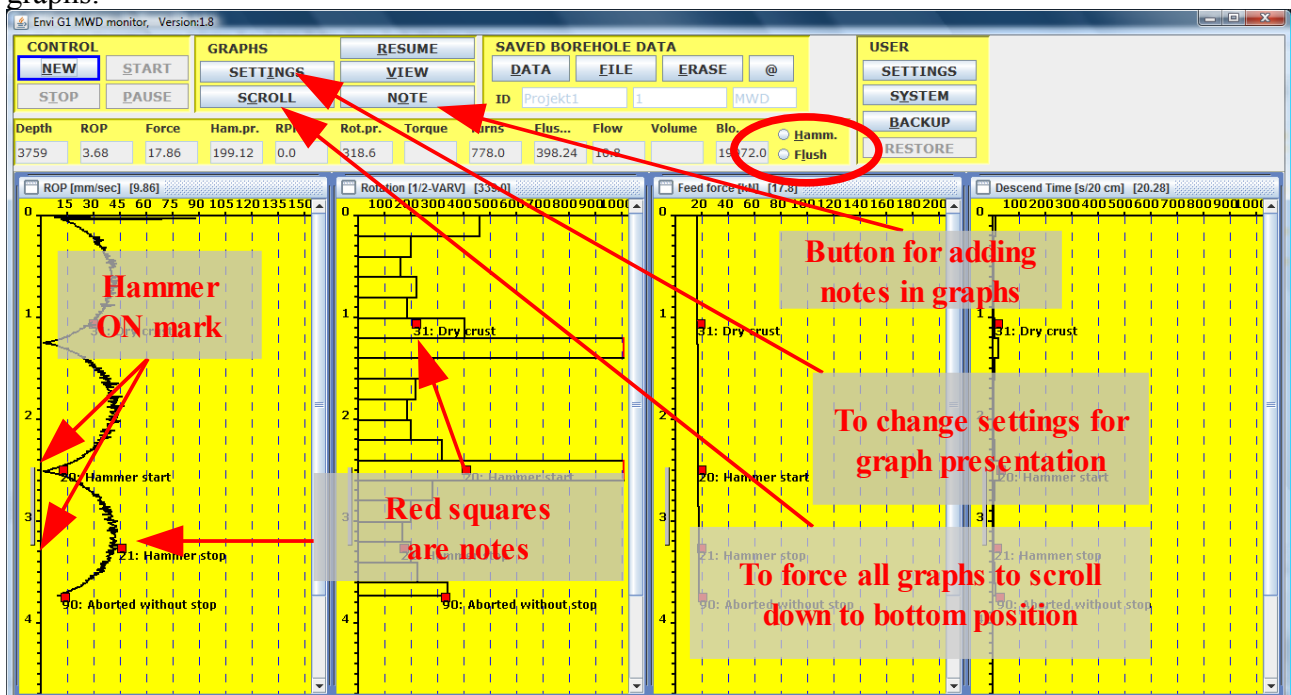
To start the drill monitoring press “START”. A dialogue for defining start depth appears.



You change meters, decimeters and centimeters by pressing up/down arrows. When you change these the system, calculates the total start level in centimeters and presents it in the text field.

To save the start depth defined and start the drill monitoring press “SAVE” button (ALT+S). If “ABORT” is selected no monitoring is started and you are back to main window.

When you have pressed the “SAVE” button in the start depth dialogue the monitoring is started. As soon as the depth increases graphs are now plotted for the parameters you have selected. Parameter values can also be seen in the upper part of each frame and in text fields between buttons and graphs.



For manual registration of “Hammer on/off” and s“Flush on/off” you press radio buttons in the main window (see red oval in picture above). The radio button shall be marked/filled when hammer/flush in on and not marked when hammer/flush is off. The note ”20: Hammer Start” and ”21: Hammer Stop” are automatically added when “Hammer on/off” button is marked or unmarked.

During borehole data registration you can add notes.

NB: The note will not become visible until new depth is registered or the data registration is terminated

ADD NOTE

Depth [m]

Code

Custom code

New user defined code

Index	Text
<input type="text" value="4"/>	<input type="text"/>

NOTE

Text Area

In the drop down menu ”CODE” there are some predefined codes. The depth text field will be populated with the depth that was when the NOTE button was pressed.

You can create your own codes by using code numbers not already used and create your own standard notes with the code number selected and any text of your choice. The available codes are found in the “Custom Code” drop-down menu.

You can also use free text notes written in the text area. Such notes will be stored as regular notes with the text you have entered in the Text Area above and they will all be given code “0”.

To save the comment with the drill data press “SAVE” (ALT+S). If you change your mind and no longer want to add a note press ABORT. Note dialogue is closed when you press any of the two buttons.

In the graphs in the main window you can update the notes by clicking on them and change data in the dialog that pops up. If you only want to change depth for a note you can simply drag and drop it to the depth where you want it positioned.

To change graph settings you press the “SETTINGS” button under GRAPHS. You then get the dialogue below with several options available:

Define parameters for graph presentation

RESOLUTION AND MAX VALUES

Parameter	Remember	Value	Unit
ROP	<input checked="" type="checkbox"/>	150	[mm/sec]
Hammer pressure	<input checked="" type="checkbox"/>	500	[MPa]
Rotation pressure	<input checked="" type="checkbox"/>	500	[MPa]
RPM, Max	<input checked="" type="checkbox"/>	500	
Flow volume	<input checked="" type="checkbox"/>	500	[l]
Descent Time	<input checked="" type="checkbox"/>	1,000	[Sec./20cm]
No.	<input checked="" type="checkbox"/>		
Torque	<input checked="" type="checkbox"/>		
Force	<input checked="" type="checkbox"/>		
Flush pressure	<input checked="" type="checkbox"/>	100	[MPa]
Flow	<input checked="" type="checkbox"/>	1,000	[l/min]
Blow count	<input checked="" type="checkbox"/>	10	[blows/20cm]
Rotation count	<input checked="" type="checkbox"/>	1,000	[Rot./20 cm]
Pressure	<input checked="" type="checkbox"/>	100	[MPa]
Pressure	<input checked="" type="checkbox"/>	50	[MPa]

APPEARANCE

Parameter	Remember	Value	Unit
Line thickness graph	<input checked="" type="checkbox"/>	2	[Pixels]
Line thickness coordinate axis	<input checked="" type="checkbox"/>	2	[Pixels]
Size of note square	<input checked="" type="checkbox"/>	8	[Pixels]

Note text

Code
 Code & Text
 Nothing

20 CM SETTINGS

Bars
 Sliding average

Buttons: SAVE, ABORT

Callout Box 1 (top right): Change max values for the graphs. This does not affect what data that is stored but only the look of things on screen.

Callout Box 2 (middle left): Define if you want to have measure data for accumulated 20 cm as floating average or steps

Callout Box 3 (bottom left): Here you may define line width and size for note squares and also line width for coordinate axes and plot line

Callout Box 4 (bottom right): Define how you want notes to be presented in the graphs Notes will be printed in file in the same format as presented in graphs. If you show code and text both will come out in file

To save settings press “SAVE” (ALT+S), or press “ABORT” (ALT+A) to exit without saving anything and go back to main window. Settings are saved by the system and used until changed. Some values will change immediately when you change values in the above dialog, but the system will only use them temporarily and will not remember the setting until SAVE has been pressed.

View data for stored boreholes

In order to view recorded borehole data press “DATA” button. You then get a dialogue where you can filter boreholes to find the one you are looking for. You can use the *Latest 20* drop down menu if you want to select between latest recorded boreholes. Alternatively you select borehole by filtering using a span of dates and then if desired pick one project and then you get all boreholes for that project in the “RETRIEVED SOUNDINGS” menu. Then you can select any borehole from the list and press “OPEN” to get data for the borehole presented.

The screenshot shows a software dialog box titled "SELECT SOUNDING" with a yellow background. At the top right are "RESET" and "ABORT" buttons. The "SELECT DATE" section contains "FROM" and "TO" date pickers, each with Year, Month, and Day fields. A "Get borehole data" button is below. The "SELECT PROJECT" section has a "PROJECT" dropdown menu. The "FETCHED SOUNDINGS" and "LATEST 20" sections each have a dropdown menu. At the bottom is a "DATE FOR SELECTED BOREHOLE" text field and an "Open" button. Red callout boxes provide the following explanations:

- SELECT DATE:** Select to retrieve recorded soundings between start date and end date.
- SELECT PROJECT:** Here all projects with boreholes between dates as per above are presented. It is enough that there is one borehole for a project between the dates above to cause the project id to appear here.
- FETCHED SOUNDINGS:** Here all borehole data logs matching the given search criteria will be available.
- LATEST 20:** Here 20 latest borehole data logs are available.

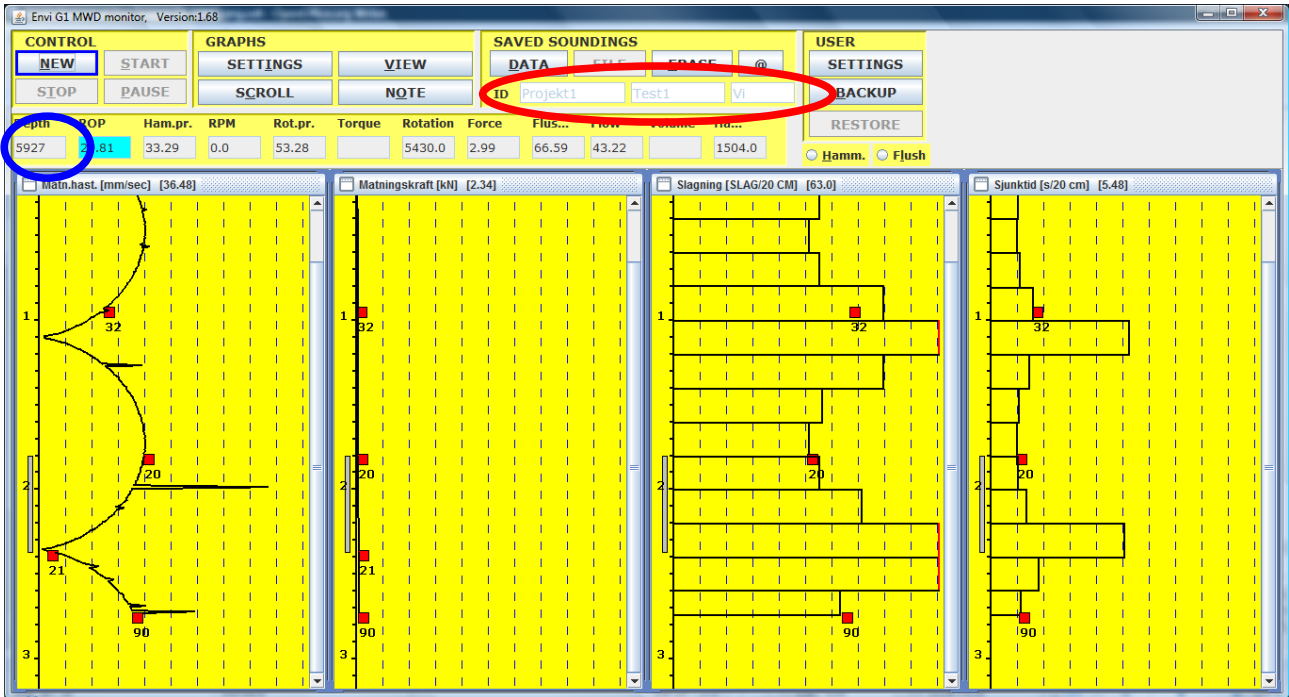
When a borehole has been selected and the date text field is populated with the date for drilling the hole selected.

The maximum depth of the borehole is printed in the Depth text field (with a blue ellipse around below).

Retrieved data is presented in the graphs in the main window. The system shows only graphs for parameters that will be printed to file for the specific method

(NB: If you have not printed any file for the used method no graphs will be shown since the system then doesn't know what parameters to show for the method).

Now you can look at the graphs and also add new notes or edit existing notes if desired. When you are done you can chose to create file or erase the borehole data. Of course you can also start a new registration or quit. A file is created by pressing button "FILE" and borehole data is deleted by pressing button "ERASE". If you chose to erase the data you will be requested to confirm that before the data is erased. NB: **IT IS NOT POSSIBLE TO UNDO ERASING DATA ONCE IT HAS BEEN DONE!**



Create file

If you press button “FILE” after finishing a borehole or after having retrieved data from recorded boreholes you must first select what parameters to include in the file. The choice you make will be remembered by the system and used as default parameters for next file creation.

Select Transducer

METHOD: **MWD**

NEW METHOD:

ROP Flush pressure

Hammer pressure Flow

Rotation pressure Flow volume

RPM Feed force

Rotation count Blow count

Torque sec/20 cm

Hammer On/Off Flush ON/OFF

These are only of interest if you measure feed force from hydraulic pressure

Force Pressure Hold Back

When you have selected what parameters to include in the file and pressed “SAVE” you must choose what file type you want to create:

SELECT FILE TYPE!

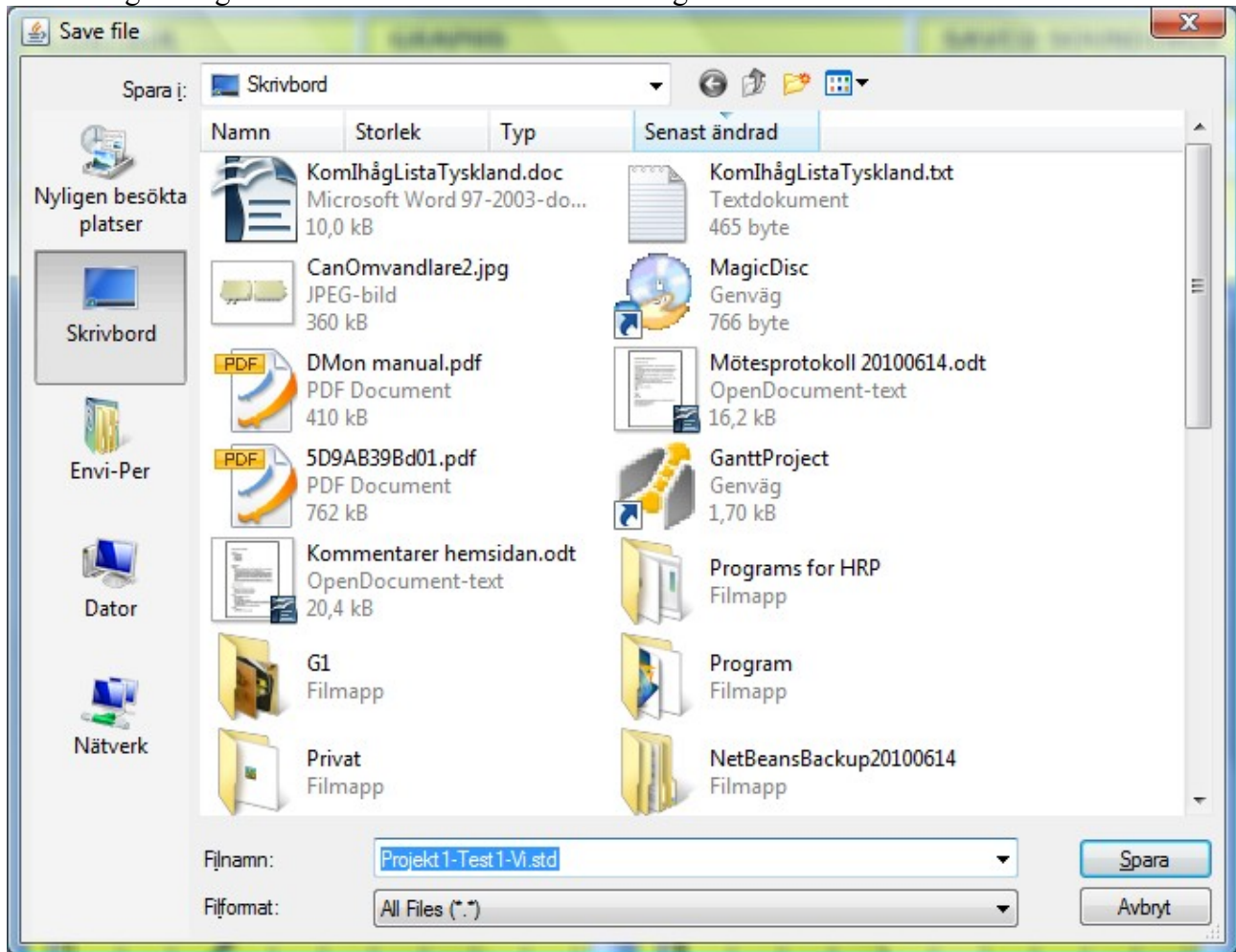
? Select file type to create!

The system sets a default file name for the borehole for which you create a file. That name is built up as follows:

”project name”_”borehole name”_”drill method”.std.

The name is hence the same as data in the ID text fields in the “*SAVED SOUNDINGS*” panel. These fields are in the red ellipse two pictures up.

You now get a regular save file window. You can change file name and select file location:

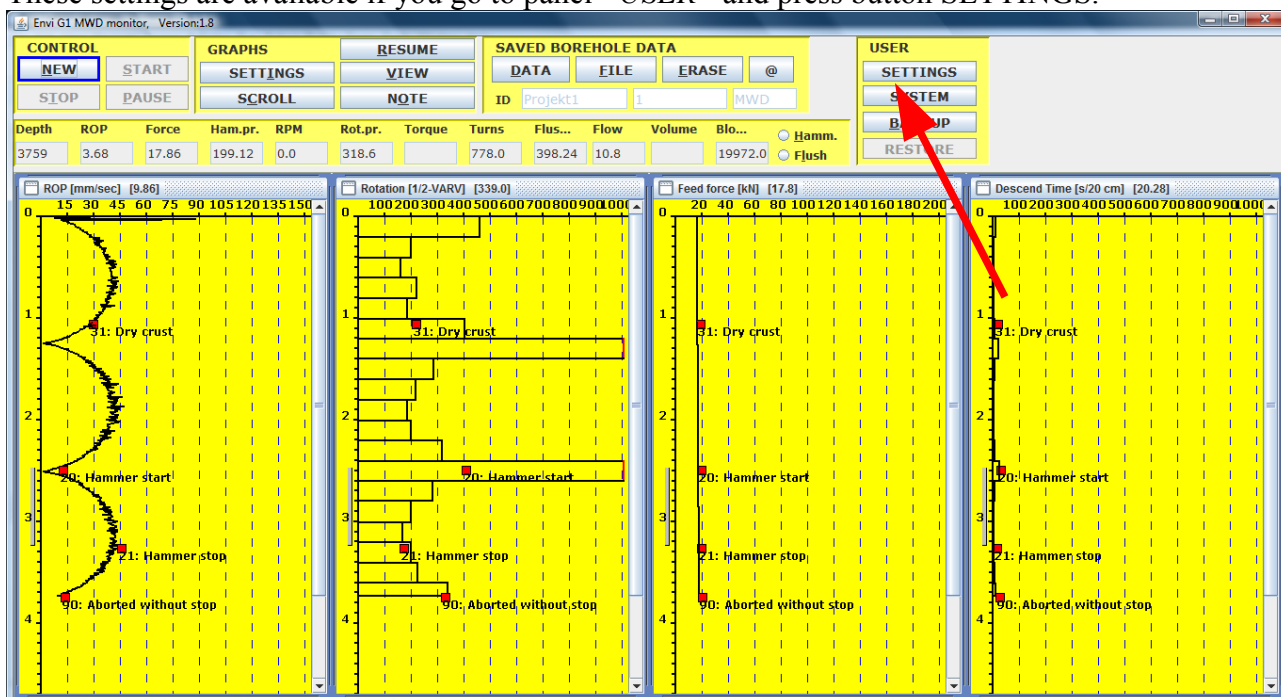


Sorry this window is in Swedish since I have that language on my PC

When you are done press SAVE and file is created. When it is done you get a pop window to confirm it.

User settings

There are several other settings a user may define to personalize the application looks and behavior. These settings are available if you go to panel "USER" and press button SETTINGS.



You get a dialogue with different settings you can change:

Some choices are gray and not available for selection since they are not (yet) available for user editing. If you want the system to save a file automatically after each borehole and if you want the file also to be sent by email directly after completion of probing you can define the settings for it in the dialog you get up if you press the button "File & E-mail" (see blue circle in the picture above).

The dialog is depicted below.

Guidelines for creating file and send E-mail

Create files automatically after each borehole Send files automatically

Your Email address:

Your SMTP server: Port:

Enter the Email addresses to send to (one recipient per line)

ABORT **SPARA**

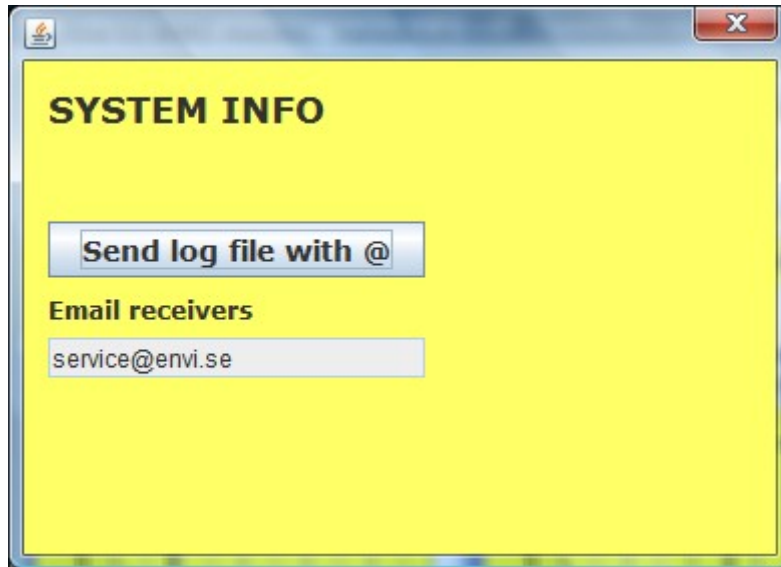
If you tick the "Create files automatically after each drill hole" a file is created directly after completion of the borehole (completed when STOP in the main window has been pressed).

To be able to tick the "Send files automatically" one must first have selected the "Create files automatically after each drill hole" so that a file is created. You must also set your preferences to send Email. You enter the same settings as for your regular email account. You can find information in the account settings in your email client. Ask your PC technician for help if you do not know how to obtain such information. If you choose to send Email automatically after completion of the wells, you will be prompted for your password the first time that the system sends E-mail after having started. The system will then remember the password until it shuts down. For security reasons the password is deleted from the system when it shuts down.

Troubleshooting

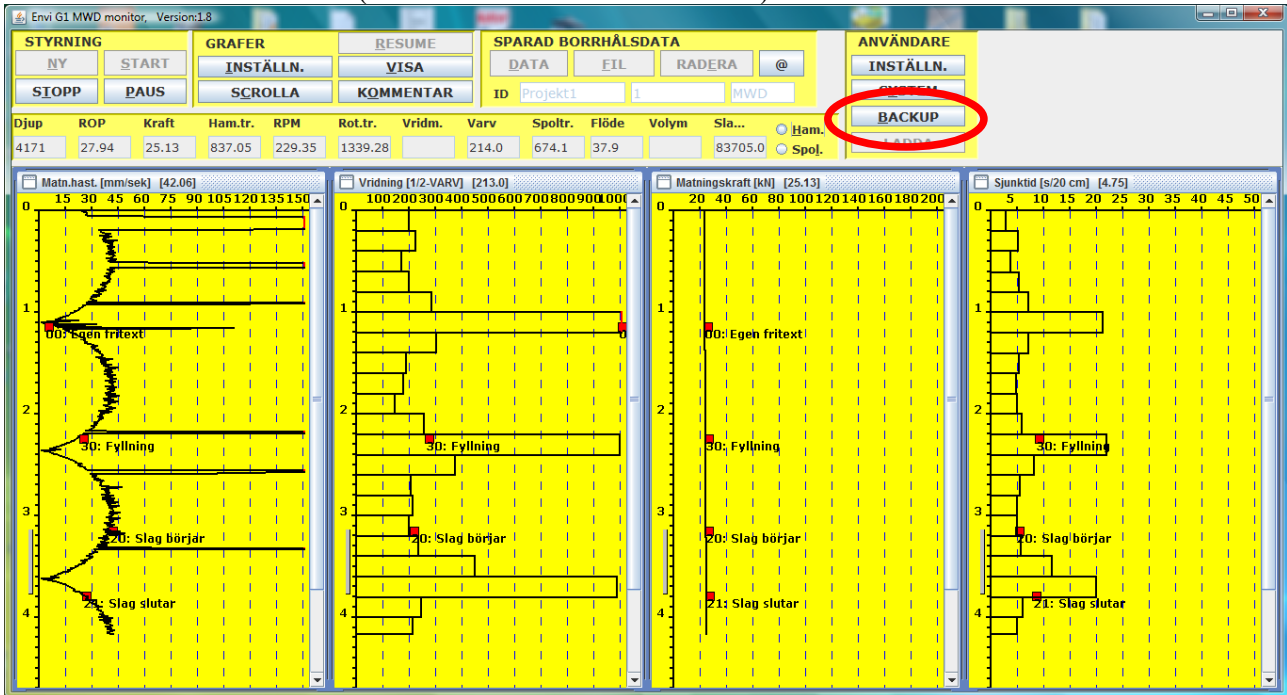
To send log files to Envi press SYSTEM. This button currently only has one function and that is to send the log file, but will be supplemented with other features later.

For sending log files, you must have entered the correct data for your Email Account in the dialogue for sending borehole data (see chapter User Settings above).



Backup and Restore

You can always back up the data you have in the database. This is done by pressing the Backup button in the main window (the button circled in red below).



You will then get a dialog where you enter the start and end dates for the data you want to backup.

GÖR BACKUP

FRÅN

År: 2010, Månad: 8, Dag: 21

TILL

År: 2010, Månad: 8, Dag: 21

KÖR

You specify the dates between which you want to store backup data and press RUN. If you change your mind and do not want to backup, you cancel by pressing on the cross and close the window.

To restore the database from a previous backup or load the backup on another computer, you must first enable the restore of the database, open the user settings and set the Backup possible (see previous chapter).

The backup file shall be placed in folder "C: / EnviLoggerG1 /" prior to starting the database restore. The name of the backup file shall be ENVILOGGERG1BACKUP.ZIP