



AB FIA Odarslövs mölla
Vinkelhaken 1D
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Manual for logger of Pressure, Torque, pH and temperature of Chewing Apparatus, DRT.





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Mount the cuvettes. In each cuvette, insert the pH-electrode and connect the cable to the logger.



Figure 1. Mounting the electrode.

Fill up with dissolution medium and your test formulation according to your test method. Close the door to the safety cupboard. Power up with the button on the main control box to the left. Elevate the lifts on all cells.

Initiation

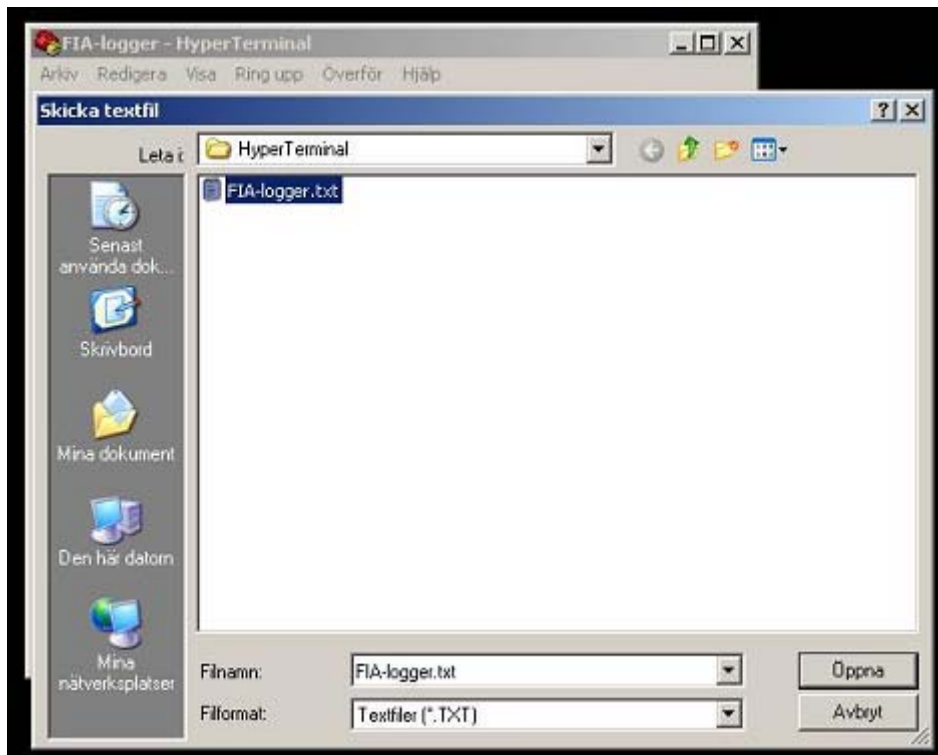
All units are now ready to start, but the loggers must also be initiated as follows:



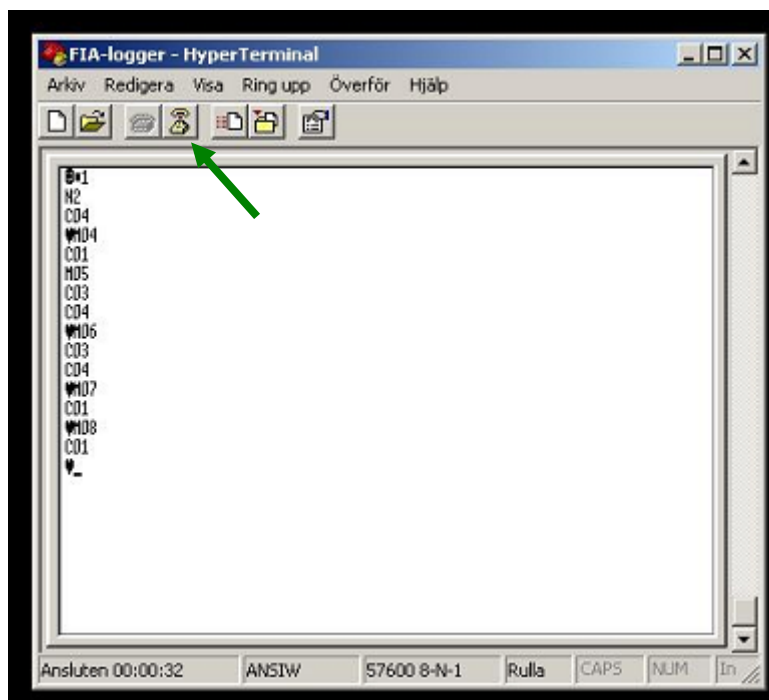
Screen picture 1 and 2. Open the HyperTerminal program "FIA-logger.ht" by double clicking the short cut. In the window that is opened, click on "Överför" and choose "Skicka textfil".



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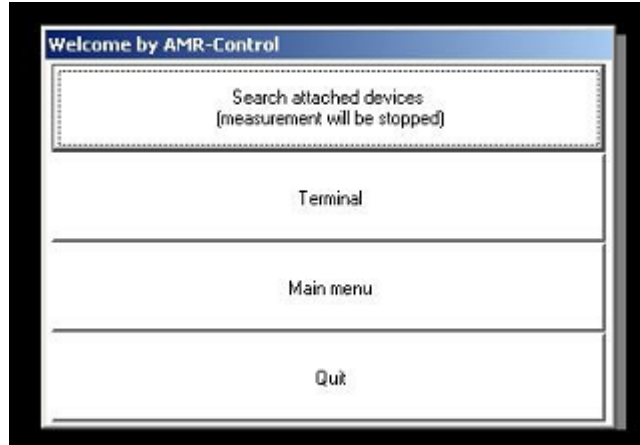
Picture 3. Mark the file "FIA-logger.txt" and click on "Öppna".



Picture 4 and 5. A number of commands are performed to initiate the logger. When the event is over and the writing in the window stops, click in the icon shown with green arrow "koppla ifrån" then minimize the window.



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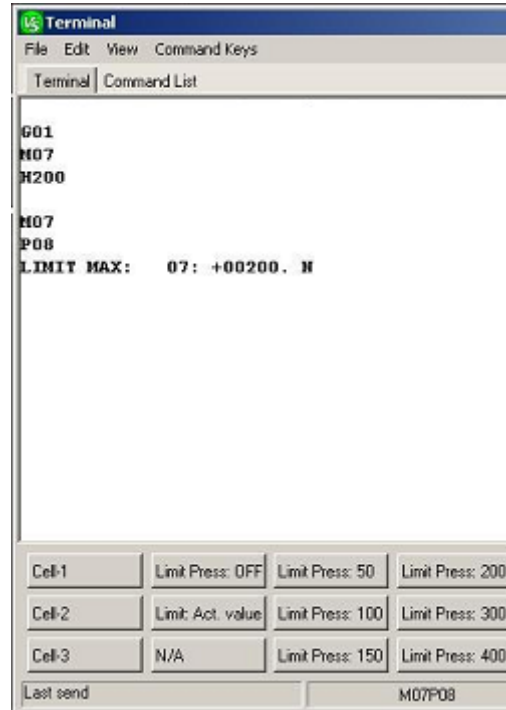
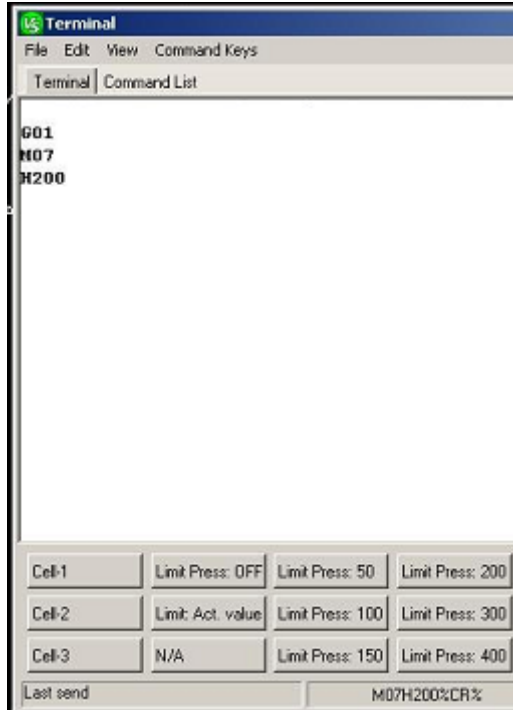
Picture 5 (detail). Start the program "AMR Control". Picture 6. Click on "Terminal".



Picture 7. If you would like to change the Max limit of the pressure it is possible to do that by clicking on the Cell no concerned (example: Cell-1 down to the left on the screen).



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Picture 8 (left). Click on the desired setting in Newton (example: Limit Press: 200 (N)). Picture 9 (right). To verify; click on "Limit Act. value" and the setting is displayed (LIMIT MAX: + 00200. N). To remove the max-setting completely; click Limit Press: OFF.

Repeat the steps in Pictures 7-9 if you wish to change limits for the other cells.

Start

Now the initiation is ready and you can start the Chewing machine including the loggers. Set the warming up period according to your method. Press the START button on the main control box of the DRT. Now the warming up period starts, ie the waiting period until the desired temperature is reached in the cells.

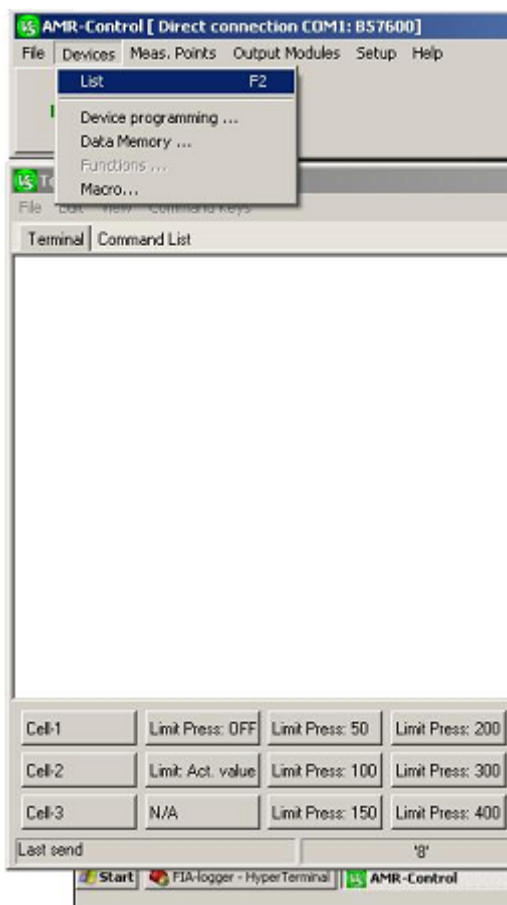
The logging actually starts when the chewing starts after the warming up period. After the preset chewing time, the chewing and the logging is also stopped automatically and the lift moves up and down to mix the dissolution medium thoroughly, after which final values are logged to verify pH and temperature values after mixing.



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Reading and saving

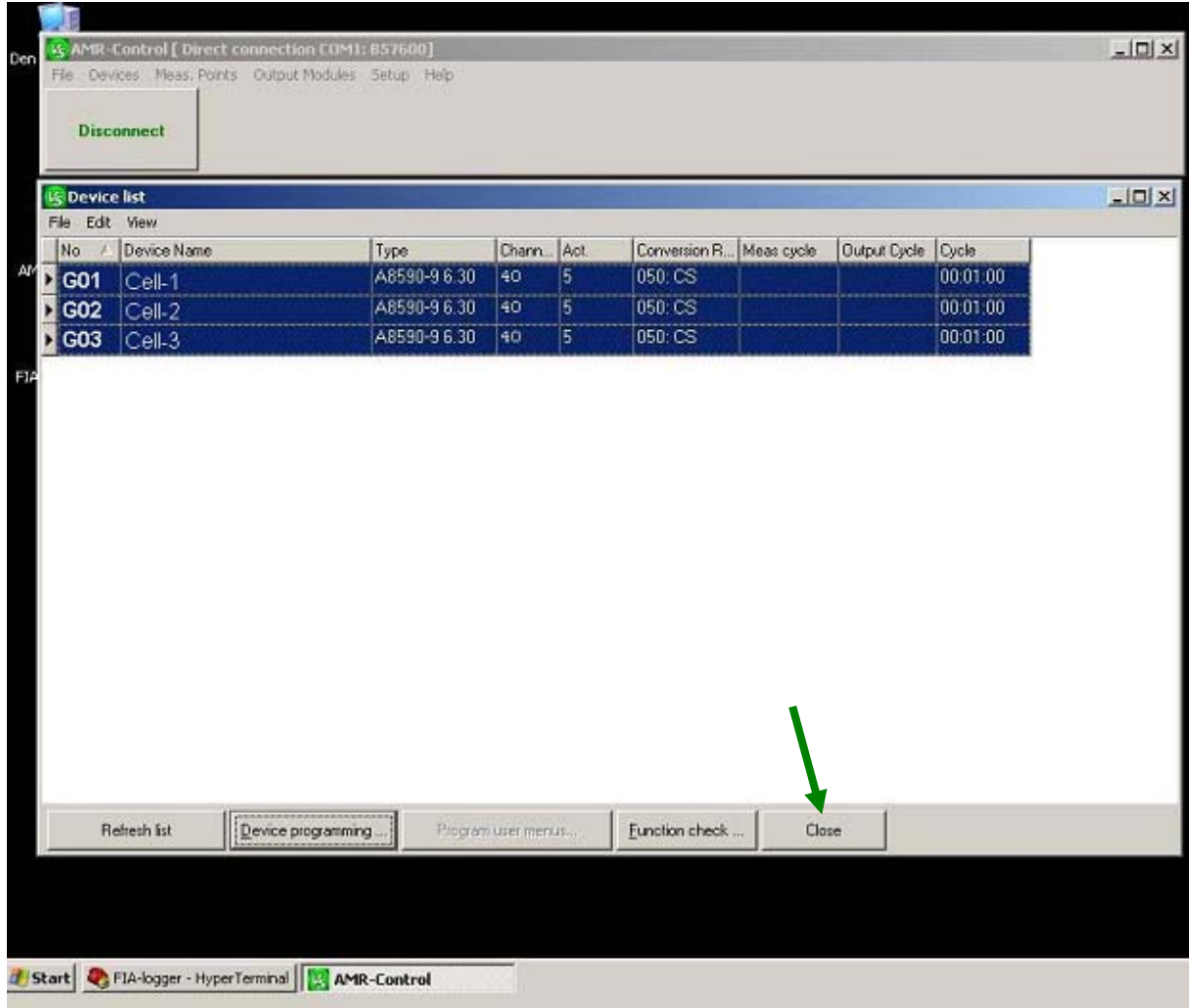
It is necessary to import the data from the loggers to the computer to be able to read them.



Picture 10. Click on "Devices" and "List".



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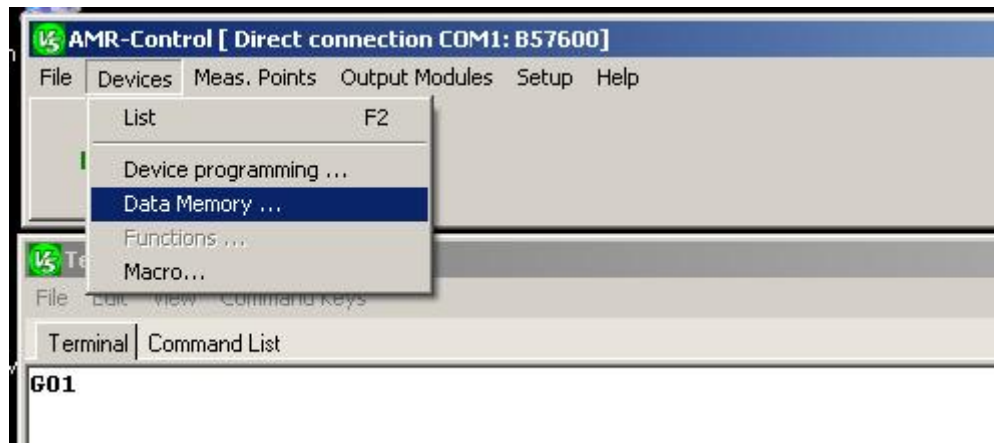
Picture 11. All the loggers are shown (here for three cells). Click on Close (here shown with a green arrow).



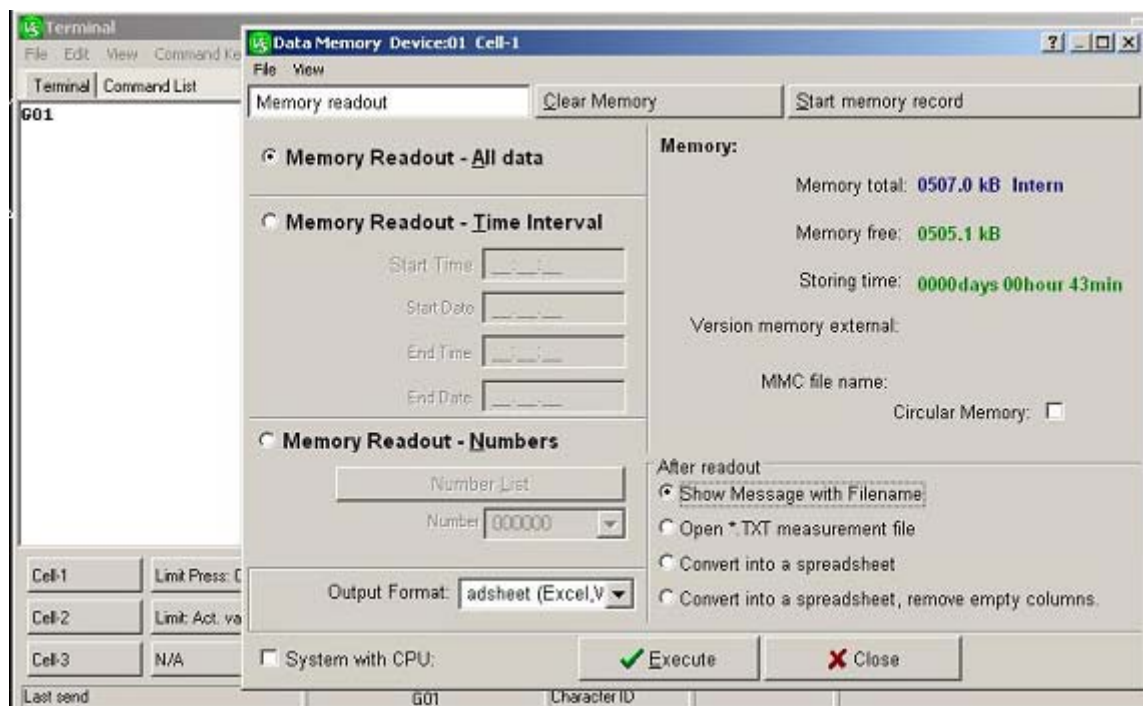
Picture 12. Click on the cell you would like to see data from (example: Cell-1).



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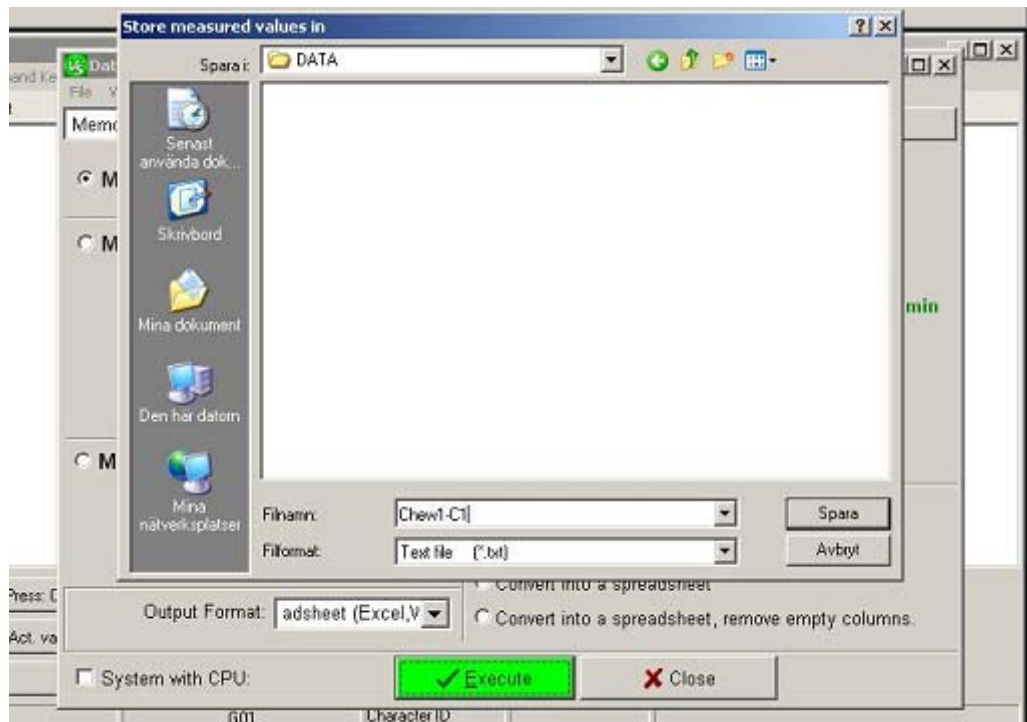
Picture 13. Click on "Devices" and then choose "Data Memory ...".



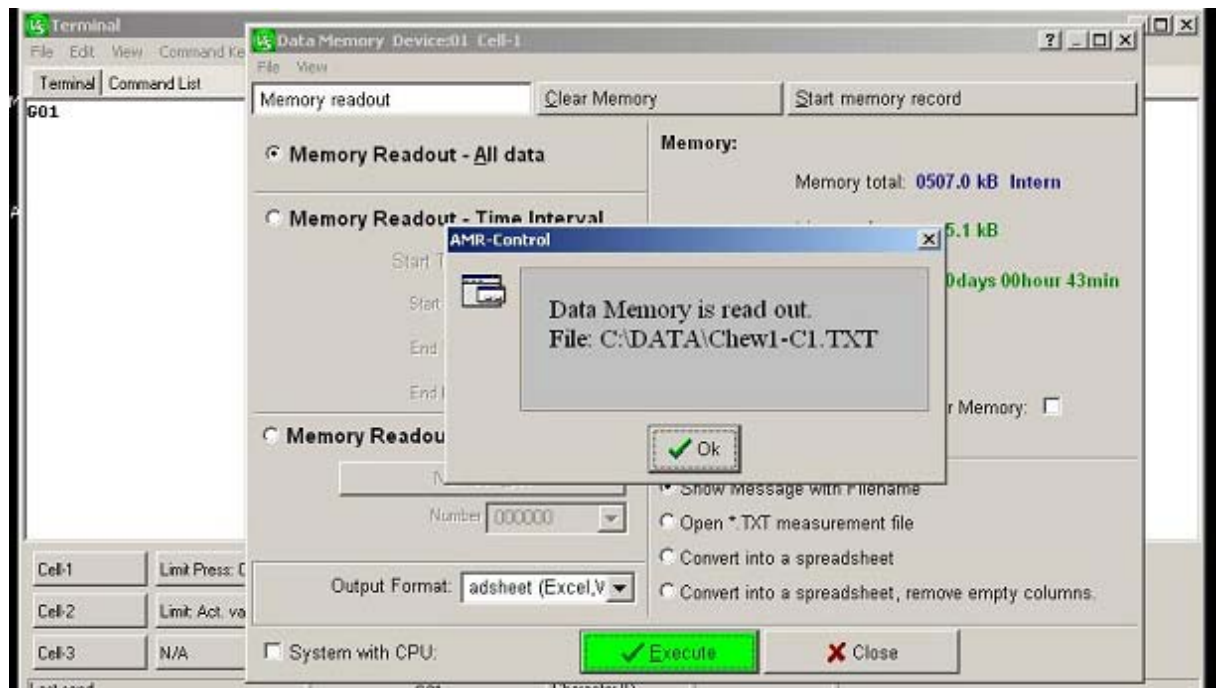
Picture 14. Choose "Memory Readout - All data"
"Output Format: Spreadsheet (Excel, WinControl)"
"Show message with Filename"
Then, click on "Execute".



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Picture 15. Choose where to save file, and give it a name; Save ("Spara").



Picture 16. The logfile is saved and when ready, click OK. After this, the window can be closed (click on Close).

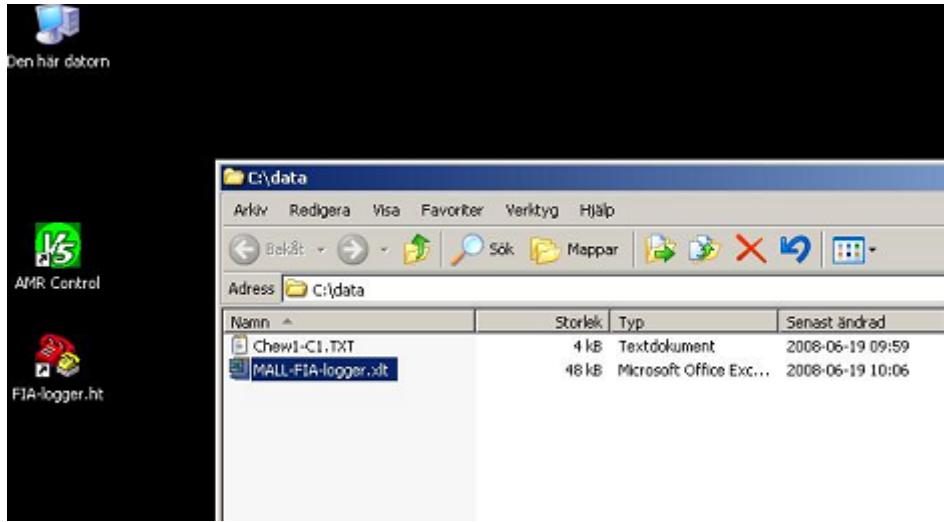
Repeat the procedure in pictures 12-16 for all cells.



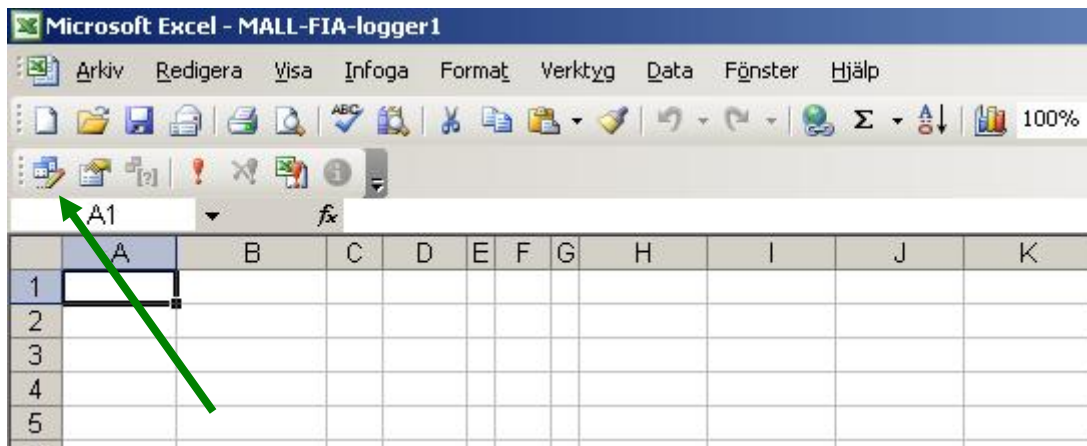
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Presenting data

The data logfiles are difficult to read since the number of datapoints is normally vast. It is necessary to present them diagrams.



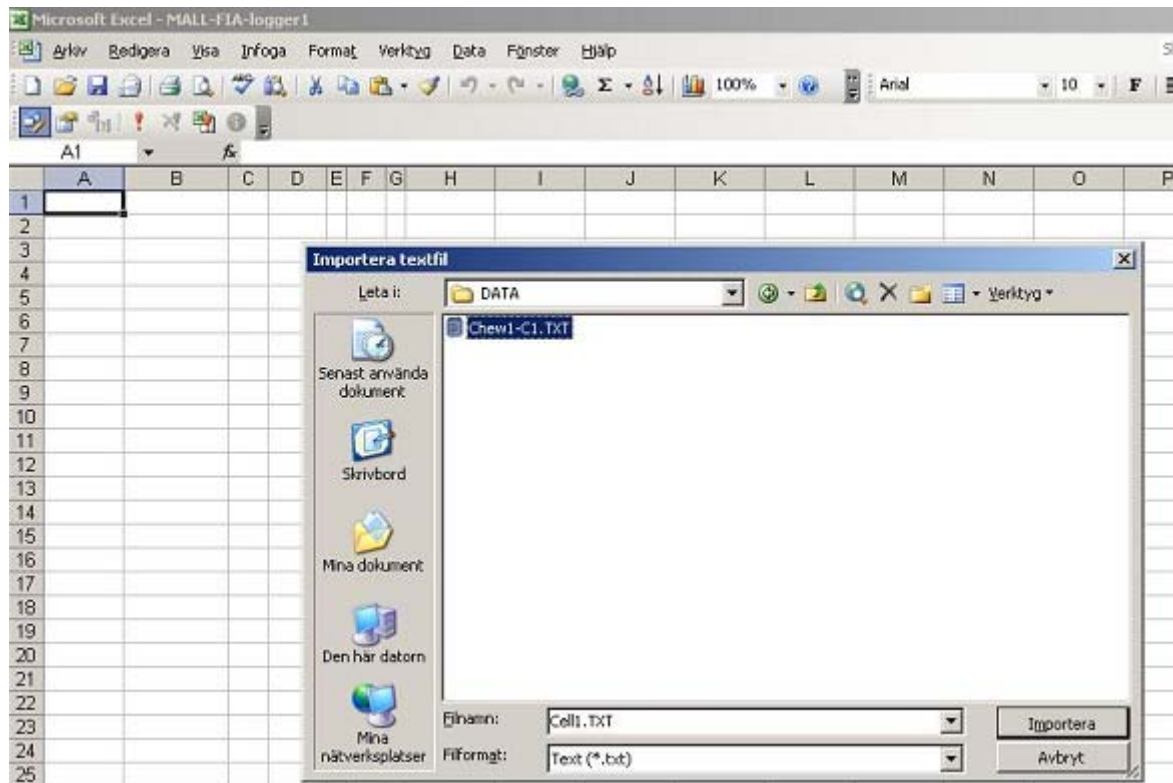
Picture 17. Open "MALL-FIA-logger.xlt".



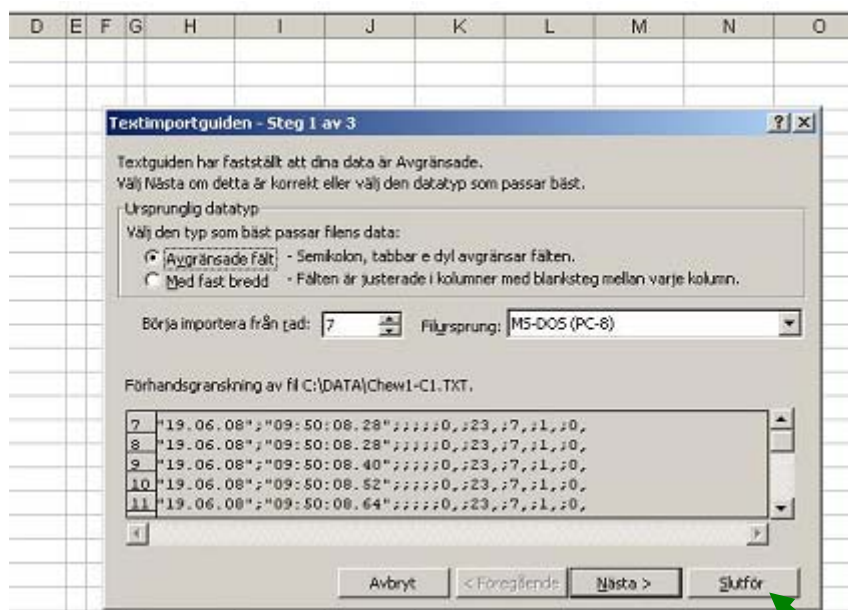
Picture 18. Click on the icon "Redigera textimport" (see green arrow).



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Picture 19. Choose the logfile you have saved earlier in steps 12-16. Click on Import.



Picture 20. Click on "Slutför" (green arrow).



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	A	B	C	D	E	F	G	H	I	J	K
1	17.06.08	08:46:09.53	0	21,1	7	46	0				
2	17.06.08	08:46:13.85	0	21,16	7	46	0				
3	17.06.08	08:46:13.97	0	21,15	7	46	0				
4	17.06.08	08:46:23.33	0	21,11	7	0	0				
5	17.06.08	08:46:23.45	0	21,1	7	0	0				
6	17.06.08	08:46:23.57	0	21,1	7	0	0				
7	17.06.08	08:46:23.69	0	21,09	7	43	0				
8	17.06.08	08:46:23.81	0	21,08	7	46	0				
9	17.06.08	08:46:23.93	0	21,08	7	46	0				
10	17.06.08	08:46:24.05	0	21,07	7	46	0				
11	17.06.08	08:46:24.17	0	21,06	7	46	0				
12	17.06.08	08:46:24.29	0	21,05	7	46	0				
13	17.06.08	08:46:24.41	0	21,04	7	15	0				
14	17.06.08	08:46:24.53	0	21,03	7	7	0				

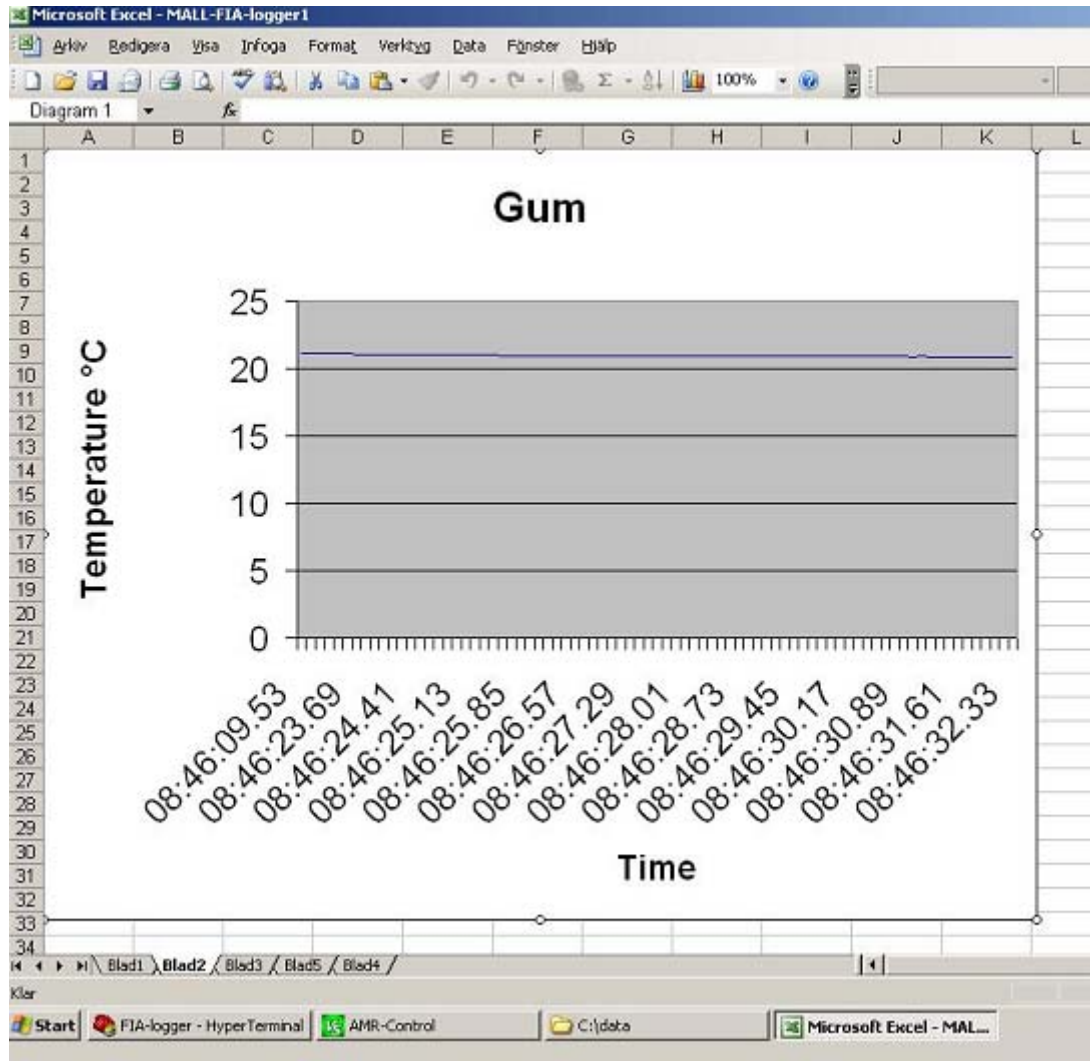
Picture 21. All data are imported to the Excel sheet.

	A	B	C	D	E	F	G	H
250	17.06.08	08:46:52.85	0	20,7	7	-1	0	
251	17.06.08	08:46:52.97	0	20,7	7	-2	0	
252	17.06.08	08:46:53.09	0	20,7	7	42	0	
253	17.06.08	08:46:53.21	0	20,69	7	44	0	
254	17.06.08	08:46:53.33	0	20,7	7	45	0	
255	17.06.08	08:46:53.45	0	20,7	7	45	0	
256	17.06.08	08:46:53.57	0	20,69	7	45	0	
257	17.06.08	08:46:53.69	0	20,7	7	45	0	
258	17.06.08	08:46:53.81	0	20,7	7	13	0	
259	17.06.08	08:46:53.93	0	20,7	7	3	0	
260	17.06.08	08:46:54.05	0	20,7	7	1	0	
261	17.06.08	08:46:54.17	0	20,7	7	-1	0	
262	17.06.08	08:46:54.29	0	20,7	7	-1	0	
263	17.06.08	08:46:54.41	0	20,7	7	-1	0	
264	17.06.08	08:46:54.53	0	20,7	7	41	0	
265	17.06.08	08:46:54.65	0	20,71	7	43	0	
266	17.06.08	08:46:54.77	0	20,7	7	44	0	
267	17.06.08	08:46:54.89	0	20,7	7	45	0	
268	17.06.08	08:46:55.01	0	20,71	7	45	0	
269	17.06.08	08:46:55.13	0	20,7	7	45	0	
270	17.06.08	08:46:55.25	0	20,7	7	8	0	
271	17.06.08	08:47:11.21	100	20,79	7	12	0	
272								
273								
274								

Picture 22. The last row of data is the measurements that were performed after the mixing movements of the lift. That row will not be presented in the diagrams. If they differ from the rest, they should be noted specially due to their importance.



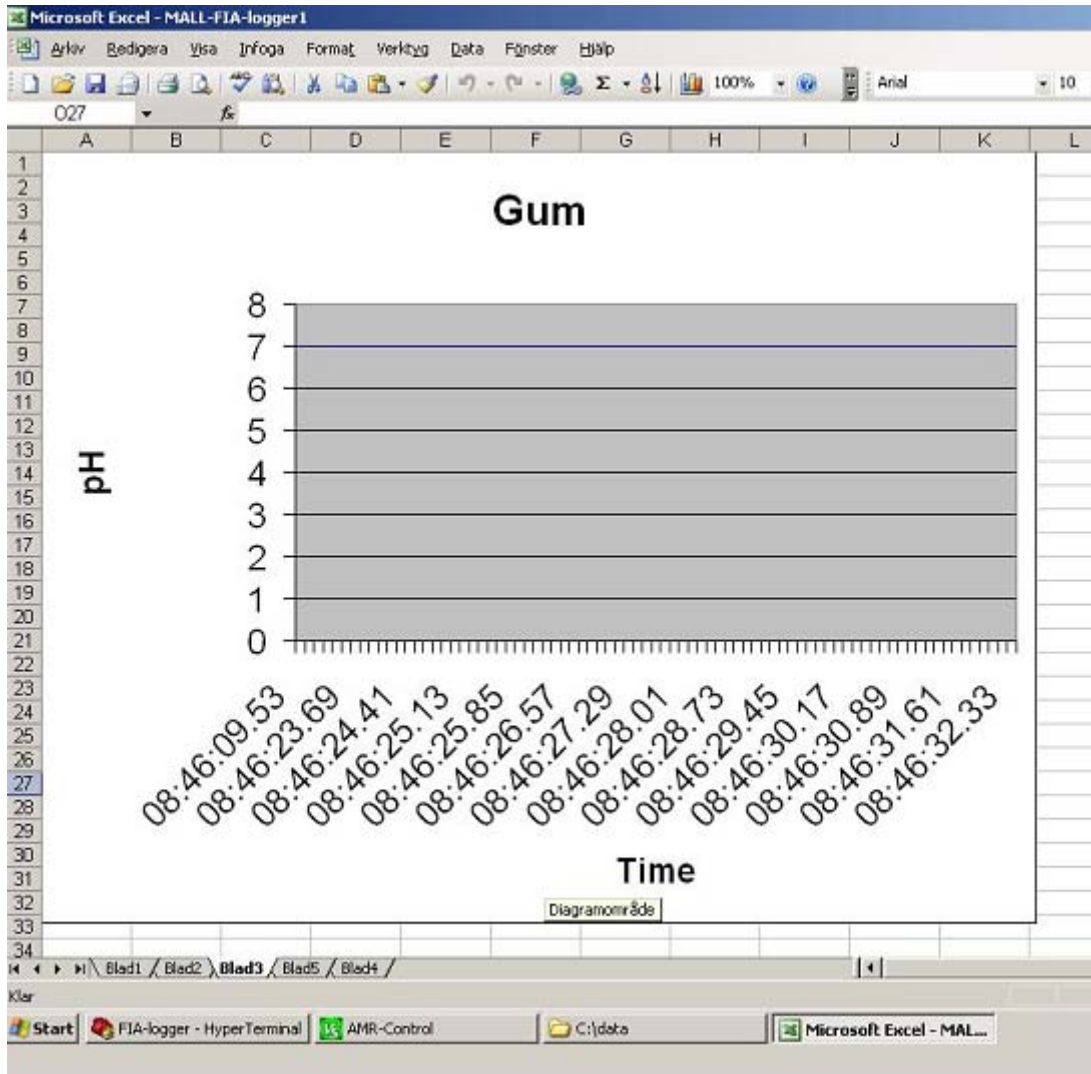
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Picture 23. Diagram showing temperature in the cell vs time ("Blad 2").



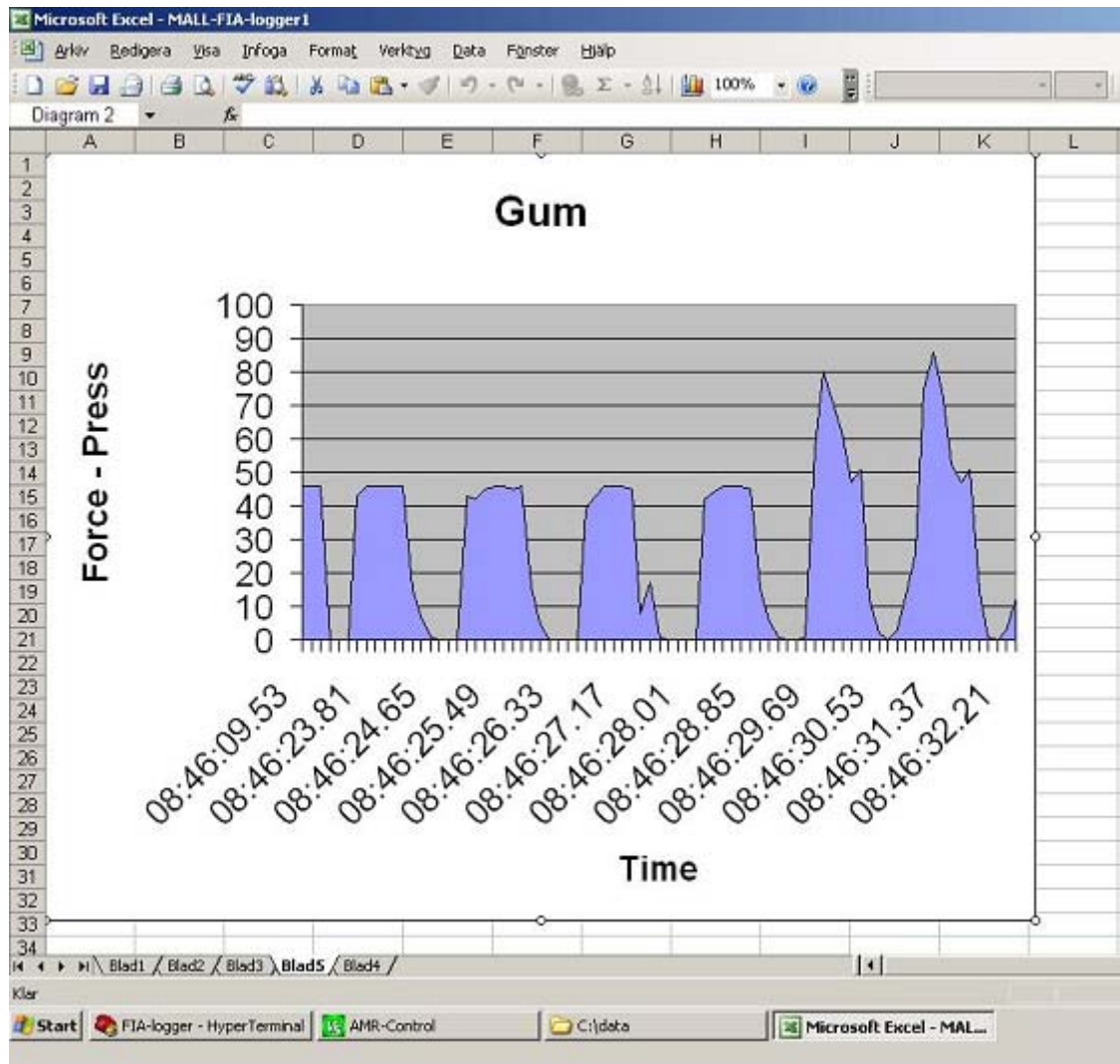
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Picture 24. Diagram showing pH in the cell vs time ("Blad 3").



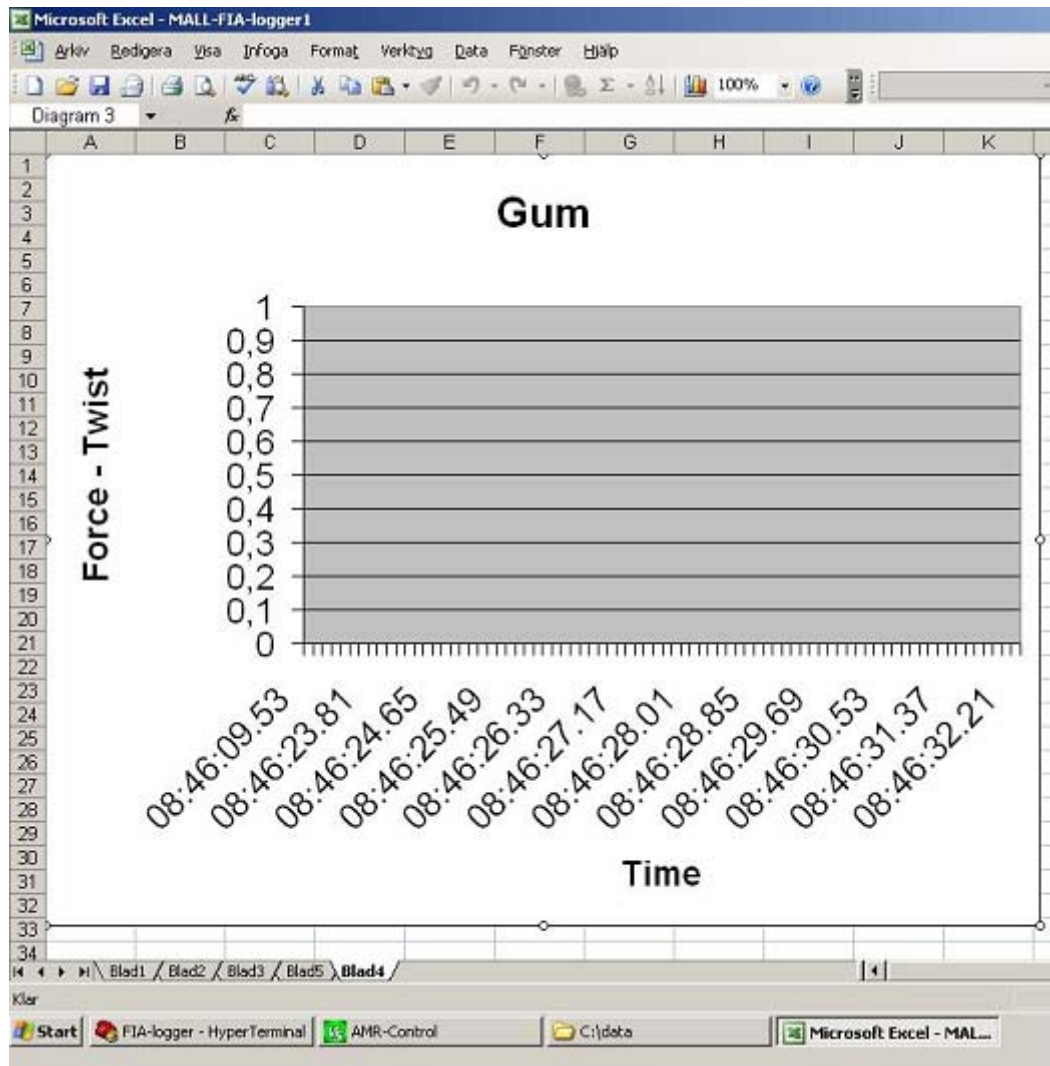
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Picture 25. Diagram showing pressure in Newton (N) on the formulation vs time ("Blad 5").



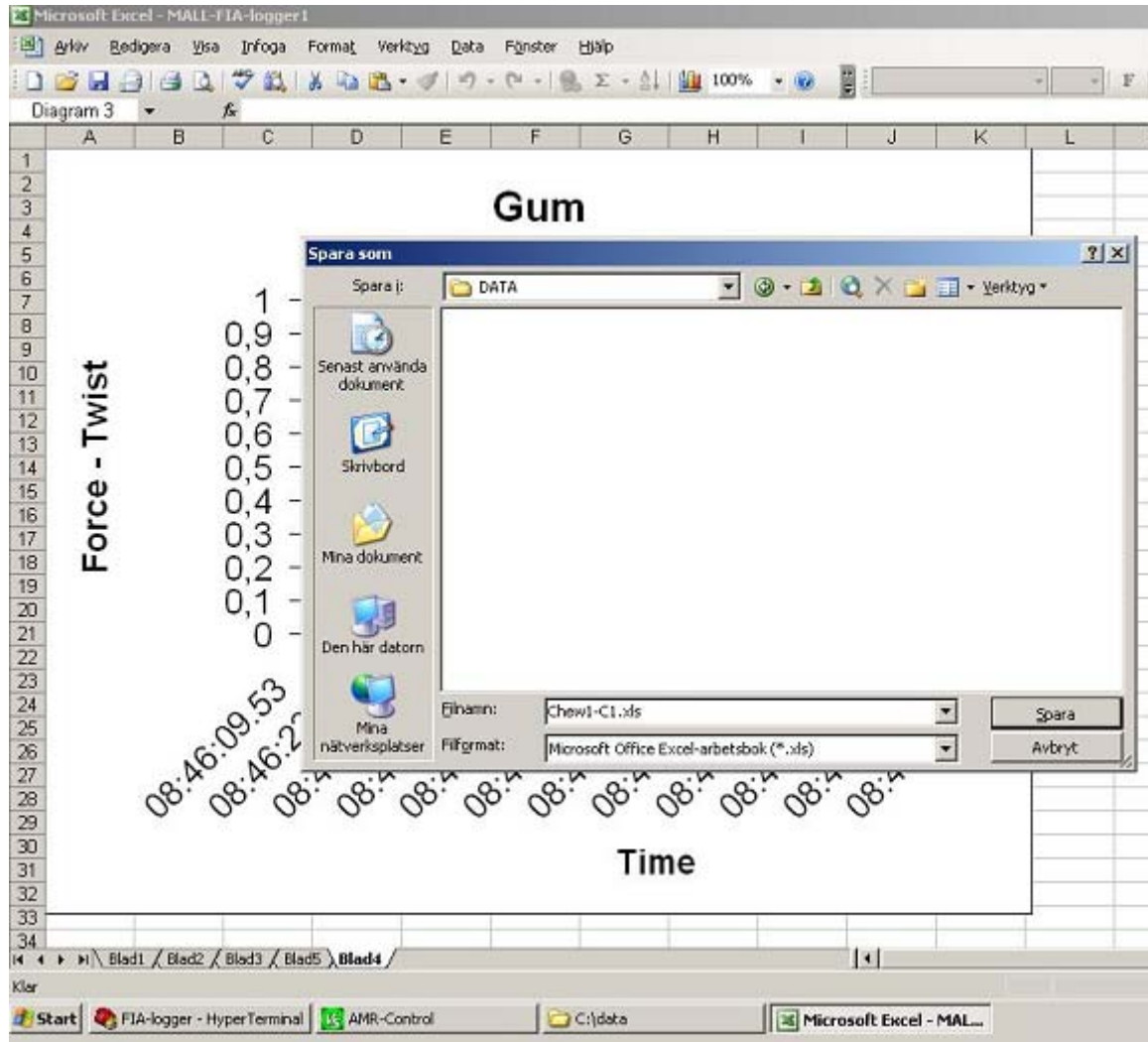
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Picture 26. Diagram showing torque in Newtoncentimeter (Ncm) on the formulation vs time ("Blad 4").



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Picture 27. Save the document.

Finish

To finish: with the control switches, move the lifts down. Shut off main power on the left control box, open the door of the safety cupboard and then take out liquid samples.