Processing of **Scopix** data
In **Recorder mode**

For maintenance purposes, it can be useful to monitor a process over a longer period, ranging from ten minutes to several weeks, in order to qualify a problem which occurs at random or at considerable intervals. Data recording then proves a particularly useful tool, as the maintenance technician does not have to be present during this period because the instrument will store the data in its memory. The Scopix® oscilloscope is a product for use in the field equipped with a 2,500 or 50,000-point RECORDER mode.

After recording, it is useful to carry out more thorough analysis of the data on the oscilloscope.

Scopix® supports two recording formats:

- text format (*.txt),
- binary format (*.rec), which can be opened subsequently in Sx-Metro and exported into Microsoft Excel.

There are several methods for recovering the files, as required:

- transfer via USB,
- µSD card,
- FTP via Ethernet.

These various transfer methods will not be examined in this case study, which focuses instead on processing the data from the .rec or .txt files recorded in the instrument.

Measurements

Recording

Analysis

Text file (*.txt)

You can use the spreadsheet software of your choice: Excel or free. The text file created contains the values of the 2,500 points (or 50,000 points*) recorded by the oscilloscope.

*If the HX0077 "Extended acquisition memory" option is installed.

> **Important note: all the measurements must have the same recording duration for correct display on the template supplied.**

1 - Setting the time base

To ensure consistency with the graphs, you must first set the time base. This can be done with the drop-down list indicating all the recording times proposed by the oscilloscope.
If you cannot remember the recording duration, it is indicated in the first line of the text file. The correspondence between the time base and the total duration is shown by the table below:

2 sec	10 sec	30 sec	1 min	10 min	30 min	1 h	12 h	24 h	2 d	7 d	31 d
0.00004	0.0002	0.0006	0.0012	0.012	0.036	0.072	0.864	1.728	3.456	12.1	53.57

Once the time base has been set in accordance with the measurements, you must import the data recorded beforehand.
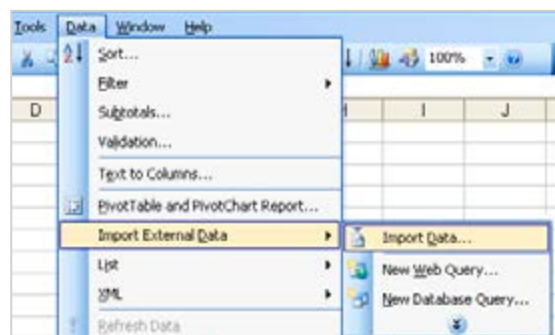
2 - Import

To import the data, you are advised to use the relevant function in Excel or another spreadsheet program.
In Excel, choose "Data" / "Import External Data" / "Import Data" and then search for the .txt file.
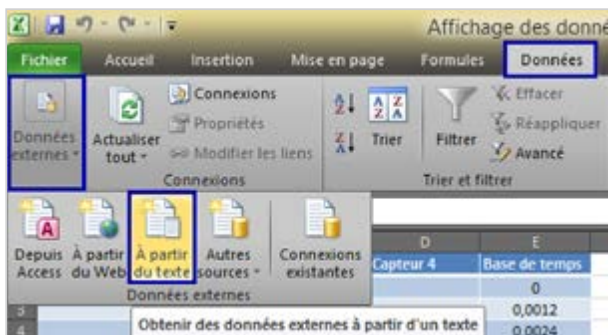
Example with Excel 2007 ".xlsx" file


Example with Excel 2003 ".xls" file

When you have selected the text file to import, a window opens.
Then select "Delimited" and enter the line to start the import: Click on Next .

The file type is delimited and the data import starts at line 3, as we do not use the first two lines.

No settings are necessary on page 2.
On **page 3**, click on Advanced , and then change the decimal separator to "." (if necessary).
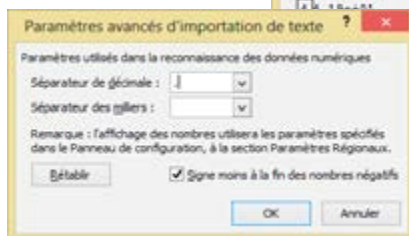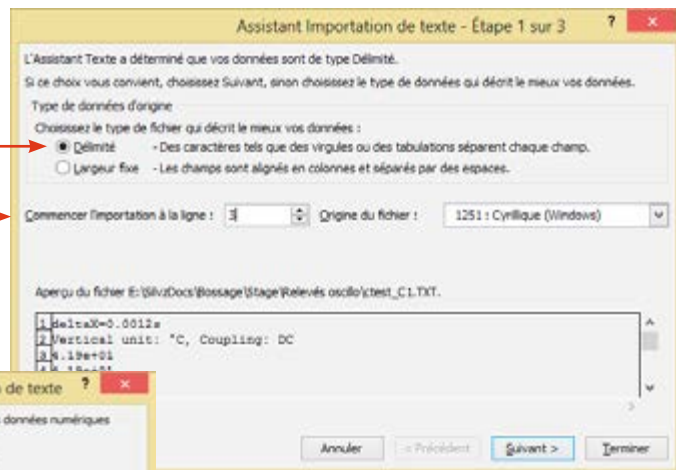
Then click on Finish , and insert the data in cell A2, B2, C2 or D2 (for example).
Repeat the import for each of your sensors.

The following graphics are available:

- The "Graph" tab offers a view of the 4 curves over the total duration of the recording.
- In the "zoomed graph" tab, the display area has been extended to provide greater accuracy for viewing the curves and temperature variations over time.

You can also create your own Excel spreadsheet or use a different processing software product to complete your study.
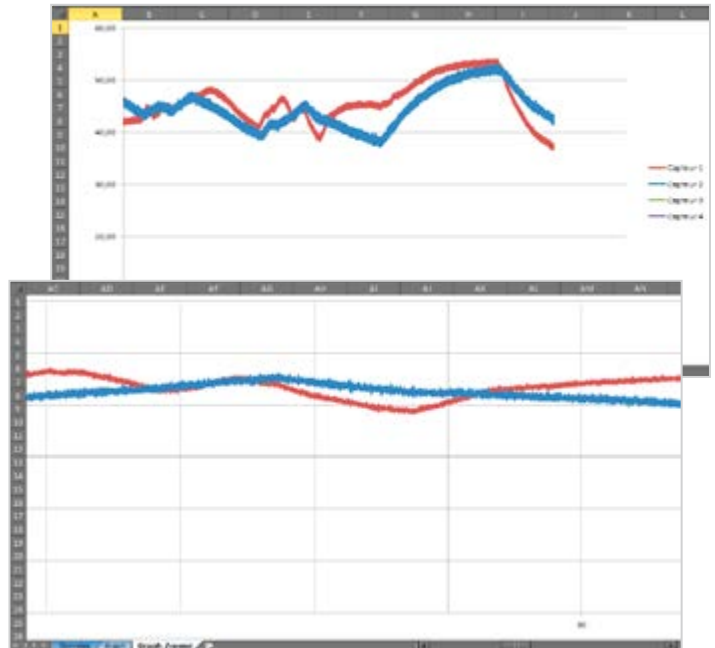
Recorder file (*.rec)

1 - The ".rec" files cannot be processed directly by an Excel spreadsheet. To use these data, you must import them using the Sx-Metro software. To do this, once you have opened the software, click on File / Open and open the ".rec" file which you have transferred onto your computer.
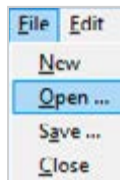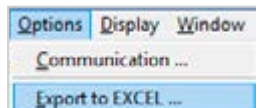
2 - It is also possible to import the ".rec" file from the oscilloscope with Sx-Metro by clicking on File / Import .

Once you have completed the import, a window opens showing the saved traces. You must now process these data.
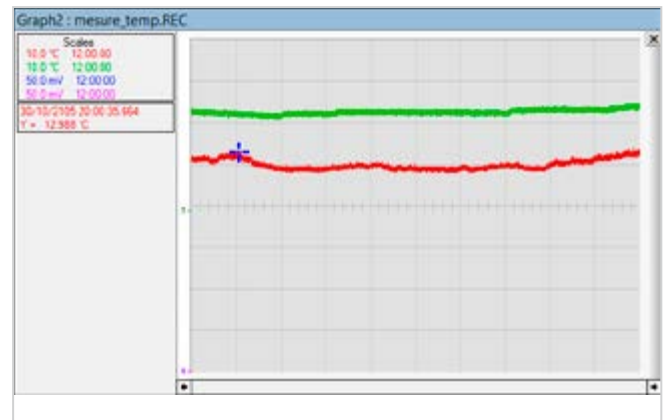
3 - Option / Export to EXCEL can be used for simple, effective transfer into a spreadsheet.

An interface opens in which you must indicate the working directory, i.e. the directory where the Excel file generated will be saved.

In the example opposite, this directory is "E:/Mesure_temperature".
The second parameter is the name of the Excel file generated ("Mesure_temperature.xls" in this example).

4 - You must then click on Start to open Excel. Once it is ready, you are prompted to click on Export to begin the data transfer.

The length of the transfer varies according to the options on your oscilloscope.
If the "**HX0077** acquisition memory extension" option is present on your Scopix, the acquisition memory is 50,000 points instead of 2,500.
Once the transfer has finished, you can quit the import interface.

Recorder file (*.rec)

### 5 - Reading in the spreadsheet

The Excel spreadsheet then contains all the values from each sensor, associated with the acquisition date and time.

6 - A graph based on the data can be displayed as follows:

- In Excel 2003 or lower:

Select all the columns containing the data (slide the mouse over the column names - A, B and C in our example).
Click on "Inserti and "Chart" and then, in the a new "Line" window opened, select the first in the list.
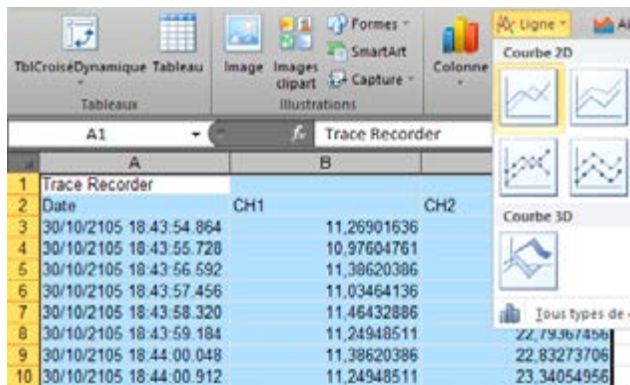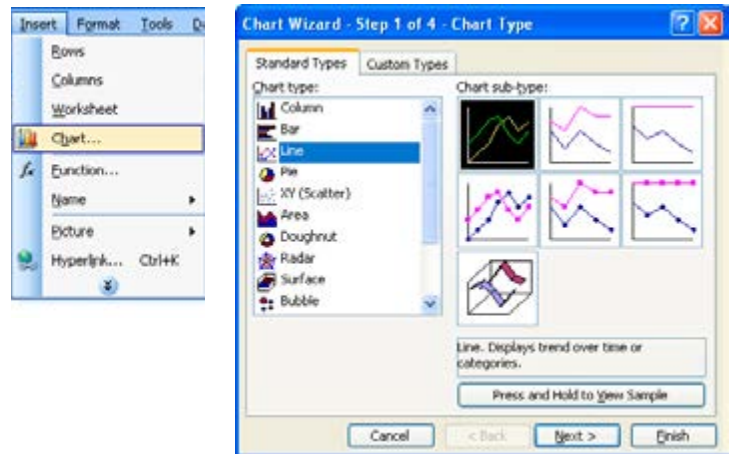
- In Excel 2007 and higher:

Select all the columns containing the data (slide the mouse over the column names - A, B and C in our example).
In the "Insert" tab, choose "Line" / "2D curve" / "Curve".

The curve is then plotted automatically using the data from the sensors as a function of time.
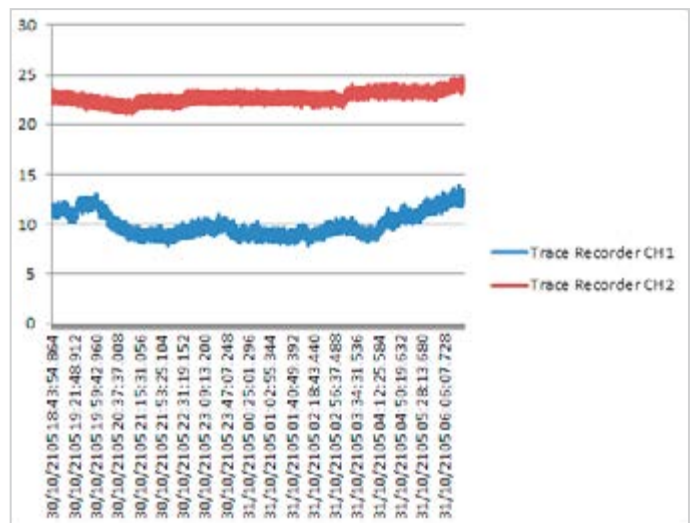
TIP

With Excel 2003, each graph is limited to
32,000 points. When the curve is displayed,
the total points are divided into 2 x (25,000 points).