

Documentation Porteau 4

- ✓ User Guide Import SCADA

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Scada Import Help

Command Line to Run

In command line mode, this tool enables the import of data from a specific database containing scada records (Excel files or Microsoft SQL Server) to object measurement in a Porteau XPTO file. To launch it, it's necessary to access to a specific class in the jar porteau file (executable for java). Open a CMD Console in Windows, put the prompt in the directory where Porteau executable is installed, by default C:\Program Files\Inrae\Porteau4.

Run the batch command file **importScada.bat** by filling out the 4 parameters:

- **name of the server** if using Microsoft SQL Server or a keyword such as "server" if using Excel files
- **name of the base** to access in SQL Server or "base" if using Excel files
- **beginning date** of the data to import written as yyyy-mm-dd format
- **end date** of the data to import written as yyyy-mm-dd format. The minimum difference between beginning and end date is set to one day.

CSV file to link Scada to Porteau Data

In order to import data, we need a system which links one data in Scada to one Object in Porteau and must be able to assign one of the 7 types of data described below:

- **Pressure**, converted to a measure of pressure on an ordinary node,
- **Flow**, converted to a flow on a link, or a pattern of a demand model,
- **FlowSum**, like an index of a flowmeter, converted to a flow on a link, or a pattern of a demand model,
- **Level**, converted to a tank node as the level measurement, or to a resource node as the piezometric head fixed value from Zomayet,
- **State**, converted to the state of a pump or a motorised valve (0 or 1), the values are converted to a clock regulator,
- **Concentration**, converted to the measure value on an ordinary node,
- **Temperature**, converted to the measure value on an ordinary node.

A total of 2 types of usage are allowed:

- **Measure**: the value is converted into the measure on a node, a link,
- **Limit**: the value is converted to a fixed limit (piezometric head on resource) or state (pump).

A total of 6 types of Porteau object can be affected:

- Ordinary node, code by "**Ordinaire**",
- Reserve node, code by "**Reserve**",
- Resource node, code by "**Ressource**",
- Link, code by "**Troncon**",
- Hydraulic Link Equipment, code by "**EHT**",
- Model of demand. code by "**Modele**",

A CSV file containing one line for each data to convert is built with the following format by column without header line:

- **1: rank**; an integer standing for the line item number. It is used to order the lines when using Excel file (or an other software),

- 2: **name**; a string containing the name of the data to read in the data base or the header of the column in the Excel file in the first tab,
- 3: **description**; a comment string to describe the data
- 4: **used**; state 1 if this line is used; state 0 otherwise. This boolean codification ensures to save a line without importing the corresponding data,
- 5: **typeObject**; the type of the object in Porteau. It has to be affected with one of the types described above,
- 6: **nameObject**; the name of the object in Porteau. It has to be affected with the string used as name in Porteau (name of node, name of link that has to be completed)
- 7: **Measure**; the type of data to be converted (Pressure, Level ...)
- 8: **Usage**; convert the values to measurements or limit conditions in Porteau
- 9: **Factor**; an affine function is used to convert the values to Porteau Unit System, this term stands for the slope A of the line ($Y=AX+B$)
- 10: **Translate**; an affine function is used to convert the values to Porteau Unit System, this term stands for the intercept B of the line ($Y=AX+B$)
- 11: **File**; if the data are read in Excel files, this term is filling out with the complete path to the Excel file; it must stay empty otherwise.

Some lines are showed as example of CSV file using a Microsoft SQL Server Base:

1	A01M0000	POLY - Mesure de niveau PC2	1	Ressource	PC2 Polygone	Level	Limit	-1	138.264
2	A01M0001	POLY Salle 1000 Mesure de Pression	1	Ordinaire	od106955	Pressure	Measure	10.197	0
3	A01M0002	POLY. G8 Debit instantane	1	Troncon	Poly_PC_2_7	Flow	Measure	0.27778	0
4	A01M0003	POLY. G8 totalisation debit	0	Troncon	Poly_PC_2_7	Flowsum	Measure	1	0
34	A03M0007	OBER - Niveau Puits	1	Ressource	Puits Oberhausbergen	Level	Limit	-1	150.279
35	A04M0001	NV_RES. Niveau Bache	1	Reserve	Reversoir Ober	Level	Measure	0.01	0
47	MOD_B01G01_MA	POLY - Etat Groupe 1 - bit de marche	1	EHT	Poly_PC_1_1	State	Limit	1	0
67	ST102_TM110	Romens - Temperature	1	Ordinaire	N_Romens	Temperature	Measure	1	0
68	ST102_TM112	Romens - Chlore	1	Ordinaire	N_Romens	Concentration	Measure	1	0
330	BILAN_15MIN_SECTO1	Secteur 01	1	Modele	Centre	Flow	Limit	1	0
349	A05_ES120	Robertsau	0	Modele	Not used	Flow	Limit	1	0

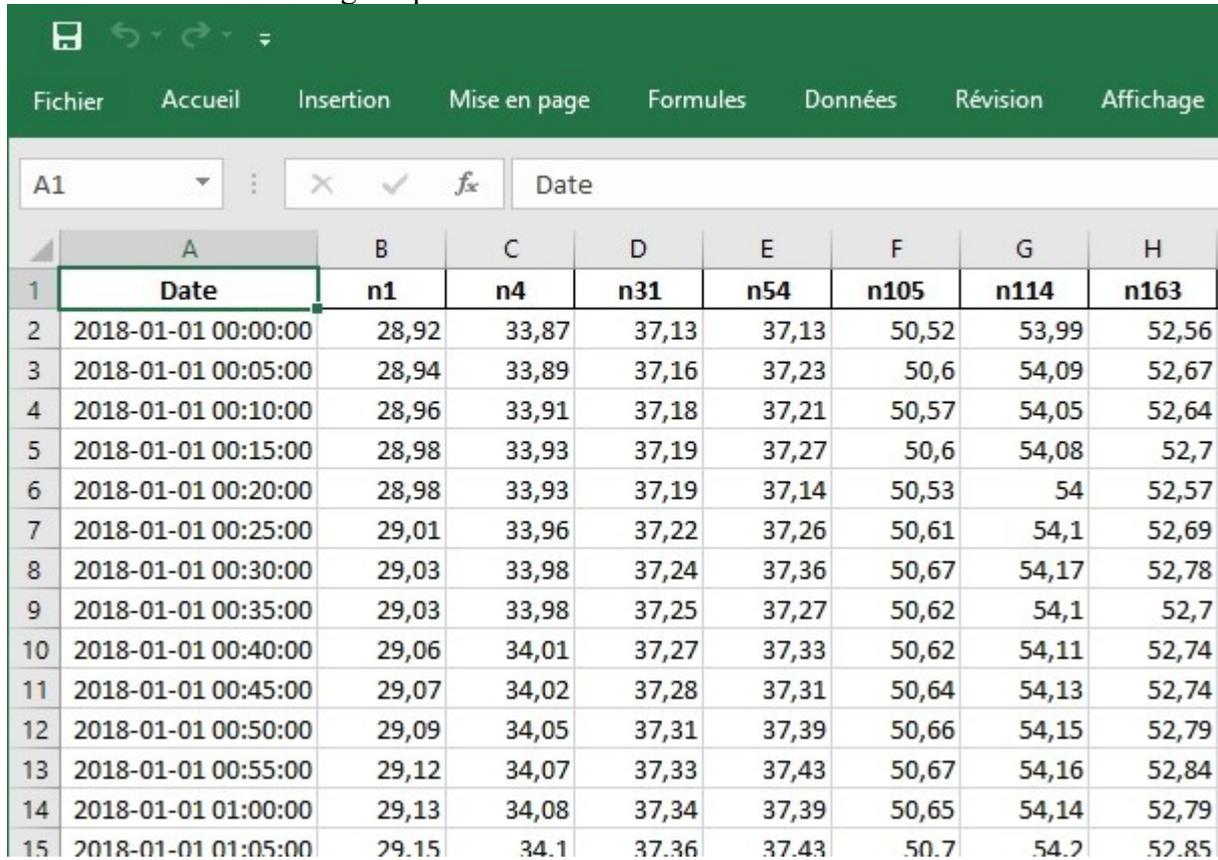
Other lines to show example of CSV file using some Excel files, the second line begins with the character ; telling the tool to jump this line:

0	T1	T1	1	Reserve	T1	Level	Measure	1	0	D:\bwdsa2020\2018_BattLeDIM_Data_v1.1\level.xlsx
;1	T1	T1	0	Ressource	T1	Level	Limit	1	98.68	D:\bwdsa2020\2018_BattLeDIM_Data_v1.1\level.xlsx
1	PC_PUMP_1	PC_PUMP_1	1	EHT	PC_PUMP_1	State	Limit	1	0	D:\bwdsa2020\2018_BattLeDIM_Data_v1.1\stateP1.xlsx
2	p227		1	Troncon	p227	Flow	Measure	0.277778	0	D:\bwdsa2020\2018_BattLeDIM_Data_v1.1\flows.xlsx
3	p235		1	Troncon	p235	Flow	Measure	0.277778	0	D:\bwdsa2020\2018_BattLeDIM_Data_v1.1\flows.xlsx
4	PUMP_1		1	Troncon	PUMP_1	Flow	Measure	0.277778	0	D:\bwdsa2020\2018_BattLeDIM_Data_v1.1\flows.xlsx

5	P-Residential	P-Residential	1	Modele	P-Residential	Flow	Limit	1	0	D:\bwdsa2020\2018_BattLeDIM_Data_v1.1\pattern2018.xlsx
6	P-Commercial	P-Commercial	1	Modele	P-Commercial	Flow	Limit	1	0	D:\bwdsa2020\2018_BattLeDIM_Data_v1.1\pattern2018.xlsx
7	n1	n1	1	Modele	n1	Flow	Limit	1	0	D:\bwdsa2020\2018_BattLeDIM_Data_v1.1\demands.xlsx
89	n1	n1	1	Ordinaire	n1	Pressure	Measure	1	0	D:\bwdsa2020\2018_BattLeDIM_Data_v1.1\pressures.xlsx
90	n4	n4	1	Ordinaire	n4	Pressure	Measure	1	0	D:\bwdsa2020\2018_BattLeDIM_Data_v1.1\pressures.xlsx

Excel Format

As illustrated above in the example of CSV file for pressures at nodes n1 and n4, here is a part of the Excel file containing the pressures for all nodes' measurements.



	A	B	C	D	E	F	G	H
1	Date	n1	n4	n31	n54	n105	n114	n163
2	2018-01-01 00:00:00	28,92	33,87	37,13	37,13	50,52	53,99	52,56
3	2018-01-01 00:05:00	28,94	33,89	37,16	37,23	50,6	54,09	52,67
4	2018-01-01 00:10:00	28,96	33,91	37,18	37,21	50,57	54,05	52,64
5	2018-01-01 00:15:00	28,98	33,93	37,19	37,27	50,6	54,08	52,7
6	2018-01-01 00:20:00	28,98	33,93	37,19	37,14	50,53	54	52,57
7	2018-01-01 00:25:00	29,01	33,96	37,22	37,26	50,61	54,1	52,69
8	2018-01-01 00:30:00	29,03	33,98	37,24	37,36	50,67	54,17	52,78
9	2018-01-01 00:35:00	29,03	33,98	37,25	37,27	50,62	54,1	52,7
10	2018-01-01 00:40:00	29,06	34,01	37,27	37,33	50,62	54,11	52,74
11	2018-01-01 00:45:00	29,07	34,02	37,28	37,31	50,64	54,13	52,74
12	2018-01-01 00:50:00	29,09	34,05	37,31	37,39	50,66	54,15	52,79
13	2018-01-01 00:55:00	29,12	34,07	37,33	37,43	50,67	54,16	52,84
14	2018-01-01 01:00:00	29,13	34,08	37,34	37,39	50,65	54,14	52,79
15	2018-01-01 01:05:00	29,15	34,1	37,36	37,43	50,7	54,2	52,85

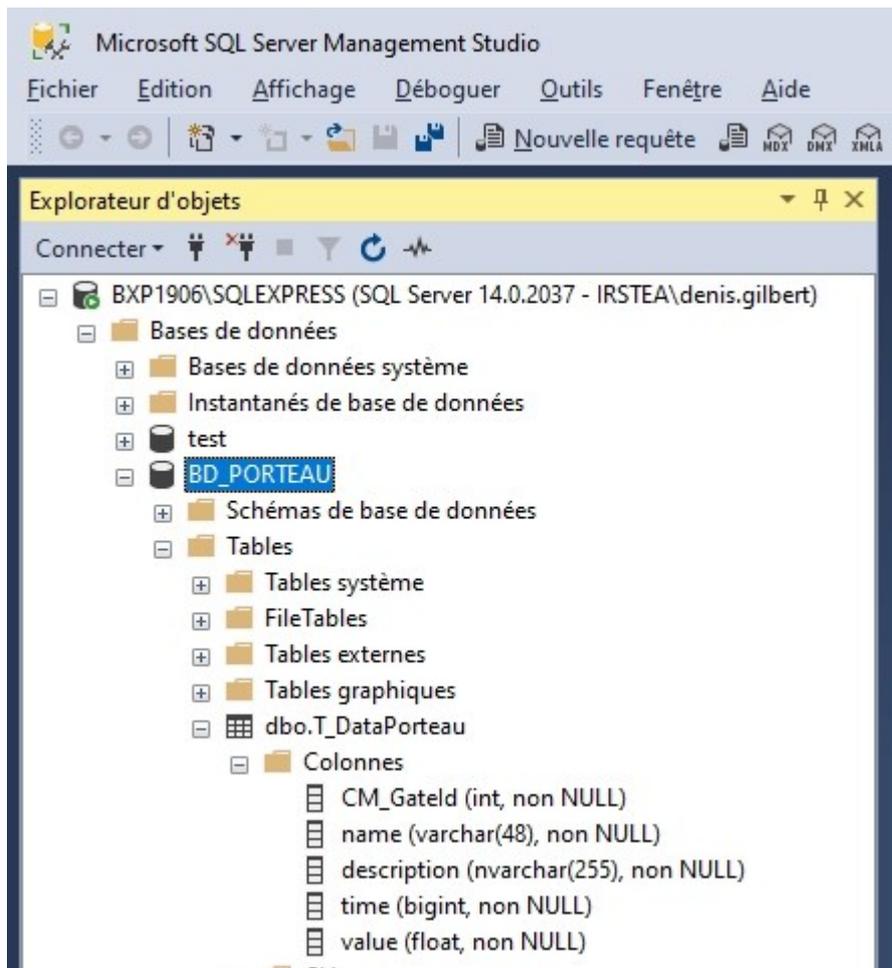
The **first column** must contain the **date in Excel format** (time in days from 1st of January 1900), with a header equals to **"Date"**.

One column with values for pressure, the header is the same has written in csv file: "n1" for example.

This is the same format for all values to import from Excel files. It is possible to add several parameters (pressure, flow, etc) into a single Excel file.

Microsoft SQL Server Format

In order to simplify the SQL code in Porteau, the name of Table and Variables in SQL Server are fixed.



The Server and the Data Base names are free, this values are done as parameters when running the batch command file.

The Data have to be recorded into a single table with 4 attributes. The name of the **Table** is **"T_DataPorteau"**.

The attributes have to be named:

- **name:** key attribute naming the data to search, for example "ST102_TM112 like in CSV file done before in the second column,
- **time:** SQL time value (in milliseconds from 1st of January 1970 in local time)
- **description:** a string of comment
- **value:** a real (float) containing the value corresponding to name and time.

The connection to the server uses Windows Authentication system with the parameter integrated security true.

Microsoft documentation can be found here:

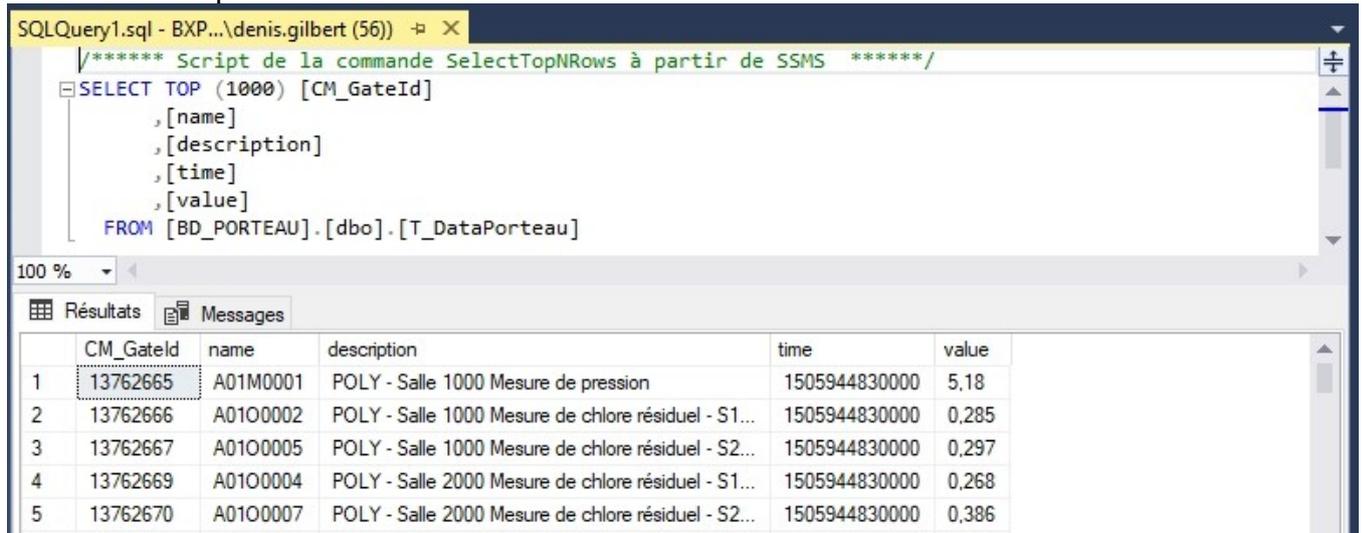
<https://docs.microsoft.com/en-gb/sql/connect/jdbc/building-the-connection-url?view=sql-server-ver15>.

The request in SQL language is:

"select * from T_DataPorteau where Name like '"+name+"' order by time";

Then, the values corresponding to the period to import are selected and converted to the Porteau Data Object.

Here is an example of the first lines of a database:



The screenshot shows a SQL query window with the following query:

```

/***** Script de la commande SelectTopNRows à partir de SSMS *****/
SELECT TOP (1000) [CM_GateId]
, [name]
, [description]
, [time]
, [value]
FROM [BD_PORTEAU].[dbo].[T_DataPorteau]

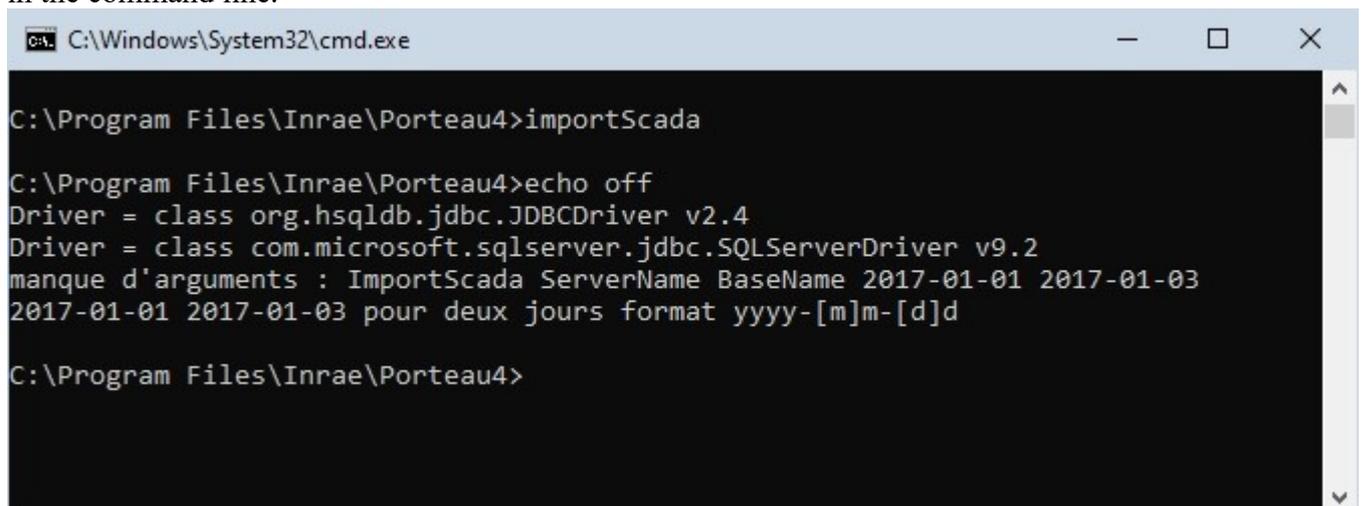
```

The results are displayed in a table with the following columns: CM_GateId, name, description, time, and value.

	CM_GateId	name	description	time	value
1	13762665	A01M0001	POLY - Salle 1000 Mesure de pression	1505944830000	5,18
2	13762666	A01O0002	POLY - Salle 1000 Mesure de chlore résiduel - S1...	1505944830000	0,285
3	13762667	A01O0005	POLY - Salle 1000 Mesure de chlore résiduel - S2...	1505944830000	0,297
4	13762669	A01O0004	POLY - Salle 2000 Mesure de chlore résiduel - S1...	1505944830000	0,268
5	13762670	A01O0007	POLY - Salle 2000 Mesure de chlore résiduel - S2...	1505944830000	0,386

Views of dialog

If `importScada.bat` is run without parameter, the tool indicates there is not enough parameters in the command line.



```

C:\Windows\System32\cmd.exe

C:\Program Files\Inrae\Porteau4>importScada

C:\Program Files\Inrae\Porteau4>echo off
Driver = class org.hsqldb.jdbc.JDBCdriver v2.4
Driver = class com.microsoft.sqlserver.jdbc.SQLServerDriver v9.2
manque d'arguments : ImportScada ServerName BaseName 2017-01-01 2017-01-03
2017-01-01 2017-01-03 pour deux jours format yyyy-[m]m-[d]d

C:\Program Files\Inrae\Porteau4>

```

For example we use the tool with only excel files, and don't need to give server and base name, so we put two strings to fill the two first parameters 'server base' and after the two dates to take the first week of 2018.

The command is: `importScada server base 2018-01-01 2018-01-08`

The tool shows some comments and open a file chooser for the CSV:

```

C:\Windows\System32\cmd.exe - importScada server base 2018-01-01 2018-01-08
C:\Program Files\Inrae\Porteau4>importScada server base 2018-01-01 2018-01-08
C:\Program Files\Inrae\Porteau4>echo off
Driver = class org.hsqldb.jdbc.JDBCdriver v2.4
Driver = class com.microsoft.sqlserver.jdbc.SQLServerDriver v9.2
home :C:\Users\Denis.Gilbert
log exists
bib exists
cheminlog:C:\Users\Denis.Gilbert\porteur\log\
cheminbib:C:\Users\Denis.Gilbert\porteur\bib\

```

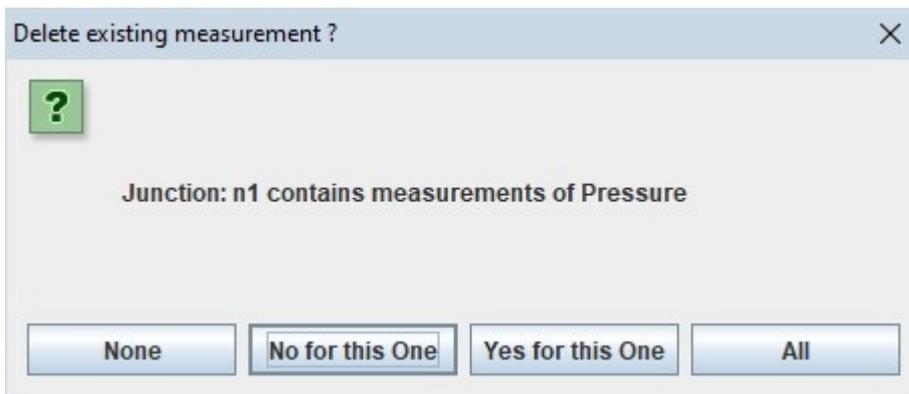
Select the CSV file containing corresponding lines to convert data.

A comment appears in the console windows with the complete path to the CSV and the number of measurements to read, and if present the number of comment lines.

A new file chooser to select the XPTO is displayed. When the tool reads the XPTO if it finds some measure that will be rewritten, a dialog is displayed to choose:

- **None:** no measure will be deleted, the previous data in XPTO file are saved, the answer is done for all future measures,
- **No for this One:** this measure is kept, if an other one is found, a new dialog will appear,
- **Yes for this One:** this measure is not kept, the new values are read and replace old ones,

All: all values are deleted and replaced by new ones.



A comment in console is written when the Porteau XPTO is read. A progress bar shows the state of conversion.



At the end, a file chooser dialog is displayed to choose the location of the new XPTO file.