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Asix.Evo - Asix Excel Add-In

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ASKOM

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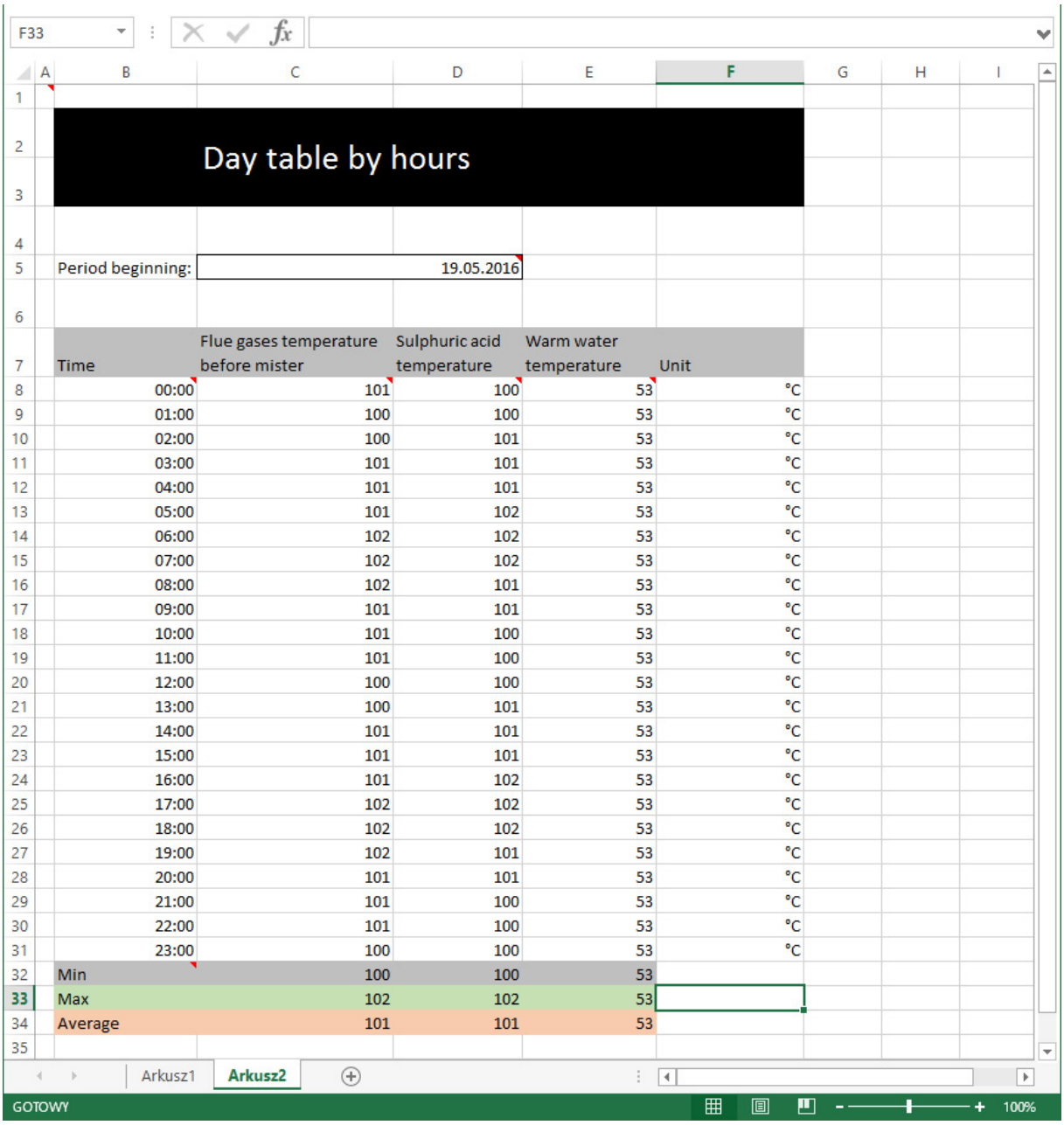
1. Introduction

The module is an add-in for Microsoft Excel that allows a typical Excel user to use process data of current and past Asix.Evo application, in a simple and intuitive manner. Add-in is installed automatically during the installation of Asix package starting from version 8.1.5. MS Excel interface is then extended with ASIX tab. For more advanced users, it is also possible to access data using scripts, based on a specially designed VB object and functions.

This add-in is supported by Excel version 2007 or later. It is also necessary to install Microsoft.NET Library 4.6 - free download from Microsoft website. Supported Windows systems include: Windows Vista SP2 or later or Windows Server 2008 SP2 or later.

Add-in can retrieve data from Asix.Evo package version 8.1.5 or later.



Day table by hours

Period beginning:		19.05.2016			
Time	Flue gases temperature before mister	Sulphuric acid temperature	Warm water temperature	Unit	
00:00	101	100	53	°C	
01:00	100	100	53	°C	
02:00	100	101	53	°C	
03:00	101	101	53	°C	
04:00	101	101	53	°C	
05:00	101	102	53	°C	
06:00	102	102	53	°C	
07:00	102	102	53	°C	
08:00	102	101	53	°C	
09:00	101	101	53	°C	
10:00	101	100	53	°C	
11:00	101	100	53	°C	
12:00	100	100	53	°C	
13:00	100	101	53	°C	
14:00	101	101	53	°C	
15:00	101	101	53	°C	
16:00	101	102	53	°C	
17:00	102	102	53	°C	
18:00	102	102	53	°C	
19:00	102	101	53	°C	
20:00	101	101	53	°C	
21:00	101	100	53	°C	
22:00	101	100	53	°C	
23:00	100	100	53	°C	
Min	100	100	53		
Max	102	102	53		
Average	101	101	53		

Fig. Example of a Table with Data Retrieved from Asix Application.

2. Asix.Evo Server Configuration

Before sharing the add-in with the users, Administrator must configure the data server. For this, Asix.Evo Mobile server and "Server REST" option must be enabled in Asix.Evo application:

Asix.Evo> *Application Explorer* > *Station Settings* > *Asix Mobile*:

Run Asix Mobile Server

Run REST (Asix Excel Add-In) Server

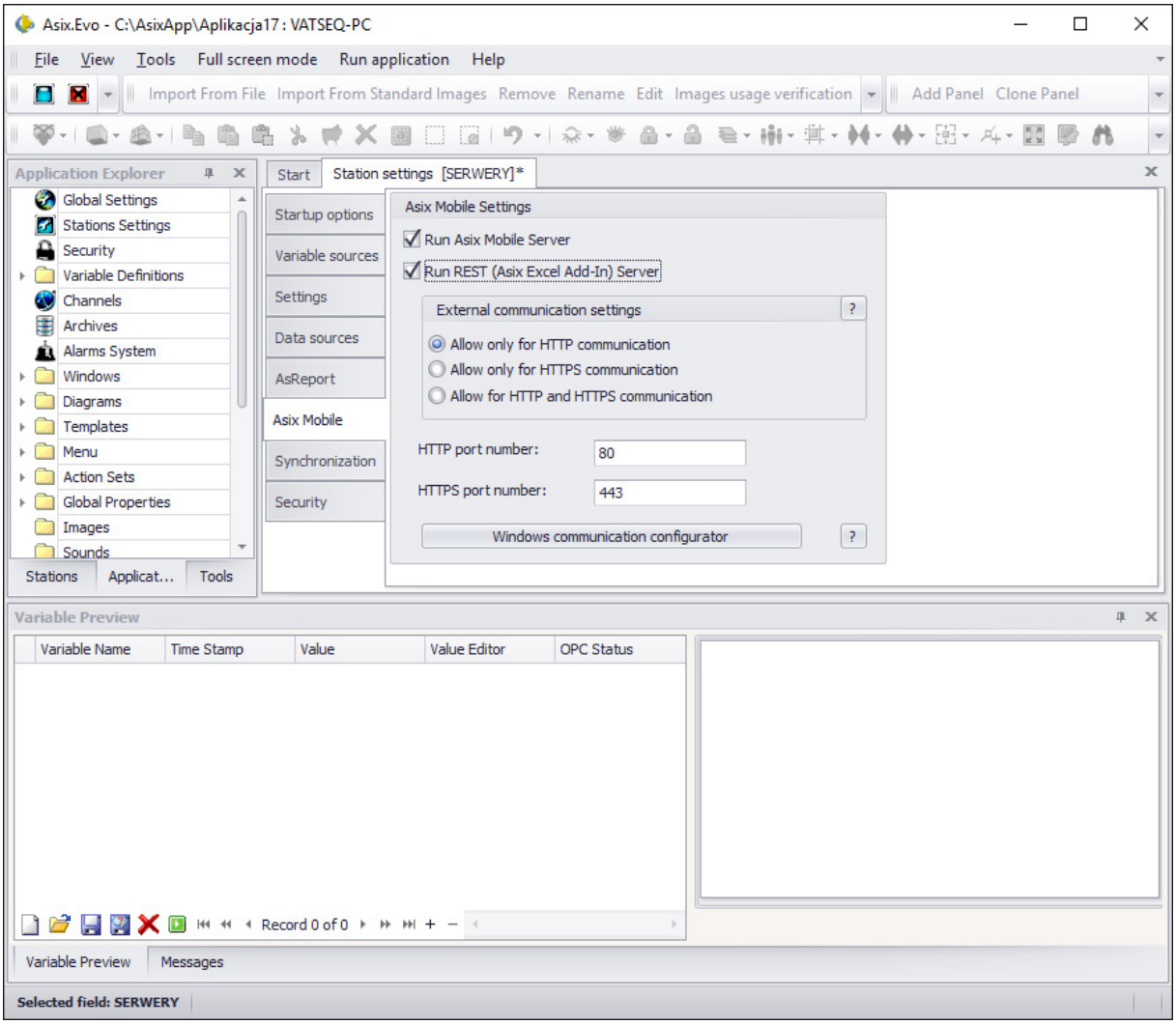


Fig. Asix.Evo Server Configuration Options.

3. Add-In Installation and Configuration

Asix Excel add-in is distributed as two files: AsixExcelAddIn32.xll and AsixExcelAddIn64.xll. First file is designed for Excel in 32-bit version, and the other one for Excel in 64-bit version.

The add-in is installed automatically during the installation of Asix package version 8.1.5, when Excel is already installed on your computer.

There is the possibility of manual instalaltion of Asix Excel add-in. You can do that when there was no Excel during the Asix package installation or the Asix package is not installed and only Asix Excel add-in is demanded.

In order to manually install the add-in, select ***Options*** in Excel. ***Excel Options*** window will come-up.

To install Asix Excel add-in:

1. Click ***File*** tab, click ***Options***, then click ***Add-Ins*** category.
2. In ***Manage*** field, click **Excel add-ins**, and then click ***Go...*** button. A dialog box ***Add-ins*** will come-up.

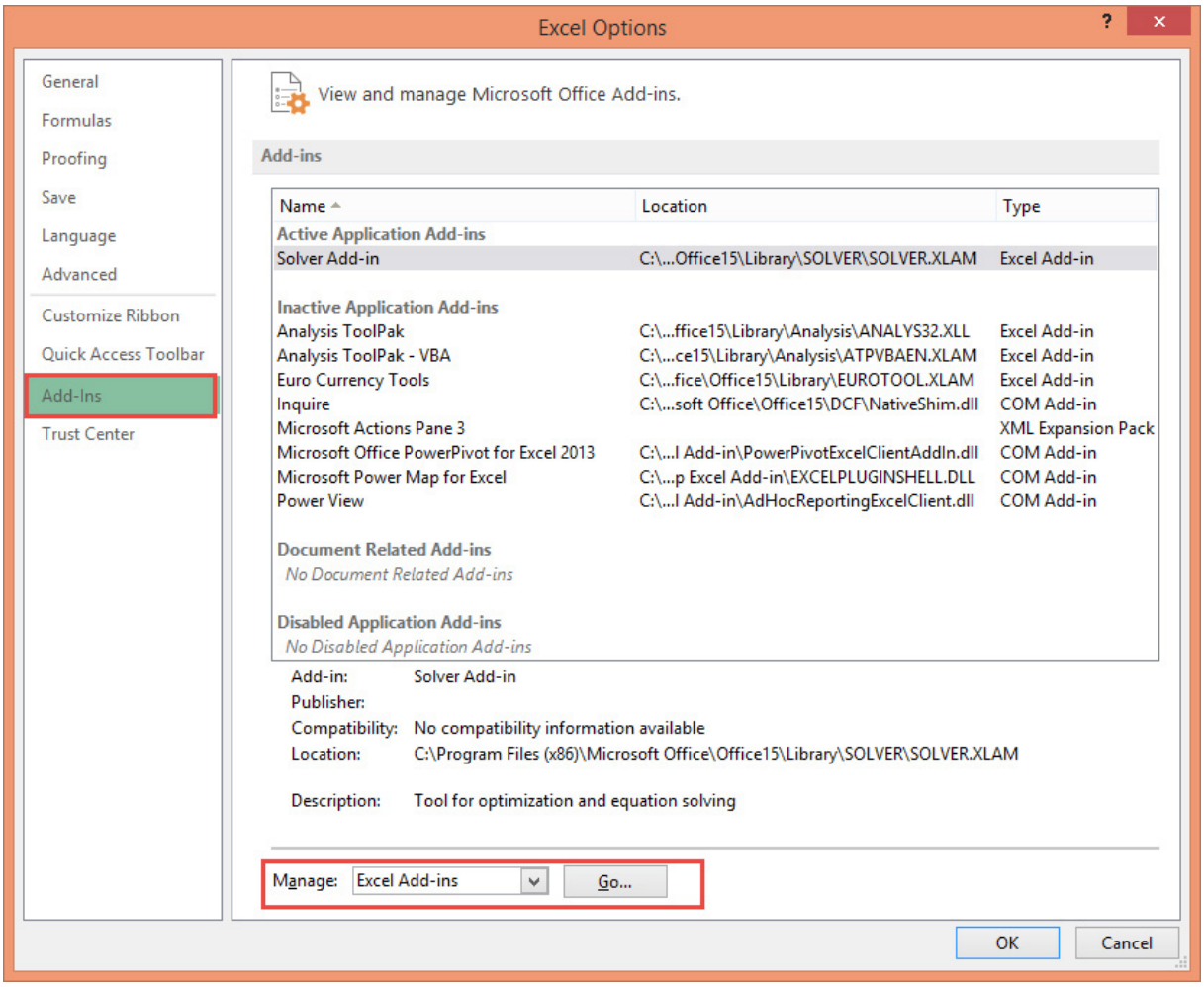


Fig. "Excel Options" Window.

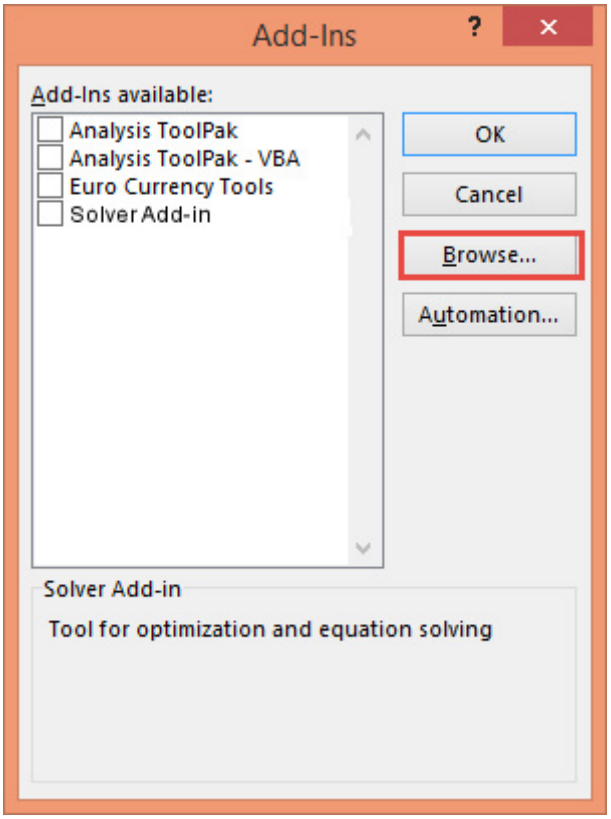


Fig. Dialog Box "Add-Ins".

3. If the desired add-in is not in ***Add-ins Available*** field, it must be added. Click ***Browse…*** (in the dialog box ***Add-Ins***),and find the add-in (AsixExcelAddIn32.xll or AsixExcelAddIn64.xll depending on the Excel version), and then click ***OK***. After this operation, add-in will appear in the list of available add-ins.

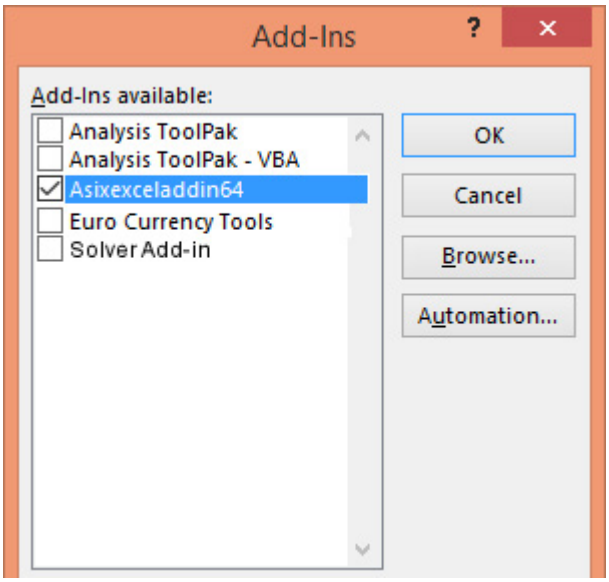


Fig. *Dialog Box "Add-Ins" with Asix Excel Add-In.*

4. Select **Asix Excel** add-in and confirm by ***OK*** button.
5. **After closing the window in Excel bar, a new ASIX** tab will come-up, with Asix Excel add-in command buttons. (Possibly requires Excel reset).

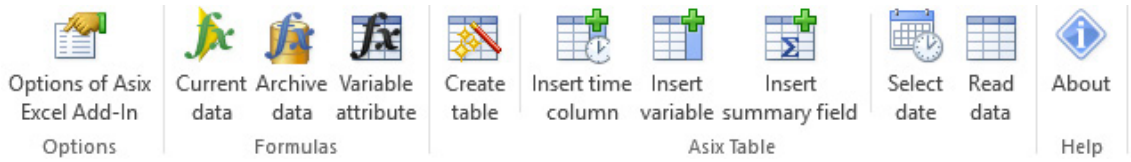


Fig. Excel-"ASIX" Tab.

To configure Asix Excel add-in:

1. Click ***Options of Asix Excel Add-In***. ***Options*** window will come-up.
2. Enter ***Asix.Evo Server Address***.

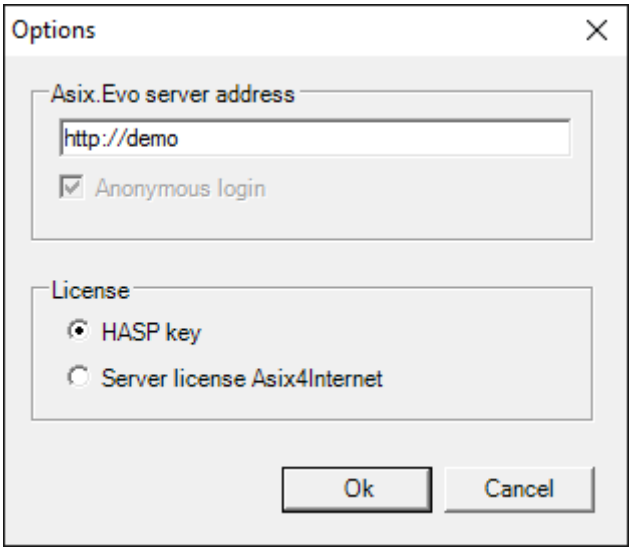


Fig. Asix Excel Add-In Configuration Window.

You can enter the IP address of the computer or its name. If only the address is entered, http protocol will be used by default. You can also specify an encrypted https protocol. Contact your Administrator to determine which protocols are enabled on the Asix.Evo server.

Access to the server is anonymous and does not require login.

The add-in will only work when Microsoft .NET 4.6 Library had been installed. Local installation of Asix package is not necessary.

4. Uninstalling Add-In

 **To disable Excel add-in:**

1. Click ***File*** tab, click ***Options***, then click ***Add-Ins*** category.
2. In ***Manage*** field, click **Excel Add-ins**, and then click ***Go...*** button.
3. In the ***Add-ins Available*** field, clear the selection box next to the **Asix Excel** add-in that you want to disable, and then click ***OK***.

   In many cases, disabling the add-in removes it from the appropriate group on the bar. In other cases, removing the add-in from the bar may require Excel restart.

   Note: Disabling the add-in does not remove the add-in file from your computer. You must manually remove the add-in from your computer (by default, the add-in is saved during installation of the package in the directory: ... ***Askom > Asix***).

5. Licensing

For Asix.Evo to act as a data server for Asix Excel add-in, it is required to have a Hasp server key.

Asix Excel add-in can use two types of licenses.

In the first case, it is possible to license the add-in using local Hasp key. The local computer is then required to have a minimum Hasp key in AsixConnect license.

In the second case, the data server is of Asix4Internet license. One Asix4Internet license is needed on one computer and may be shared with AsTrend in a browser and with Asix.Evo in a browser.

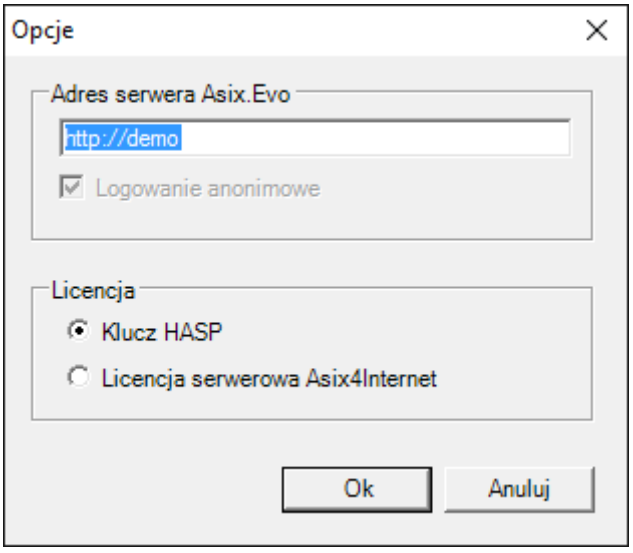


Fig. Window with the License Selection for Asix Excel.

6. Excel Formulas

Asix Excel add-in expands the pool of worksheet formulas with new formulas:

- ASIX.VAR - current value of a variable,
- ASIX.VAR.HIST - archive value of a variable,
- ASIX.VAR.HIST.N - archive values of N variables,
- ASIX.VAR.ATTRIBUTE - attribute value.
- ASIX.VAR.AGGREGATE – aggregate of historic values calculated against the current moment,
- ASIX.VAR.AGGREGATE.HIST – aggregate of historic values,
- ASIX.VAR.HISTRAW – raw value.

6.1. ASIX.VAR function

ASIX.VAR function displays the current value of a variable of Asix.Evo application in the cell. The value of the variable is automatically updated.

To use ASIX.VAR function with Excel editor:

1. Select the cell where the variable's value is to appear.
2. Click ***Insert function*** , ***Insert function*** window will come-up.
3. Select ***Asix.Evo*** category and click on the selected function. Confirm with ***OK*** button.

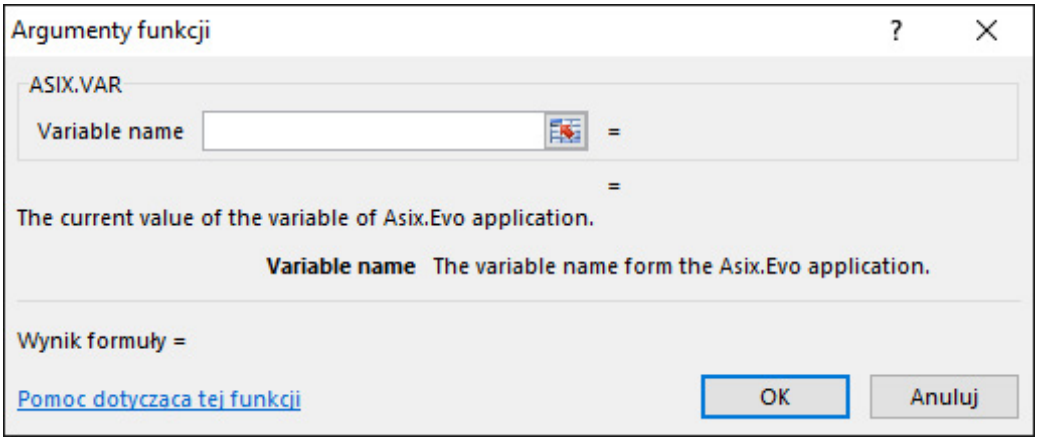


Fig. Defining the ASIX.VAR Function Argument Using Excel Editor.

4. Enter the name of the variable. Confirm with ***OK*** button.

To use ASIX.VAR function with Asix Excel add-in editor:

1. Select the cell where the variable value is to appear.
2. Click ***Current Data*** on ASIX tab - editor window will come-up on the right side of Excel worksheet.
3. In the ***VARIABLE NAME*** field, enter the name of the variable or use the ***Select*** button to select the variable from the list of available variables.
4. Otherwise, select the option of header display with the variable name.
5. Confirm with ***OK*** button.

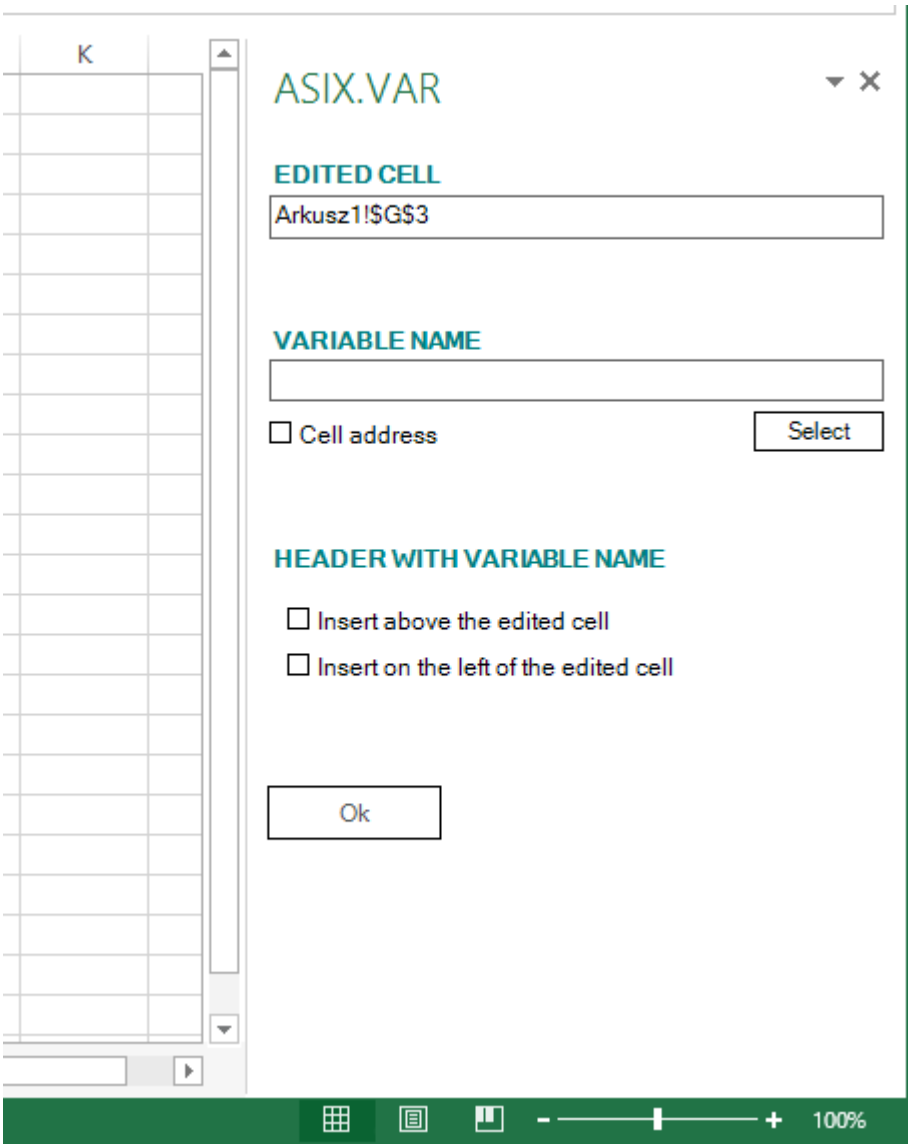


Fig. Defining the ASIX.VAR Function Frgument Using Asix Excel Add-In Editor.

This editor is better than the built-in editor in Excel, because it allows you to search the Asix.Evo application variable definition database.

6.2. ASIX.VAR.HIST function

ASIX.VAR.HIST array function displays archived aggregated values of variable of the Asix.Evo application. Archived values are retrieved once and are not updated. **In order to force the re-retrieval of data, use a combination of keys *Ctrl-Shift-Alt-F9***.

Archived values are returned as a table with time and data columns.

To use ASIX.VAR.HIST function with Excel editor:

1. As ASIX.VAR.HIST is an array formula, before opening the editor, select the cells, where you want the data (the number of selected rows corresponds to the number of values that will be displayed; the number of selected columns must match the number of columns that you want to view: one for the aggregates and other for the times (StartTime and/or EndTime, and/or StartTimeUtc and/or EndTimeUtc)).
2. Click ***Insert function*** , ***Insert function*** window will come-up.
3. Select ***Asix.Evo*** category and click on the selected function. Confirm with ***OK*** button.

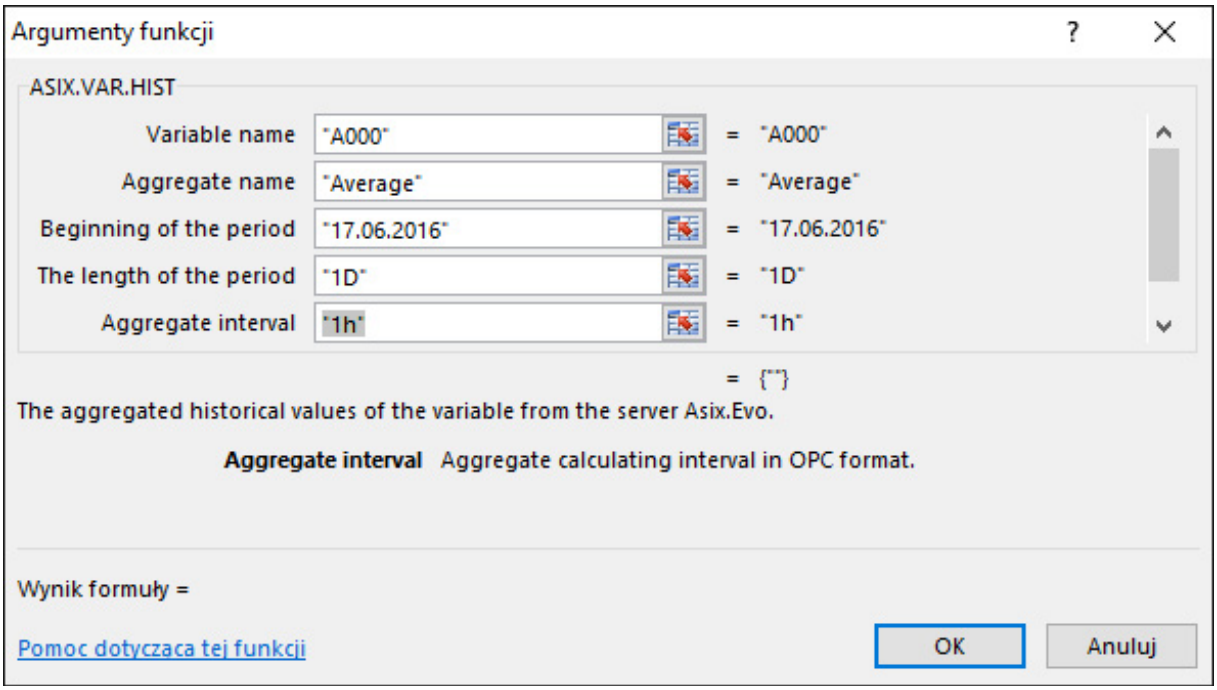


Fig. Defining the ASIX.VAR.HIST function arguments using Excel editor.

4. Enter the values of all parameters or specify the addresses of cells that contain the parameter values (entered according to the instructions). In the ***Options*** field, TimeColumns option arguments must be separated with a comma (e.g.: TimeColumns=StartTime,EndTime,StartTimeUtc). Confirm declarations with the key combination ***Ctrl***+***Shift*** and ***OK***.

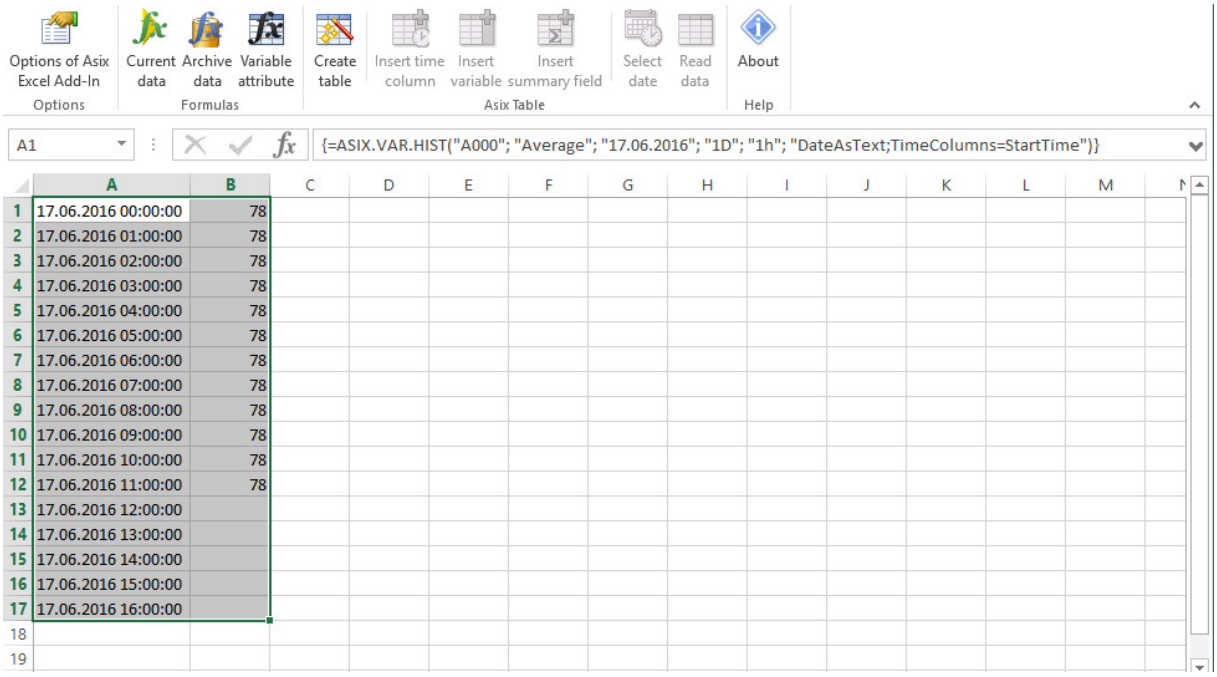


Fig. Displaying the Archived Values Using ASIX.VAR.HIST Function.

To use ASIX.VAR.HIST function with Asix Excel add-in editor:

1. As ASIX.VAR.HIST is an array formula, before opening the editor, select the cells area, where you want the data (the number of selected cells corresponds to the number of values that will be displayed; select 1 column only – 2 columns will be displayed: aggregate and time values).
2. Click ***Archive Data*** on *ASIX* tab - editor window will come-up on the right side of Excel worksheet.
3. In the ***Variable Name*** field, enter the name of the variable or use the ***Select*** button to select the variable from the list of available variables.
4. Select other values.
5. Confirm with ***OK*** button.

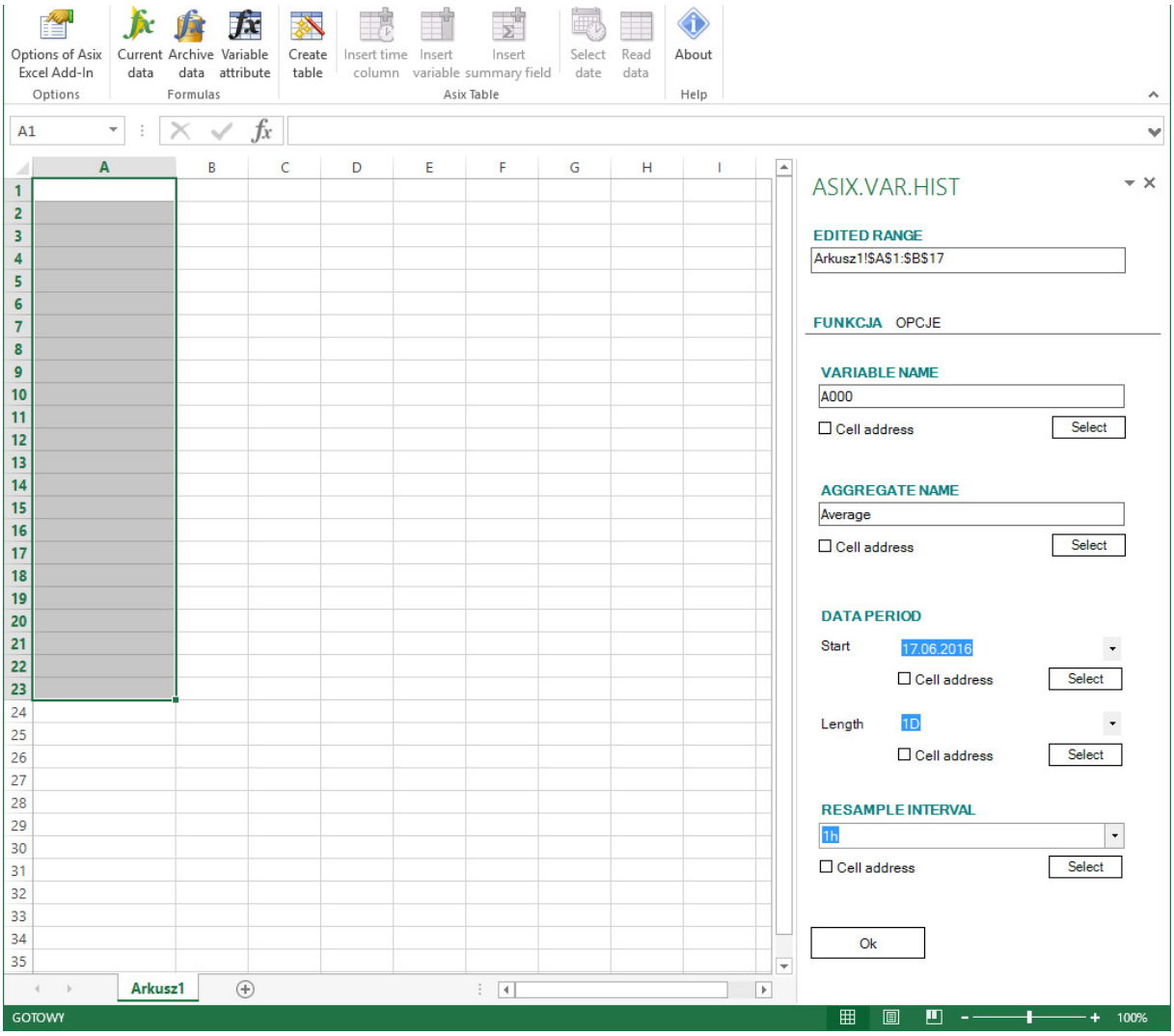


Fig. Defining the ASIX.VAR.HIST Function Argument Using Asix Excel Add-In Editor - FUNCTION Tab.

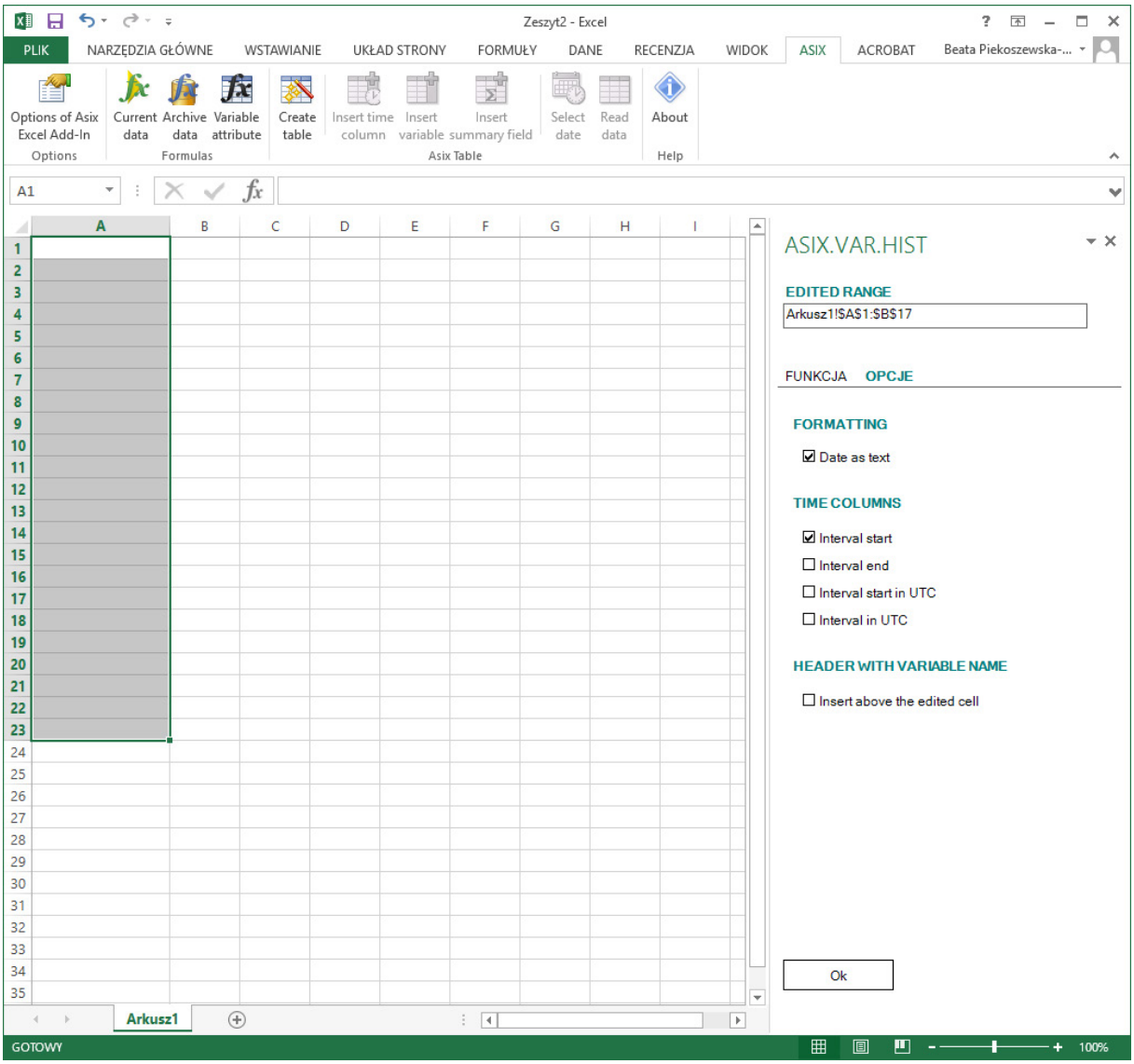


Fig. Defining the ASIX.VAR.HIST Function Argument Using Asix Excel Add-In Editor - OPTIONS Tab.

The editor allows you to search the Asix.Evo application variable definition database, select the aggregate name from the list of aggregates and contains suggested values of all ASIX.VAR.HIST function parameters.

As ***Start*** parameter, you must enter the date in local time or in OPC format. As ***Length*** and **RESAMPLE INTERVAL**, give the length of time in the OPC format.

By default, the time stamps of the historical measurement values are returned as numbers. In order to display date in Excel cell, change the cell format from "General" to for example "Short date". Option ***Data Ss Text*** allows you to return the time stamps as text values that no longer require cell format change.

By default, historical data is returned as a two-column table. The first column contains the time stamp of the start of each interval in local time. The second column contains sample values. You can retrieve the time stamp of the interval end instead of the interval start or retrieve UTC time rather than local time.

Using UTC time can be helpful when reviewing data for the day, when summer time changed to winter time. This day has 25 hours and 2:00 am occurs twice. When the UTC time is used, all time stamps are unique.

6.3. ASIX.VAR.HIST.N Function

ASIX.VAR.HIST.N array function displays archived aggregated values of many variables of the Asix.Evo application. Archived values are retrieved once and are not updated. In order to force the re-retrieval of data, use a combination of keys ***Ctrl-Shift-Alt-F9***.

Archived values are returned as a table with time and data columns.

You can insert this function using the Excel built-in editor.

To insert ASIX.VAR.HIST.N function with Excel editor:

1. As ASIX.VAR.HIST.N is an array formula, before opening the editor, select the cells, where you want the data (the number of selected rows corresponds to the number of values that will be displayed; the number of selected columns must match the number of columns that you want to view: one for the aggregates and other for the times (StartTime and/or EndTime, and/or StartTimeUtc and/or EndTimeUtc)).
2. Click ***Insert function*** fx , ***Insert function*** window will come-up.
3. Select ***Asix.Evo*** category and click on the selected function. Confirm with ***OK*** button.
4. Enter the values of all parameters o r specify the addresses of cells that contain the parameter values (entered according to the instructions). As ***Data Columns***, provide an array of texts, that is, put all the texts in curly brackets and separate by semicolons. Each text put in quotation marks shall contain the name of the variable, and name of the aggregate separated by a comma.). In the ***Options*** field, TimeColumns option arguments must be separated with a comma (e.g.: TimeColumns=StartTime,EndTime,StartTimeUtc). Confirm declarations of the required fields with the key combination ***Ctrl***+***Shift*** and ***OK***.

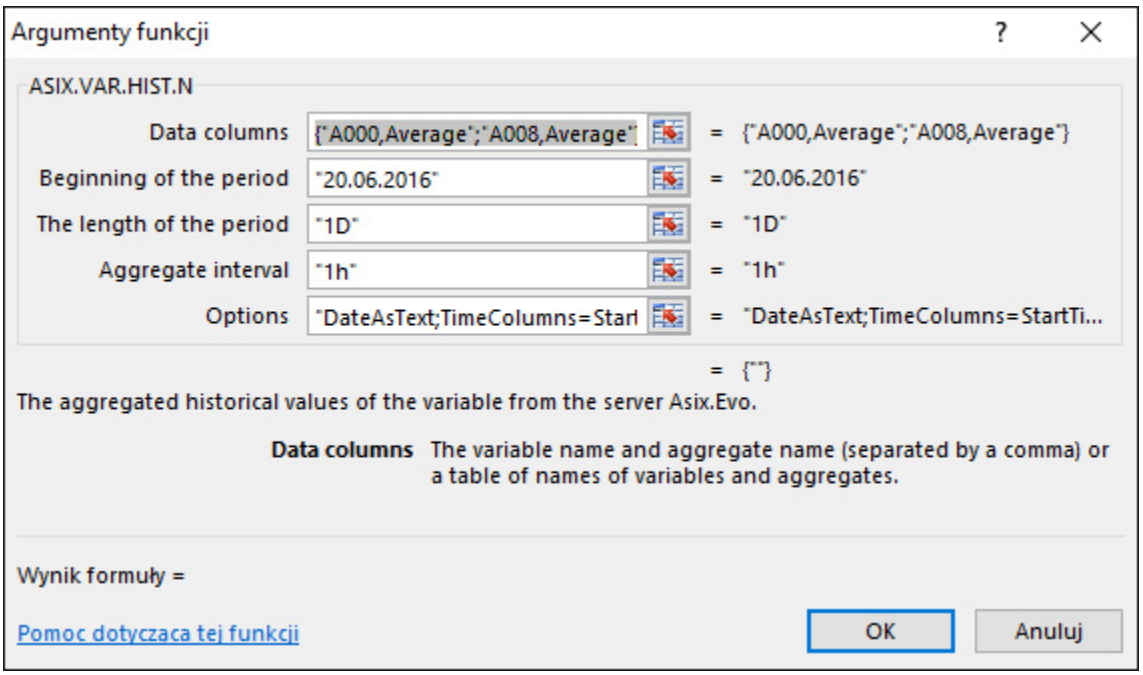
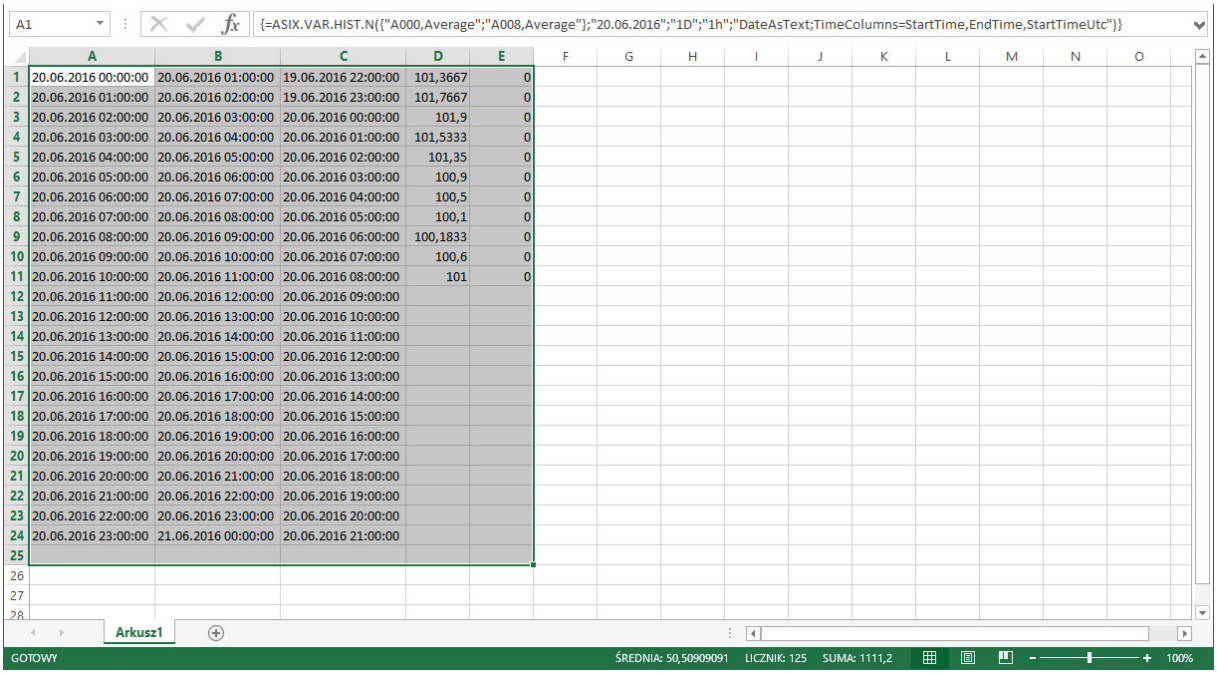


Fig. Defining the ASIX.VAR.HIST.N Function Arguments Using Excel Editor.



	A	B	C	D	E
1	20.06.2016 00:00:00	20.06.2016 01:00:00	19.06.2016 22:00:00	101,3667	0
2	20.06.2016 01:00:00	20.06.2016 02:00:00	19.06.2016 23:00:00	101,7667	0
3	20.06.2016 02:00:00	20.06.2016 03:00:00	20.06.2016 00:00:00	101,9	0
4	20.06.2016 03:00:00	20.06.2016 04:00:00	20.06.2016 01:00:00	101,5333	0
5	20.06.2016 04:00:00	20.06.2016 05:00:00	20.06.2016 02:00:00	101,35	0
6	20.06.2016 05:00:00	20.06.2016 06:00:00	20.06.2016 03:00:00	100,9	0
7	20.06.2016 06:00:00	20.06.2016 07:00:00	20.06.2016 04:00:00	100,5	0
8	20.06.2016 07:00:00	20.06.2016 08:00:00	20.06.2016 05:00:00	100,1	0
9	20.06.2016 08:00:00	20.06.2016 09:00:00	20.06.2016 06:00:00	100,1833	0
10	20.06.2016 09:00:00	20.06.2016 10:00:00	20.06.2016 07:00:00	100,6	0
11	20.06.2016 10:00:00	20.06.2016 11:00:00	20.06.2016 08:00:00	101	0
12	20.06.2016 11:00:00	20.06.2016 12:00:00	20.06.2016 09:00:00		
13	20.06.2016 12:00:00	20.06.2016 13:00:00	20.06.2016 10:00:00		
14	20.06.2016 13:00:00	20.06.2016 14:00:00	20.06.2016 11:00:00		
15	20.06.2016 14:00:00	20.06.2016 15:00:00	20.06.2016 12:00:00		
16	20.06.2016 15:00:00	20.06.2016 16:00:00	20.06.2016 13:00:00		
17	20.06.2016 16:00:00	20.06.2016 17:00:00	20.06.2016 14:00:00		
18	20.06.2016 17:00:00	20.06.2016 18:00:00	20.06.2016 15:00:00		
19	20.06.2016 18:00:00	20.06.2016 19:00:00	20.06.2016 16:00:00		
20	20.06.2016 19:00:00	20.06.2016 20:00:00	20.06.2016 17:00:00		
21	20.06.2016 20:00:00	20.06.2016 21:00:00	20.06.2016 18:00:00		
22	20.06.2016 21:00:00	20.06.2016 22:00:00	20.06.2016 19:00:00		
23	20.06.2016 22:00:00	20.06.2016 23:00:00	20.06.2016 20:00:00		
24	20.06.2016 23:00:00	21.06.2016 00:00:00	20.06.2016 21:00:00		
25					
26					
27					
28					

Fig. Displaying the Archived Values Using ASIX.VAR HIST.N Function with the Use of Excel Editor.

6.4. ASIX.VAR.ATTRIBUTE function

ASIX.VAR.ATTRIBUTE function displays the attribute value of a variable of Asix. Evo application in the cell.

To use ASIX.VAR.ATTRIBUTE function with Excel editor:

1. Select the cell where the variable attribute value is to appear.
2. Click ***Insert function*** , ***Insert function*** window will come-up.
3. Select ***Asix.Evo*** category and click on the selected function. Confirm with ***OK*** button.

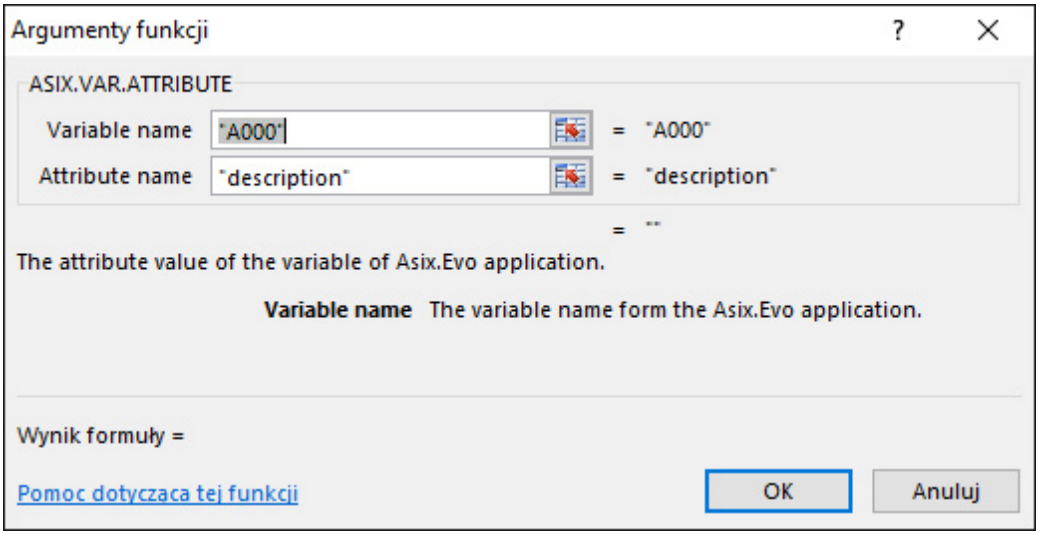


Fig. Defining the ASIX.VAR.ATTRIBUTE Function Arguments Using Excel Editor.

4. Enter the variable name and the name of the attribute. Confirm with ***OK*** button.

To use ASIX.VAR.ATTRIBUTE function with Asix Excel add-in editor:

1. Select the cell where the variable attribute value is to appear.
2. Click ***Variable Attribute*** on ASIX tab - editor window will come-up on the right side of Excel worksheet.
3. In the ***VARIABLE NAME*** field, enter the name of the variable or use the ***Select*** button to select the variable from the list of available variables.
4. In the ***ATTRIBUTE NAME*** field, enter the name of the attribute or use the ***Select*** button to select the attribute from the list of available attributes.
5. Otherwise, select the option of header display with the variable name.

6. Confirm with ***OK*** button.

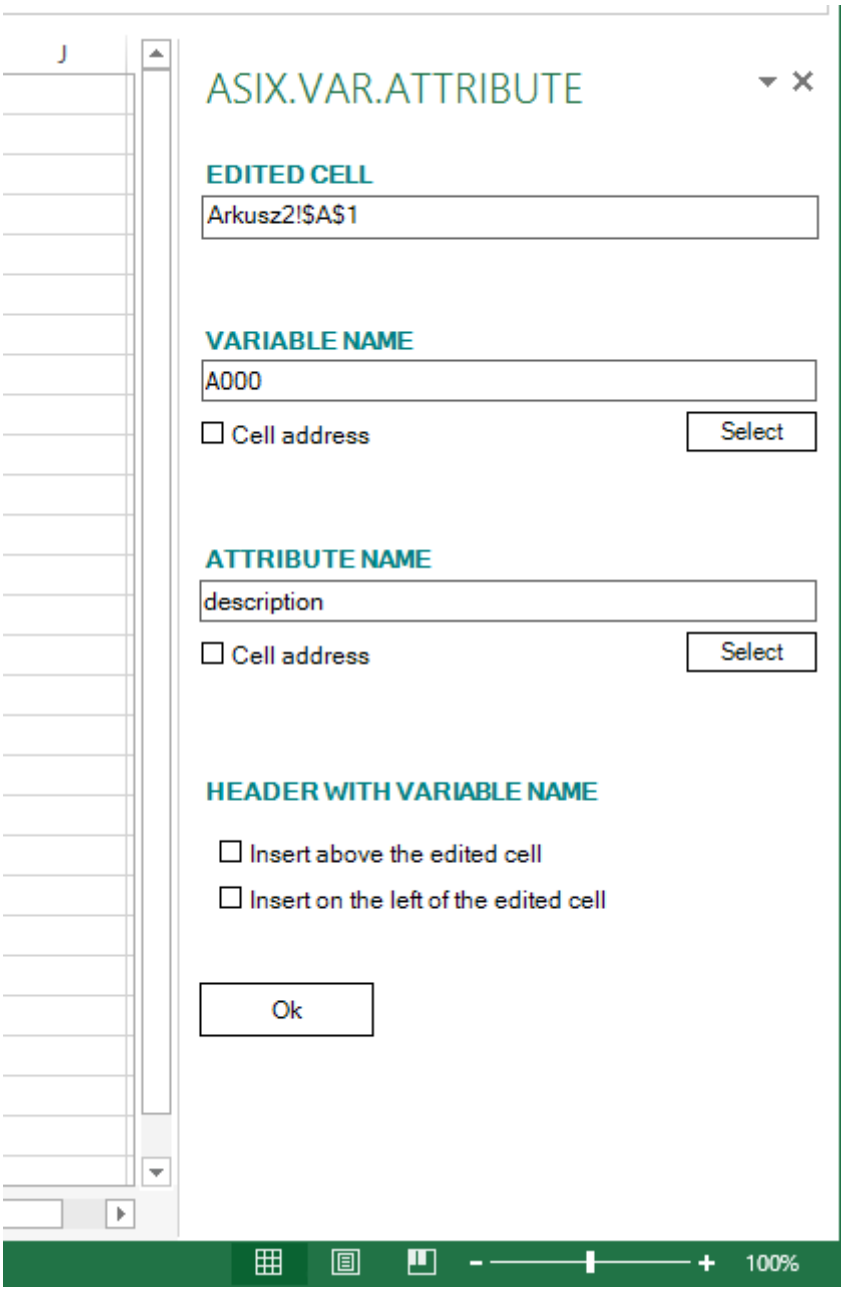


Fig. Defining the ASIX.ATTRIBUTE Function Arguments Using Asix Excel Add-In Editor.

6.5. ASIX.VAR.AGGREGATE Function

The ASIX.VAR.AGGREGATE enables the reading of the aggregating function value for the period ending in the current moment (the moving aggregate).

To use the ASIX.VAR.AGGREGATE function by means of the Excel program editor:

1. Select the cell where the variable value is to appear.
2. Click the ***Insert function*** button and the ***Insert function*** window will appear.
3. Select the ***Asix.Evo*** category and click on the selected function. Use the ***OK*** button to confirm.

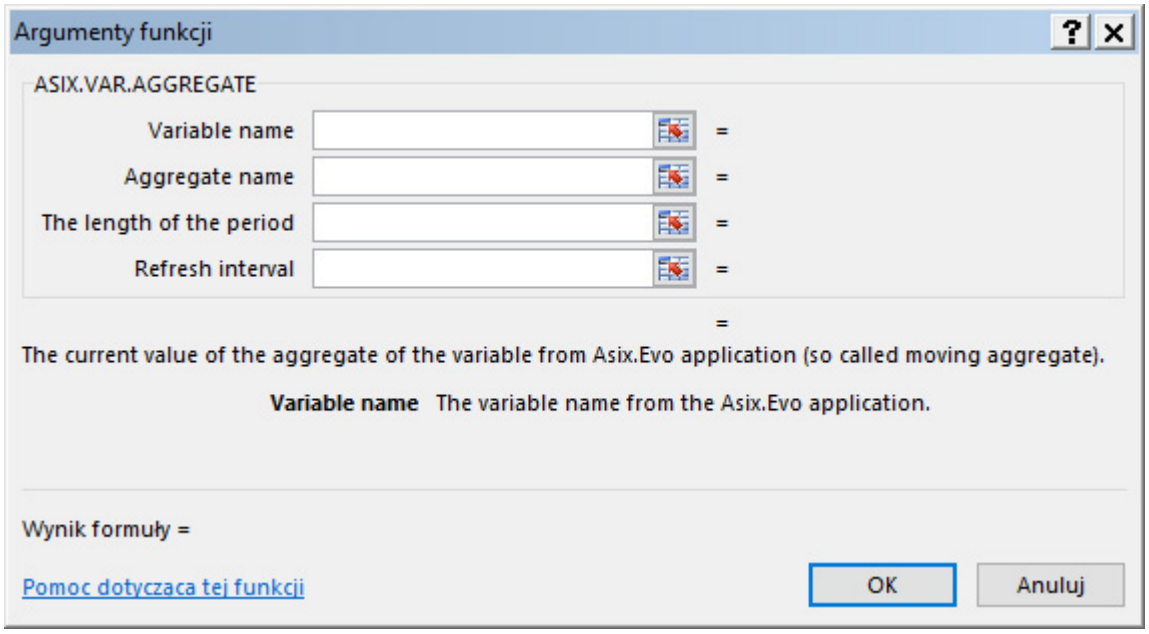


Fig. Defining the ASIX.VAR.AGGREGATE function argument by means of the Excel program editor.

4. Enter the name of the variable, the aggregate, the period length, the refresh rate (the period after which the archived data are reread and the aggregate is calculated; in the OPC format).
5. Use the ***OK*** button to confirm.

To use the ASIX.VAR.AGGREGATE function by means of the Asix Excel addition editor:

1. Select the cell where the variable value is to appear.
2. Click the ***Aggregate*** button > ***Moving Aggregate*** on the ASIX tab - the editor window will appear to the right of the Excel sheet.
3. Enter a variable name in the ***Variable name*** field or use the ***Select*** button to select the variable in the list of available variables.

4. Select the other values: ***Aggregate name***, ***Data period length***, ***Refresh interval***.
5. Optionally, select the variant in which the header is displayed with the variable name.

6. Use the ***OK*** button to confirm.

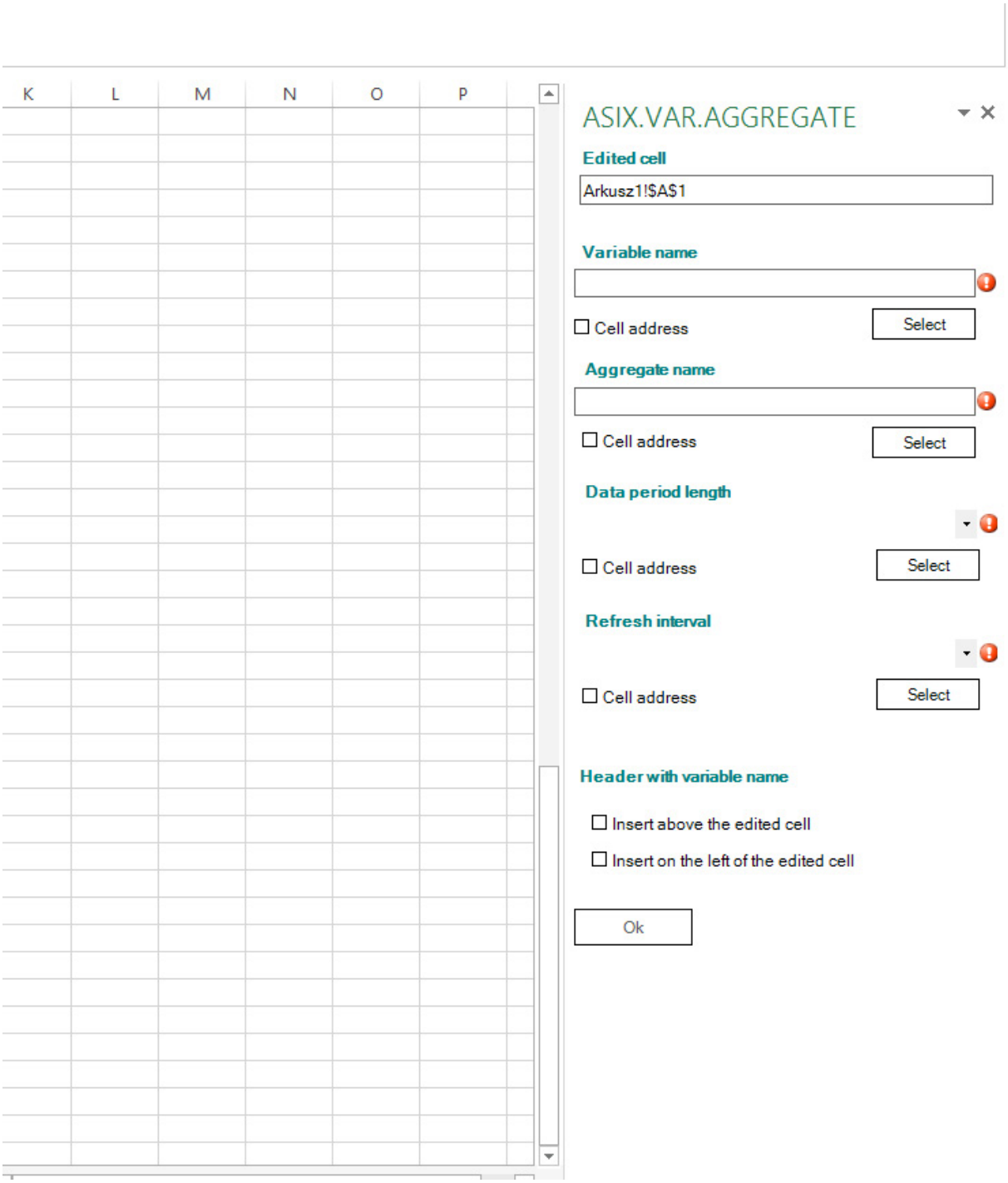


Fig. Defining the ASIX.VAR.AGGREGATE function argument by means of the Asix Excel addition editor.

This editor is better than the editor built into the Excel program because it allows you to search through the database of definitions of the Asix.Evo application variables.

6.6. ASIX.VAR.AGGREGATE.HIST Function

The ASIX.VAR.AGGREGATE.HIST function enables the reading of the aggregating function value for the relatively given period (e.g. the average for the previous hour).

To use the ASIX.VAR.AGGREGATE.HIST function by means of the Excel program editor:

1. Select the cell where the variable value is to appear.
2. Click the ***Insert function*** button and the ***Insert function*** window will appear.
3. Select the ***Asix.Evo*** category and click on the selected function. Use the ***OK*** button to confirm.

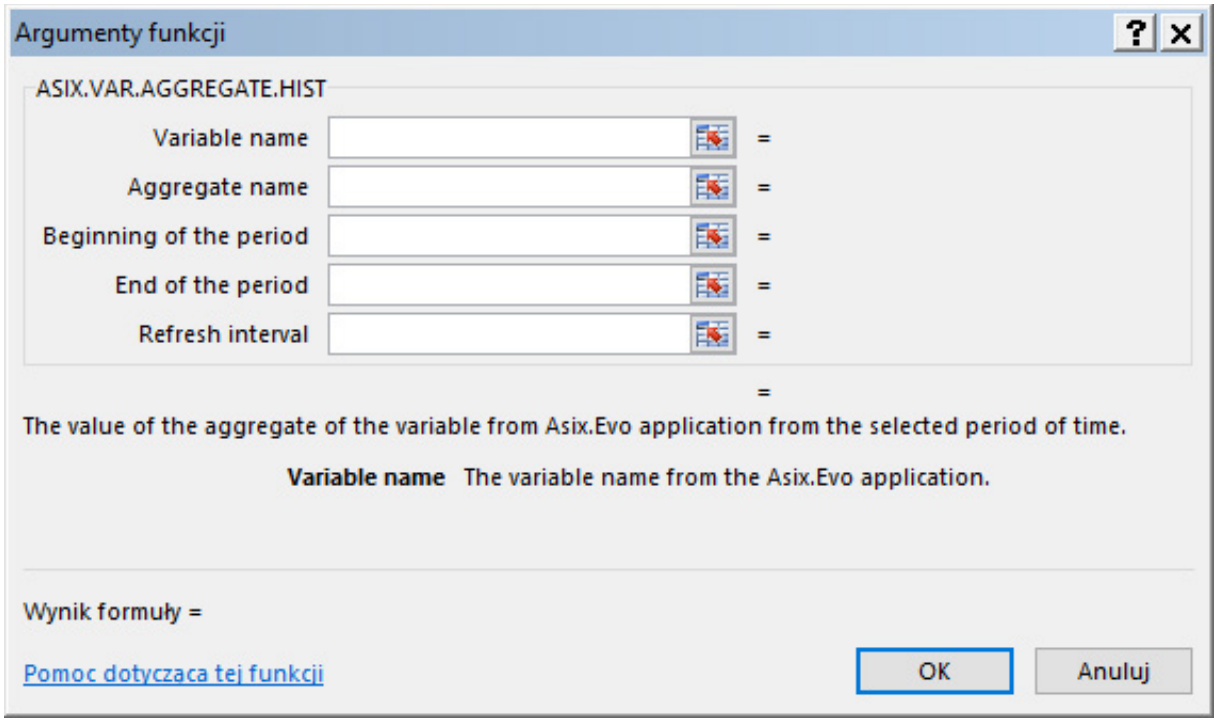


Fig. Defining the ASIX.VAR.AGGREGATE.HIST function argument by means of the Excel program editor.

4. Enter the name of the variable, the aggregate, the start of the period, the end of the period, the refresh rate (the period after which the archived data are reread and the aggregate is calculated; in the OPC format).
5. Use the ***OK*** button to confirm.

To use the ASIX.VAR.AGGREGATE.HIST function by means of the Asix Excel addition editor:

1. Select the cell where the variable value is to appear.
2. Click the ***Aggregate***  button > ***Historical aggregate*** on the ASIX tab - the editor window will appear to the right of the Excel sheet.
3. Enter a variable name in the ***Variable name*** field or use the ***Select*** button to select the variable in the list of available variables.
4. Select the other values: ***Aggregate name***, ***Data period start***, ***Data period end, Refresh interval***.
5. Optionally, select the variant in which the header is displayed with the variable name.
6. Use the ***OK*** button to confirm.

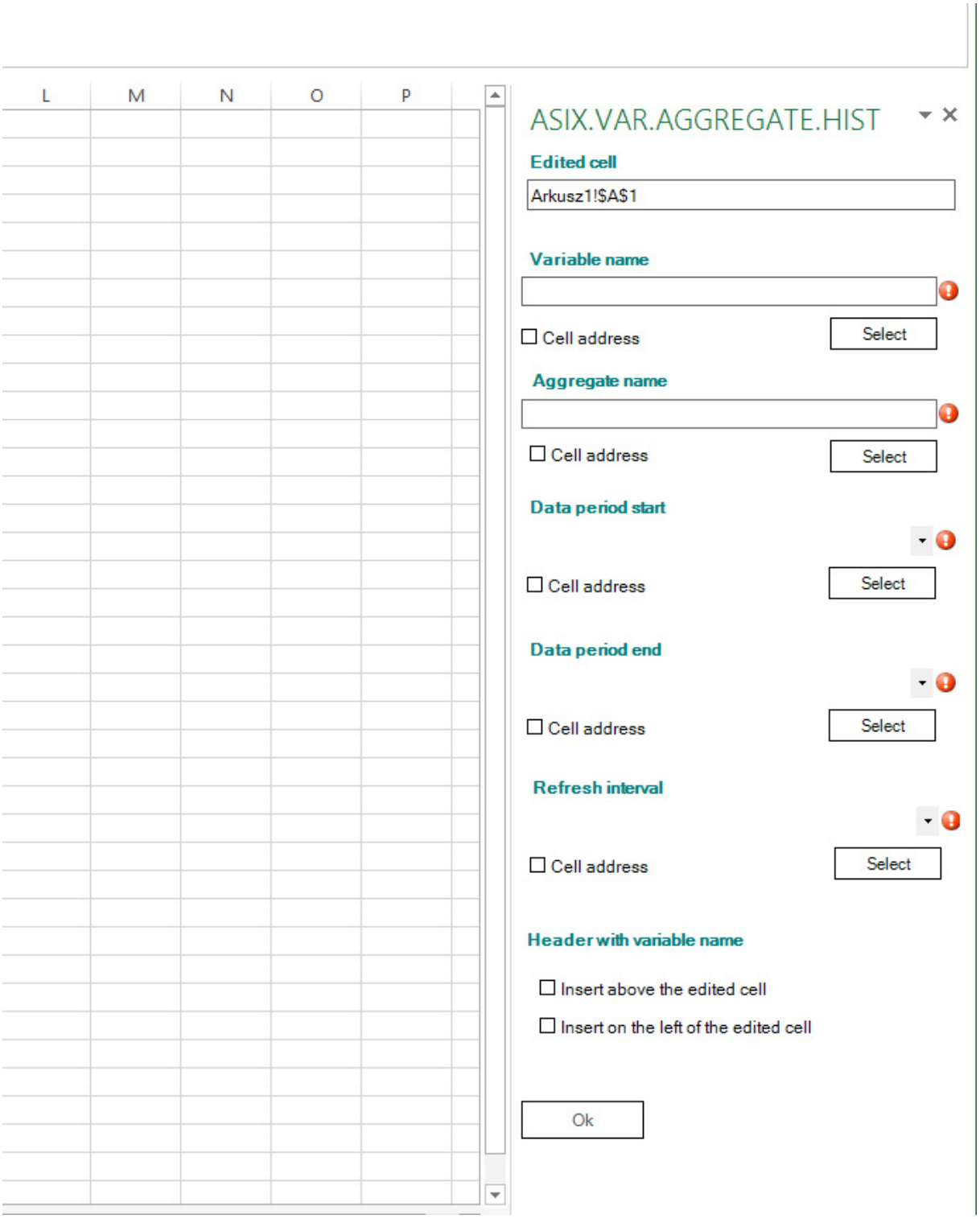


Fig. Defining the ASIX.VAR.AGGREGATE.HIST function arguments by means of the Asix Excel addition editor.

This editor is better than the editor built into the Excel program because it allows you to search through the database of definitions of the Asix.Evo application variables.

6.7. ASIX.VAR.HISTRAW Function

The ASIX.VAR.HISTRAW function enables the reading of raw archived data.

To use the ASIX.VAR.HISTRAW function by means of the Excel program editor:

1. Select the cell where the variable value is to appear.
2. Click the ***Insert function*** button and the ***Insert function*** window will appear.
3. Select the ***Asix.Evo*** category and click on the selected function. Use the ***OK*** button to confirm.

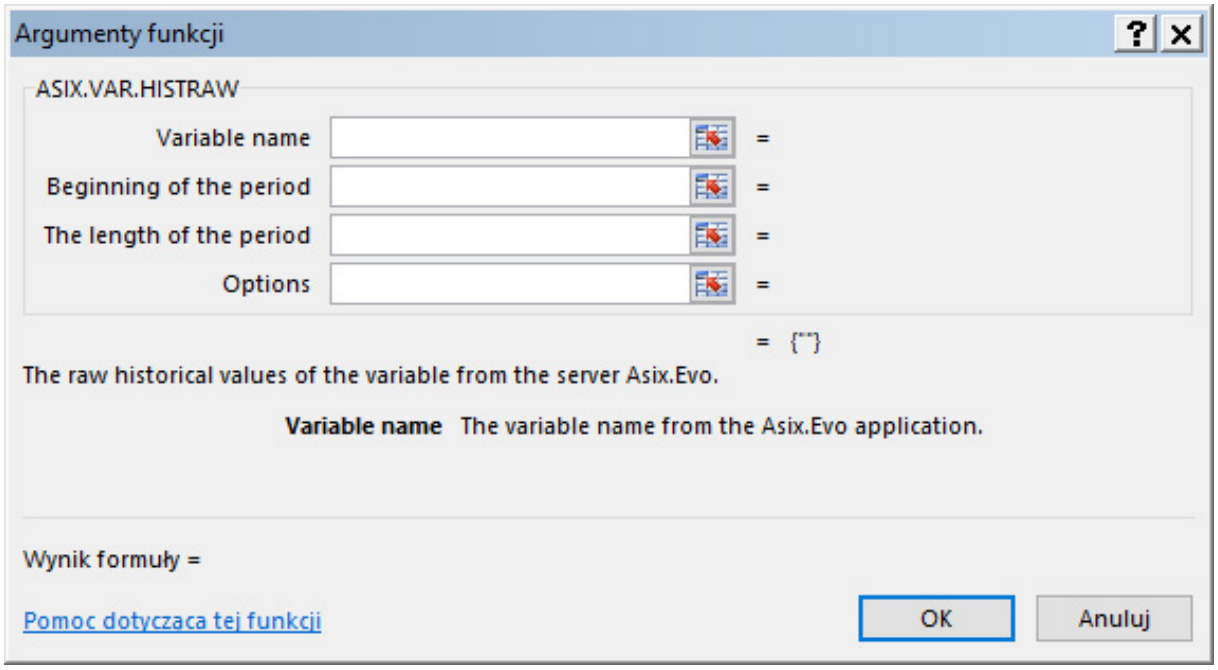


Fig. Defining the ASIX.VAR.HISTRAW function argument by means of the Excel program editor.

4. Enter the name of a variable, the start of the period, the length of the period, options (an optional text of the 'DateAsText' option).
5. Use the ***OK*** button to confirm.

To use the ASIX.VAR.HISTRAW function by means of the Asix Excel addition editor:

1. Select the cell where the variable value is to appear.
2. Click the ***Raw archive data***  button on the ASIX tab - the editor window will appear to the right of the Excel sheet.
3. Enter a variable name in the ***Variable name*** field or use the ***Select*** button to select the variable in the list of available variables.
4. Select the other values: ***Data period start***, ***Data period length.***
5. Optionally, select the options: ***Date as text***, ***Samples quality column*** and the variant in which the header is displayed with the variable name.
6. Use the ***OK*** button to confirm.

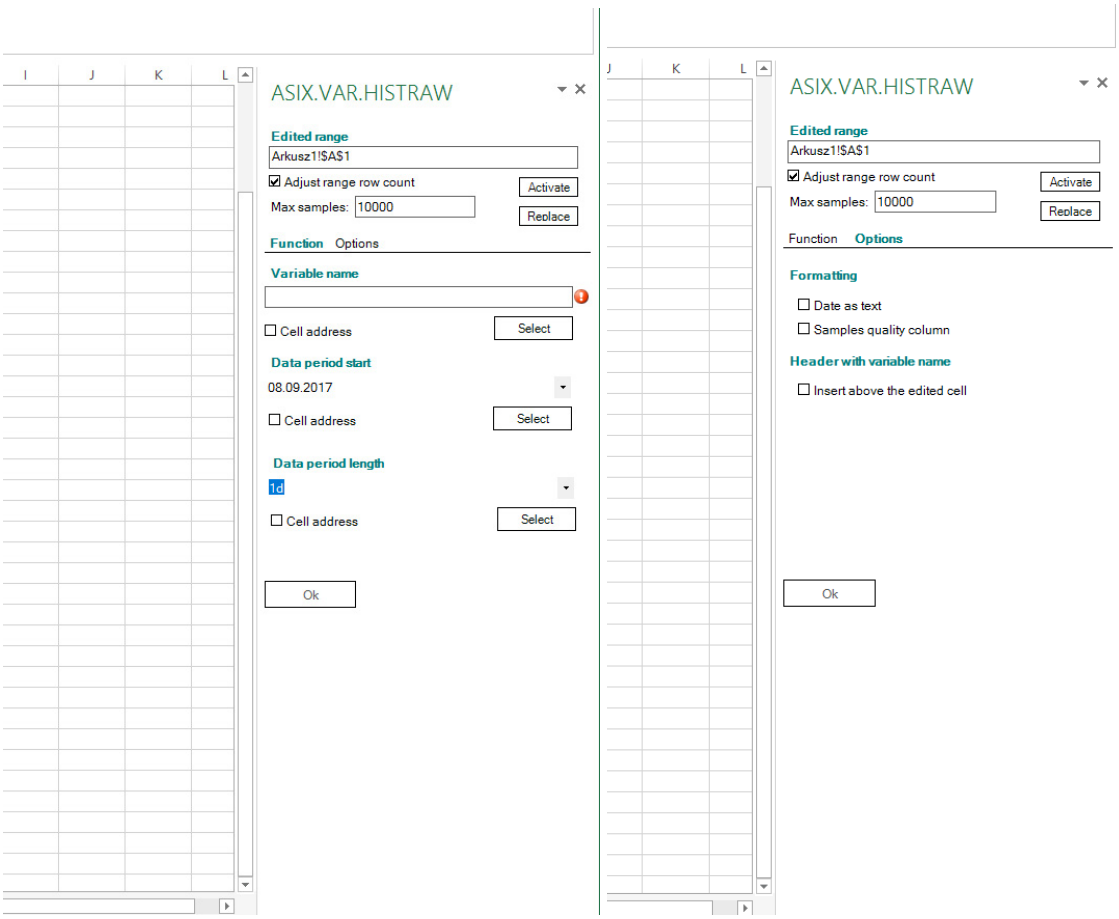


Fig. Defining the ASIX.VAR.HISTRAW function arguments by means of the Asix Excel addition editor.

This editor is better than the editor built into the Excel program because it allows you to search through the database of definitions of the Asix.Evo application variables.

7. Asix Table Worksheet Object

"Asix Table" worksheet object enables easy creation of tabular summaries of historical data from the Asix.Evo application.

The entire table is one area named "AsixTableData".

When creating a chart, if you have selected the named area, automatically, the first column is treated as the x axis values (time) and the other create data series.

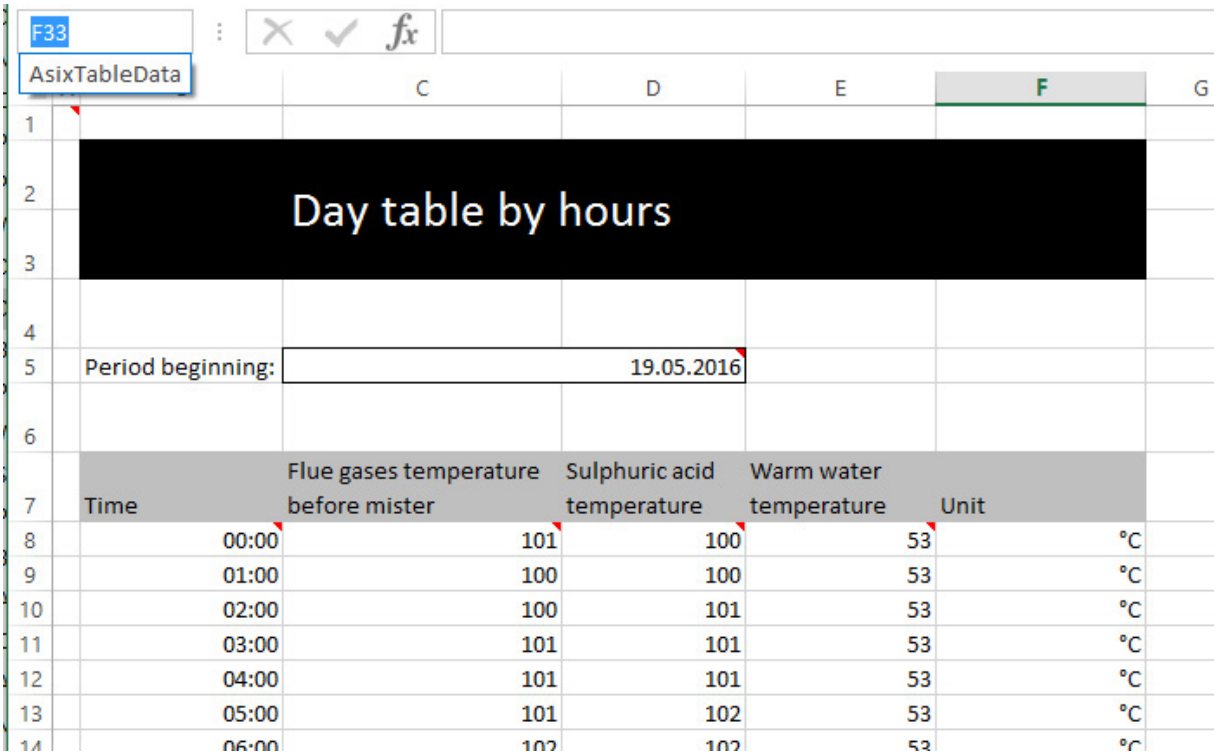


Fig. The Area Named "AsixTableData".

To create a Table:

1. Click ***Create Table*** . Select the kind of table. A named data area will be created. Configuration data describing the table will be inserted into the worksheet. This data is in the form of cell comments and should not be modified manually.

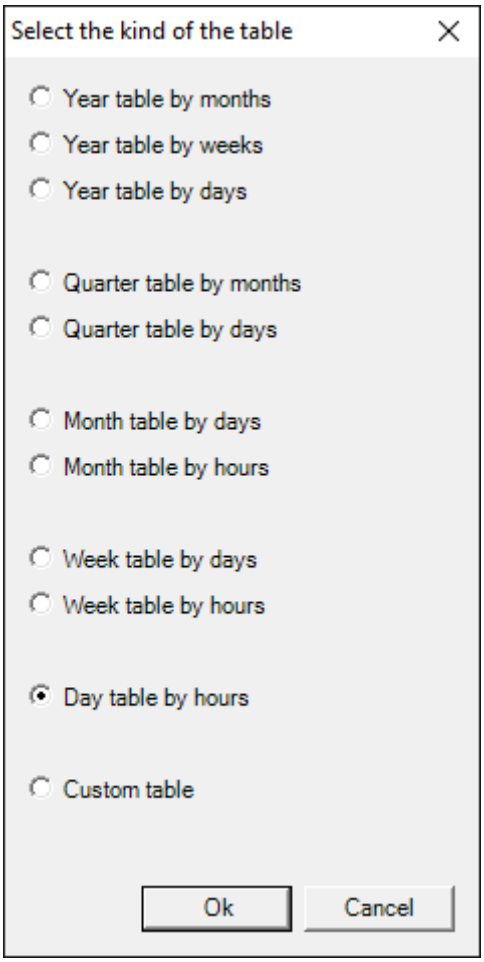


Fig. "Select the Kind of the Table" Window.

2. Then click ***Insert Variable*** , to add more data columns to the table. Start from inserting the variable to "Variable1" field created at the start by table wizard.
3. To select a data period, enter the date into a cell for the start of the period of time or select it by pressing ***Select Date*** .
4. Select ***Read Data*** to retrieve data from selected period of time and insert it into the worksheet.

Using the named area, you can create the summarising formulas that input data area is automatically updated when you change the area in which the data is read. You can enter the formulas manually or use ***Insert Summary Field*** command.

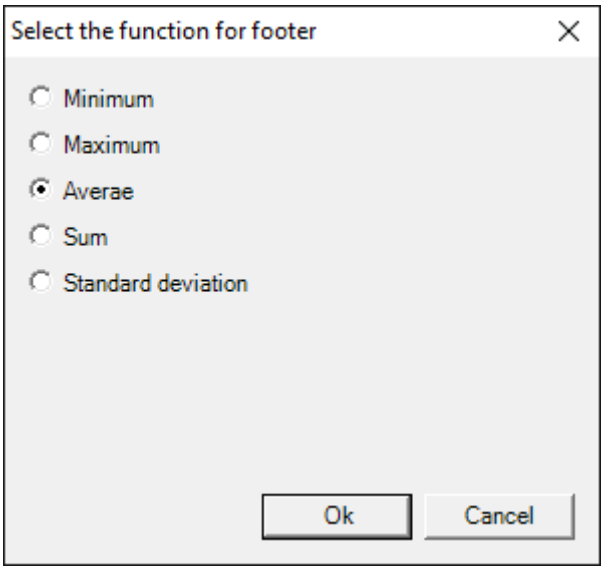
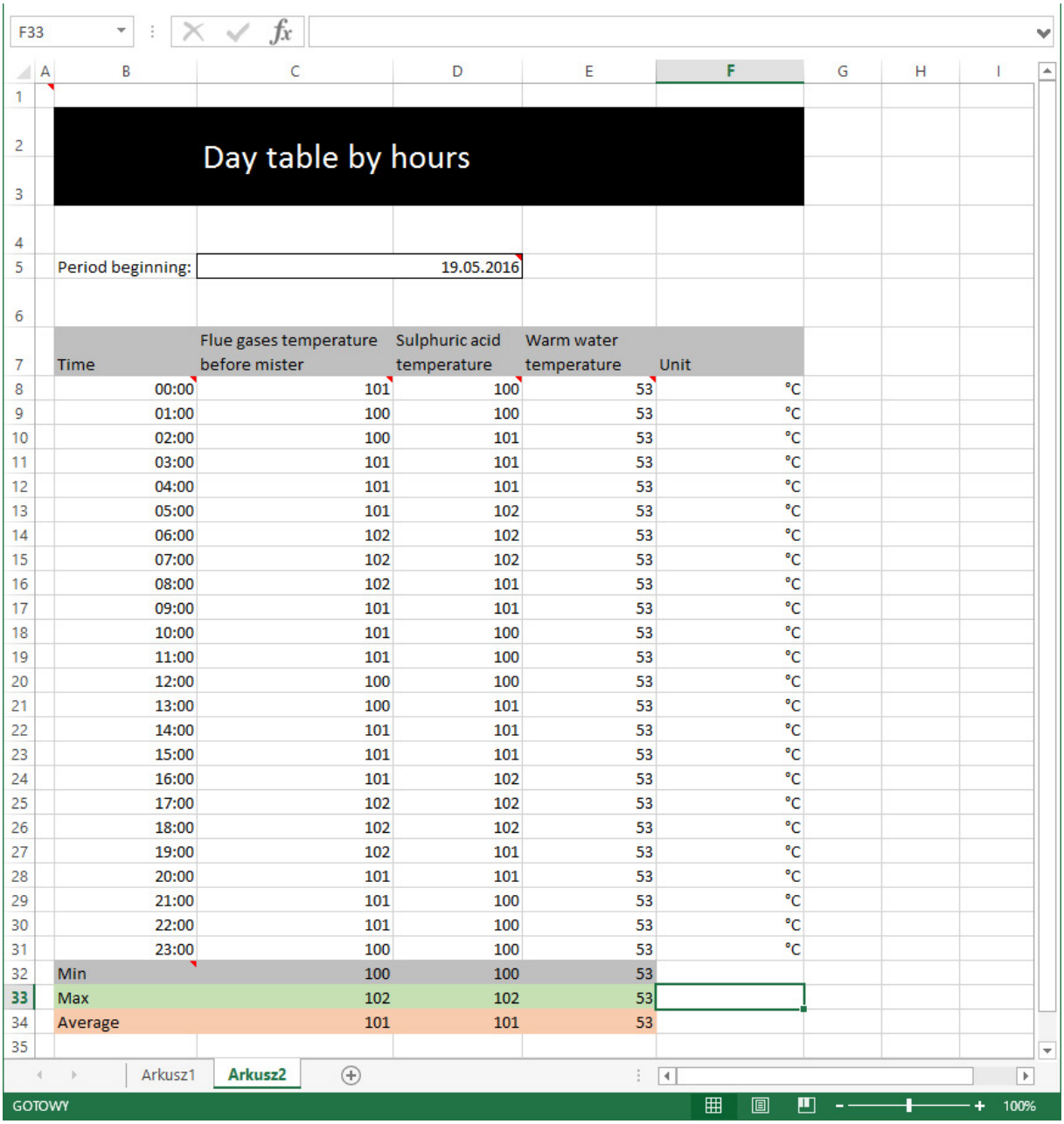


Fig. Function Selection Window for the Summary.



Day table by hours

Period beginning:	19.05.2016

Time	Flue gases temperature before mister	Sulphuric acid temperature	Warm water temperature	Unit
00:00	101	100	53	°C
01:00	100	100	53	°C
02:00	100	101	53	°C
03:00	101	101	53	°C
04:00	101	101	53	°C
05:00	101	102	53	°C
06:00	102	102	53	°C
07:00	102	102	53	°C
08:00	102	101	53	°C
09:00	101	101	53	°C
10:00	101	100	53	°C
11:00	101	100	53	°C
12:00	100	100	53	°C
13:00	100	101	53	°C
14:00	101	101	53	°C
15:00	101	101	53	°C
16:00	101	102	53	°C
17:00	102	102	53	°C
18:00	102	102	53	°C
19:00	102	101	53	°C
20:00	101	101	53	°C
21:00	101	100	53	°C
22:00	101	100	53	°C
23:00	100	100	53	°C
Min	100	100	53	
Max	102	102	53	
Average	101	101	53	

Fig. Example of a Table with Data Retrieved from Asix Application.

8. Scripts

Asix Excel add-in provides Excel Visual Basic scripts with the possibility to access the Asix.Evo application data. This feature is separate from the AsixConnect module.

8.1. AsixEvo object

Access to the process data of Asix. Evo application is done via an object called "AsixEvo". To create such object, use the following command in Visual Basic:

```
Dim asix As Object
Set asix = CreateObject("AsixEvo")
```

8.2. Available functions

Hello-test function

EXAMPLE

```
Sub Przycisk1_Kliknięcie()
  Dim asixEvo As Object
  Set asixEvo = CreateObject("AsixEvo")
  MsgBox (asixEvo.Hello())
End Sub
```

The function displays a window "Hello World"-this makes it easy to check that the AsixEvo object has been correctly created.

* * *

AsixVar - current values reading

AsixVar(VariableName)

The function returns the current value of the process variable. The function has the following parameters:

VariableName - name of a variable. The parameter should contain the STRING type value. You can also provide the table of names and then the function returns the values of all provided variables.

For a single variable, the function returns a three-component table containing the current value, the time stamp and the quality of the provided aggregate of the variable. For many variables, the function returns a table containing three columns and as many rows as there are variables which were provided as a parameter of the function.

EXAMPLE

```
Sub Przycisk2_Kliknięcie()
  Dim asixEvo As Object
  Set asixEvo = CreateObject("AsixEvo")
  Dim data
  data = asixEvo.AsixVar ("A000")
  Worksheets("Arkusz1").Range("a1:c1") = data
End Sub
```

The function returns a three-component array with a current value, time stamp, and the quality of the variable with the specified name.

EXAMPLE

Example that shows how to check the quality of the read variable.

```
Dim asixEvo As Object
Set asixEvo = CreateObject("AsixEvo")
Dim data
data = asixEvo.AsixVar("A000")      ' table: value, time, quality

Dim opc_quality
opc_quality = data(0, 2) And 192    ' 192 - OPC quality bit mask - 0000
0000 1100 0000

If (opc_quality = 192) Then     '1100 0000 - constant indicating good
quality
    Worksheets("Arkusz1").Range("a1") = "Jakość dobra"
ElseIf (opc_quality = 64) Then  '0100 0000 - constant indicating uncertain
quality
    Worksheets("Arkusz1").Range("a1") = "Jakość niepewna"
Else
    Worksheets("Arkusz1").Range("a1") = "Jakość zła"
End If

End Sub
```

***

AsixVarHist – archived value reading

AsixVarHist function reads data aggregated from a specified period of time for a given process variable. The function has the following parameters

```
AsixVarHist(PeriodStart, PeriodLength, ResampleInterval, VariableName, AggregateName)
```

PeriodStart parameter should include the start of the period, from which to retrieve data. The parameter should include a value, such as DATE or STRING. DATE value contains a time stamp directly; use local time. STRING value is considered to be relative time and should be given in OPC format.

PeriodLength parameter should be the length of the period, from which to retrieve data. This parameter should contain a STRING value - the length of the period in OPC format.

ResampleInterval parameter should be the duration of the sample interval. This parameter should contain a STRING value - the length of the period in OPC format.

VariableName parameter should contain the name of the variable, and *AggregateName* parameter should contain the name of the aggregate.

When reading is complete, the function returns an array of read samples. The Table contains as many rows as the number of read samples. In each row, the first element contains the value of the sample, the second element contains the time stamp of the sample, and the third element is the sample quality.

Example of the function command:

```
Dim data
data = asix.AsixVarHist("DAY", "1H", "1M", "A000", "Start")
```

EXAMPLE

```
Sub Przycisk3_Kliknięcie()
  Dim asixEvo As Object
  Set asixEvo = CreateObject("AsixEvo")
  Dim data
  data = asixEvo.AsixVarHist("DAY", "1H", "1M", "A000", "Start")
  Worksheets("Arkusz1").Range("a1:c24") = data
End Sub
```

The function returns an array that contains three columns (value, quality, and time of the sample), and 24 rows for the aggregate values at each time point (hour).

EXAMPLE

Example that shows how to check the quality of the read variable.

```
Dim asixEvo As Object
Set asixEvo = CreateObject("AsixEvo")
Dim data
data = asixEvo.AsixVar("A000")      ' table: value, time, quality
```

```
Dim opc_quality
opc_quality = data(0, 2) And 192    ' 192 - OPC quality bit mask - 0000
0000 1100 0000

If (opc_quality = 192) Then     '1100 0000 - constant indicating good
quality
    Worksheets("Arkusz1").Range("a1") = "Jakość dobra"
ElseIf (opc_quality = 64) Then  '0100 0000 - constant indicating uncertain
quality
    Worksheets("Arkusz1").Range("a1") = "Jakość niepewna"
Else
    Worksheets("Arkusz1").Range("a1") = "Jakość zła"
End If


End Sub
```

***

AsixVarHistRAW

AsixVarHistRaw(object PeriodStart, object PeriodLength, object VariableName)

The AsixVarHistRaw function reads raw data from the provided time period for the provided process variable. The function has the following parameters:

PeriodStart - start of the period from which data are to be sourced. The parameter should contain a DATE or STRING type value. The DATE type value directly contains a time stamp; local time should be used. The STRING type value is considered to be the relative time and should be provided in the OPC format.

PeriodLength - length of the period from which data are to be sourced. The parameter should contain the STRING value – the time period length in the OPC format.

VariableName - name of a variable. The parameter should contain the STRING type value.

After the end of the reading operation, the function returns the table of read samples. The table contains as many rows as there are samples read. In every row, the first element contains the sample content, the second one contains the sample time stamp and the third one - the sample quality.

Exemplary function call-up:

```
Dim data
data = asix.AsixVarHistRaw("DAY", "1H", "A000")
```

***

AsixVarAggregate

AsixVarAggregate(object VariableName, object AggregateName, object PeriodLength)

The function returns the value of the aggregate of of the process variable historic values from the indicated time horizon in relation to the current moment (the so-called rolling aggregate).

The function returns a three-component table containing the calculated value, the time stamp and the quality of the provided aggregate of the variable.

Parameters:

VariableName - name of the variable for which the aggregate is calculated. The parameter should contain the STRING type value.

AggregateName - name of the aggregate to be calculated. The available names are: start, end, delta, min, max, range, total, average, average0, sumup, sumdown, prevknown, last, stdev, rms, avglk, totallk. The parameter should contain the STRING type value.

PeriodLength - period of the calculated aggregate. It is always calculated in relation to the current moment. The parameter should contain the STRING value – the time period length in the OPC format.

You can also provide the STRING type value tables instead of the STRING values as the AsixVarAggregate function parameters. The function returns then the aggregates for all provided variables.

The function returns a three-component table containing the current value, the time stamp and the quality of the provided aggregate of the variable. For many variables, the function returns a table containing three columns and as many rows as there are variables which were provided as a parameter of the function.

* * *

AsixVarAggregateHist

AsixVarAggregateHist(object VariableName, object AggregateName, object PeriodStart, object PeriodEnd)

The function returns the value of the aggregate of process variable historic values from the indicated time horizon.

Parameters:

VariableName - name of the variable for which the aggregate is calculated. The parameter should contain the STRING type value.

AggregateName - name of the aggregate to be calculated. The available names are: start, end, delta, min, max, range, total, average, average0, sumup, sumdown, prevknown, last, stdev, rms, avglk, totallk. The parameter should contain the STRING type value.

PeriodStart - Start of the horizon of the calculated aggregate. It should be relative time in the form of the STRING type value in the OPC format.

PeriodEnd - End of the horizon of the calculated aggregate. It should be relative time in the form of the STRING type value in the OPC format.
You can also provide the STRING type value tables instead of the STRING values as the AsixVarAggregateHist function parameters. The function returns then the aggregates for all provided variables.

The function returns a three-component table containing the current value, the time stamp and the quality of the provided aggregate of the variable. For many variables, the function returns a table containing three columns and as many rows as there are variables which were provided as a parameter of the function.

***

AsixVarAttribute – variable attribute reading

EXAMPLE

```
Sub Przycisk4_Kliknięcie()
  Dim asixEvo As Object
  Set asixEvo = CreateObject("AsixEvo")
  Dim data
  data = asixEvo.AsixVarAttribute("A000", "unit")
  Worksheets("Arkusz1").Range("a1") = data
End Sub
```

The function returns the value of the variable attribute with the specified name.

***

SetAsixEvoServer -By default, AsixEvo object connects to the server, which name had been specified in the window activated by the bar command *Options of Asix Excel Add-in*. SetAsixEvoServer function allows you to specify the name of another server from which the data is to be retrieved by AsixEvo object.

EXAMPLE

```
Dim asixEvo As Object
 Set asixEvo = CreateObject("AsixEvo")
 asixEvo.SetAsixEvoServer("http://DEMO")
```

9. The OPC Time Format

The format syntax of the OPC relative time is as follows:

keyword +/- offset +/- offset …

The possible values of the keyword and offset are given in the following tables. Space and tab characters are ignored. Each offset parameter must be preceded by an integer specifying its multiplicity and direction.

Table: The Possible Values for the "keyword" for the OPC Time Format.

Keyword	Description
NOW	Archived data server current time.
SECOND	The start of the current second.
MINUTE	The start of the current minute.
HOUR	The start of the current hour.
DAY	The start of the current day.
WEEK	The start of the current week.
MONTH	The start of the current month.
YEAR	The start of the current year.

Table: The Possible Values for the "offset" for the OPC Time Format.

Offset	Description
S	Time offset in seconds.
M	Time offset in minutes.
H	Time offset in hours.
D	Time offset in days.
W	Time offset in weeks.
MO	Time offset in months.
Y	Time offset in years.

For example, DAY-1D + 7H30M could represent the data start time data for a daily report generated on the current day (DAY = first time stamp of the current day). -1D gives the first time stamp for the previous day, +7H gives 7:00 yesterday, +30M gives 7:30 yesterday; + in the last offset is moved from the previous offset.

Likewise, MONTH-1D + 5h is 5:00 on the last day of the previous month, NOW-1H15M means 1 hour and 15 minutes ago, and YEAR + 3MO means April 1 of the current year.

This format can be also used to express the length of the time period. For this, skip the first part of the keyword in the described format.

10. Diagnostics

The add-in creates log files in the user's document directory. A subdirectory is created "Askom\AsixExcelAddin\log" that contains a log file named "AsixExcelAddIn.log". There is also a subdirectory "archive" that contains log files from previous days.