Apertum

Volume 4

Airviro User's Reference

Working with the Indico Report

How to get the most out of your data stored in the Time Series Database of the AIRVIRO system

Working with Indico Report

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Amendments

Version	Date changed	Cause of change	Signature
3.00.11	May 2004	New module	GS
3.11.20	Oct2007	Upgrade	GS
3.12	January 2009	Upgrade	GS
3.20	June 2010	Upgrade	GS
3.21	December 2010	Upgrade	GS
3.21	July 2012	Review	GS
3.22	April 2013	Upgrade	GS
3.23	Nov 2014	Upgrade	GS
4.00	April 2015	New version	GS
4.00	Aug 2018	Review	GS
4.01	May 2019	Upgrade	GS
5.01	July 2020	Review	GS
5.01	Oct 2022	Review	GS
5.10	March 2023	Upgrade	GS
6.00	Nov 2023	Upgrade	GS
6.00	Feb 2024	Upgrade	GS
6.00	July 2024	Review	DC
6.00	Dec 2024	Review	GS
6.00	Jan 2025	Review	GS
6.00	Mar 2025	Review	DC

Content

4.1 Introduction to Indico Report

Indico Report is - together with Indico Administration and Indico Validation - one of the three main tools in Airviro Air Quality Management, intended for acquiring, storing, editing, presenting, analyzing, reporting and exporting time series data.

4.1.1 What is Indico Report?

Indico Report is a powerful tool for reporting data stored in the time series database.

With Indico Report is possible to create reports that can be automatically executed at a specified interval such as at the end of every day. Typically this would be a summary table of some kind that is automatically sent by email or printed. There are many different types of reports that can be used.

A set of five standard output formats (called process types) is provided.

- With Indico Report, you can:
- Create different types of reports.
- Assess capture.Automatically run reports at specified intervals.
- Reports can be sent to a mailbox, printer, screen or file.
- Use Indico Macros to create reports.

An experienced user will be able to use the Airviro system as an integrated monitoring system, i.e. extract valuable information from the measured data and use it to evaluate dispersion calculations.

4.1.2 How does Indico Report client work?

This Airviro module runs on any PC or device running later versions of Microsoft Edge, Firefox, Chrome or Safari.

All data processing is made on the Airviro server and afterwards the results are sent to the web browser.

Airviro version v5.00 or higher don't need Java Runtime Environment to run.

4.2 Getting started

This Airviro module runs on any PC or device running later versions of Microsoft Edge, Firefox, Chrome or Safari.

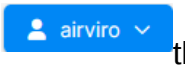
Once Airviro has been properly installed on the *server*, you can start using it by typing the correct URL in your web browser over the Intranet/Internet.

The user can select the Language (Spanish and English) to work with, at the logging window.

After logging into Airviro typing your user-ID and password, a domain must first be selected, from the icon showing the map or enabling the List Mode, and pressing on the Domain name that is displayed. In this case **Indico Report** should be chosen from the available modules.

At the top of the window, in the Address Bar, the currently selected module name path, is shown. Additionally, placing your cursor over the Domain name (for example REF) will display a label showing the name of the module currently selected.

Clicking on the ^ [down arrow] button, besides the Domain name, the available modules are shown and can be selected.

By clicking on the button ^ [down arrow] , besides the user button text , 

the **Logout** button, is shown. Click on it to close the current module and display the Airviro login page instead.

All the examples explained here are based on the Airviro (Göteborg) Reference System, included in all Airviro systems delivered. Here you will find two years of hourly data, meteorological and ambient air measurement. View the example *Figure 4.1*, Domain REF.

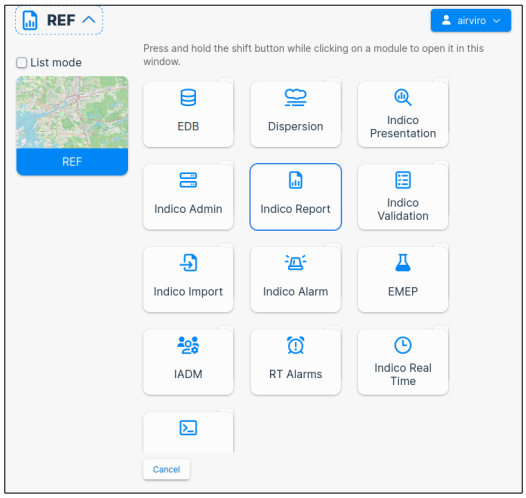


Figure 4.1. Domain

4.2.1 Overview of the Indico Report main window

Once Indico Report has been loaded into the web browser, you will see the main menu options on the left side. To complete a set up for a report, it is advisable to work through the menus sequentially, from **REPORT** down to **Manage Template**, because some settings may depend on previous choices.

4.3. The Main Menu of the Indico Report module

The main window contains different menus:

REPORT Includes three different sub-menus, Edit, New and Delete.

Allows the user to edit, define or delete Reports.

OUTPUT Allows you to display the report choosing from different available output options (mail, files, printer, screen)

MANAGE TEMPLATE Allows the user to import or delete excel template files used for Excel type reports.

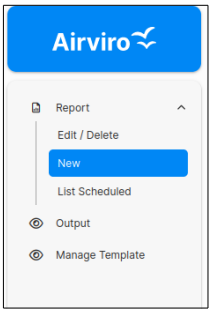


Figure 4.2 Menu.

4.3.1. General Concepts

Report is the first menu option which is divided in three sub menus **Edit, New** and **Delete,** each one of them takes you to different sub windows where you can Define New Reports, Edit or Delete existing ones.

In the **Output** sub window you can preview or execute existing reports.In the **Manage template** sub windows you can import or delete excel template files. Files must be in .xlsx format (Figure 4.2.1)

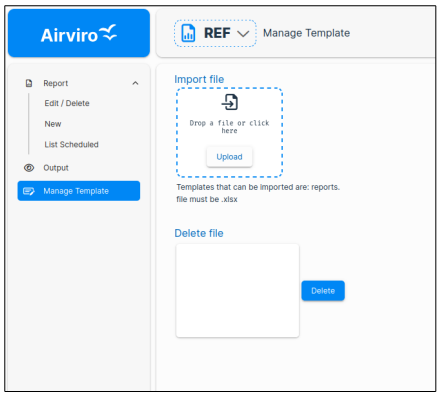


Figure 4.2.1 Menu: Manage Template.

4.3.2. Database Concepts

When working with Indico Report you are accessing the time series database, so it is important to understand how a time series is defined.

A time series contains measurement observations. The following variables must be defined in order to specify a time series:

- **station :** It defines from which measurement site the data is being collected

- **parameter:** It defines which parameter is being measured, e.g. gas concentration, air temperature, wind direction, etc.

- **Instance:** this is used to differentiate among several measurements of the same parameter at the same site. In the case of DOAS measurements, the instance indicates which path (light beam) has been used for the measurements. In the case of meteorological mast measurements, the instance should indicate the height at which the measurement has been made. This component can also be used to differentiate between measured values and calculated values for a parameter (in which case the instance might instead be named CAL).

- **attributes:** this variable describes the available properties of the measurement. Value and Status are generally stored. In the case of DOAS measurements, this could be value, standard deviation, light.

4.3.3. The Report Wizard Sub window

The Report Wizard sub window is designed to be as versatile as possible, by incorporating the preferences of different customers. To open this option, click on **New** under the menu **Report**, on the left side.

4.3.4. Basic Concept of Report Configuration

- Report Types or Instances

A Report Type is a sort of workflow containing the necessary steps to follow to successfully create an instance of a report for that particular type.. To create a new instance, you can copy the configuration from a previous report instance by loading and editing it first and then saving it with a different name or by starting from scratch with the option **New**. The current instance is saved with the **[Save Report]** button, once you have performed all the required steps in the selected report type.

- Report type

Each instance is linked to one report type. Selecting a report type from the list is the first step in the Wizard. then click on **New** to continue to the next step.

Once a new Report type has been selected you must go through the entire wizard configuration to create a new report instance. Use **[Next >>] and [<< Prev]** buttons to move back and forth. The input data requested is different for each report type.. Once you have gone through all the wizard steps, at the final step you have press the **[Save Report]** button in order to save the report configuration.

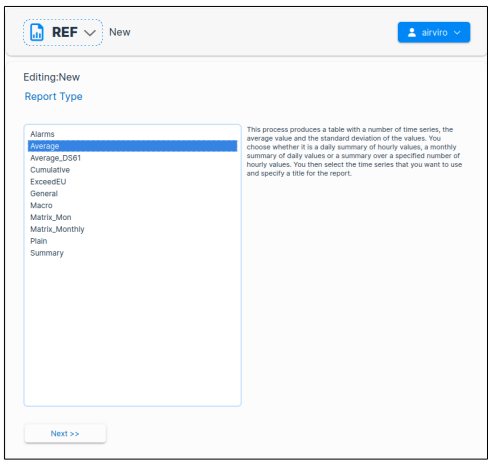


Figure 4.3 Report Wizard.

Output

Reports can be scheduled either to be made automatically or on demand. Use the menu output to make reports on demand. Pressing [**Preview]** the report is shown in a new window. Pressing **[Execute]** the report is sent to the destination specified in the report instance. The Time period text box is used to specify the end of the period used for the report.

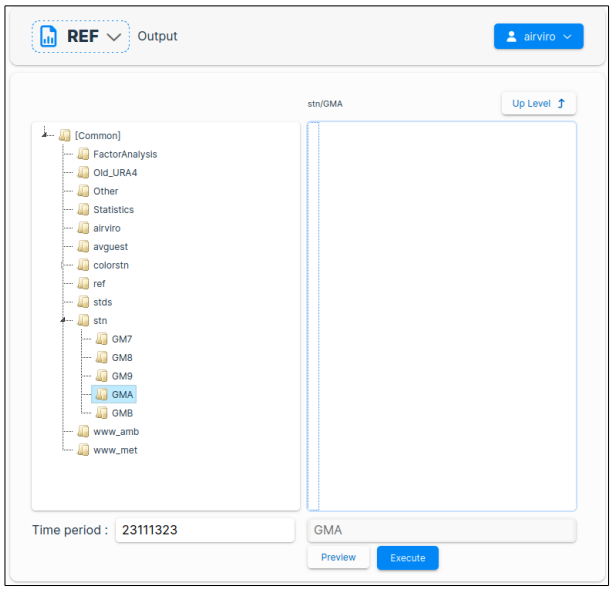


Figure 4.4. Output.

HINT: When you press the [**Preview]** button, the output configuration is NOT used, instead a preview is shown on your screen. The **[Execute]** button will generate the output using the output destination that has been specified in the report settings.

Destination

The final report may have different destinations. See *Figure 4.5*

The available destinations are:

None: Use this if the report is intended only for previewing.

To printer: Send the report to a printer attached to the server.

To file: Save the report in a file on the server. The whole path should be specified.

To email: Input the email address. If the email should be sent to more than one recipient use space as a separator between the email addresses.

To email group: Select the email group in the combo. Email groups are managed from IADM.

To SFTP: Select this if the report is to be sent via SFTP. Host, user name, password, remote directory and remote file name must be specified.

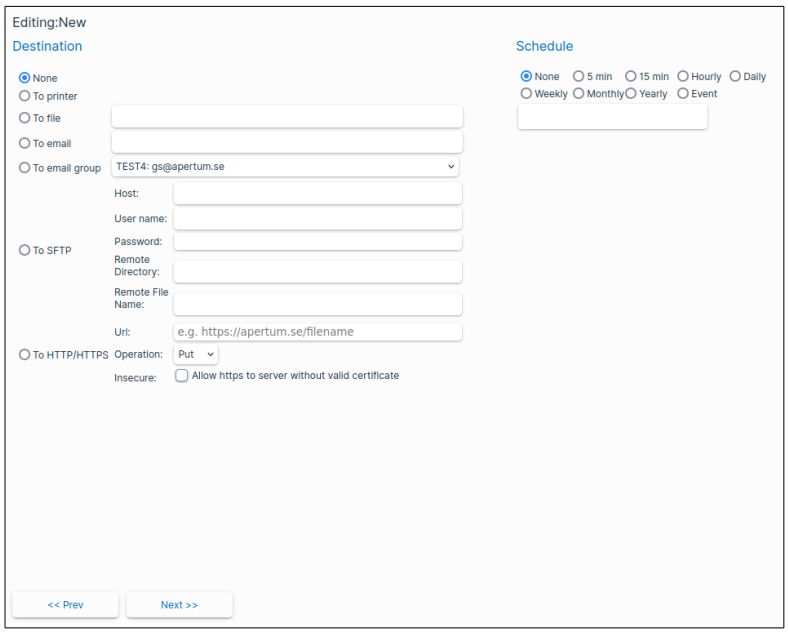


Figure 4.5. Destination.

Schedule

The default is **None,** which means that no automatic report will be made. In this case, to make a report you must execute it from the **Output** menu.

You can also select to automatically run the instance at certain intervals or events.

The available intervals are: 5 minutes, 15minutes, hourly, daily, weekly, monthly, yearly and event.

Execution

Execution can basically take place in three slightly different ways:

- When you press the [**Preview]** button in the Output window a new window opens, showing some status information on the progress while the report is generated, when this is finished, the data produced will be shown on screen.

- When you press the [**Execute]** button, as in the previous case, a new window opens to show the progress while the report is generated, then the report will be sent to the Output destination specified in the configuration (screen, file, or email).

- Instances that are saved with a schedule (for automatic execution) will be executed on the server, without showing the progress information window.

Note: logging out or closing the progress window will abort the execution.

4.4. Default Report Types

4.4.1 Alarms

This report produces a table with the alarms state (warning, alarm and alert).

You can also add a title, description and select a report type. For example: General, Alarms days v/s level, Alarm hourly v/s level, Monthly alarm v/s level , Time v/s level and User v/s alarm.

Output formats available are pdf, text and excel.

4.4.2 Average

Displays the selected time series data together with the average value and the standard deviation. Up to eight time series can be selected. You also write a title and select a format. If you have specified hourly values then the instance will be for the previous day, if you have specified daily values then the instance will be for the previous month. It is also possible just to indicate a specific number of hours back in time.

Output formats available are plain text, pdf, csv and excel.

4.4.3. Average_DS61

This process is similar to the Average report, but includes the reason why data has been deleted.

You can input two comments with 100 characters.

Output formats available are plain text, postscript and excel.

4.4.4. Cumulative

Produces a more complex output of cumulative ratios, data capture and maximum and average values. You set up the cumulative ratios by first choosing a number of levels, the distance between each level and the value for the first level. Alternatively you can specify 8 levels. The percentage of data that is below that level is calculated for each level. The result is a table showing percentile values. Again, if you have specified hourly values then the instance will be for the last day, if you have specified daily values then the instance will be for the previous month. It is also possible just to indicate a specific number of hours back in time.

Output formats available are PS percent values, PS Gray levels and Plain text.

4.4.5. Exceed EU

This process produces different tables for exceedance, for a specific substance a Report period (annual, quarterly and monthly), a Report Language and Report Type (pdf or Excel). Different Destinations and Schedules are available for this report type.

Finally, the defined report can be saved as a macro for future use.

4.4.6. General

It uses a saved Indico macro and produces a listing of data in a tabular format. You can choose a day, week, month, quarter or year. The instance will then be for the day, week, etc. previous to the specified date. When specifying a macro; title, restrictions and time series will be used to generate the output. The unit slot in the variable selection will be used for heading each one of the columns. When specifying the setup, you can select the time period and resolution to be used. The highest resolution depends on which database you have available, i.e., it could be 5 minutes, quarter hourly, etc.

The resolution or the time period is used for computing the total averages, maximum, minimum and standard deviation values that appear at the bottom of the table. An additional summary is also given for the resolution of the table.

4.4.7. Macro

It uses a saved Indico macro, keeping all the same information except the time period, which can be specified by the number of hours worth of data that you want to include in the graph. In this case the printout is graphical, and you can select output format. The stop time of the graph will be the end of the specified time period unless a number of hours forward has been specified.

4.4.8. Plain

This report produces a simple list of the selected data.

It lists the data that you have selected for a specified number of hours. The stop time will be the specified time. Output formats available are plain ASCII text, SKV format (i.e. for importing to certain spreadsheet programs) or Airviro format.

4.4.9. Matrix_Monthly

This process produces a matrix, containing the Days in the columns and the hours in the rows.

You must specify a title, station and parameter name.

This report displays the selected time series data together in the rows, showing the average, the standard deviation, maximum and minimum values.

4.4.10. Summary

This report allows the creation of up to 8 columns of processed time series data. (Average, Maximum, Minimum, etc).

You must add a title and select the report period: day, month, quarter and year.

Then you can select the output format. Finally, the defined report can be scheduled or sent to different outputs and saved as a macro for future usage.

4.4.11. Excel

This report uses excel time sheets, time series and macros to produce a report.

Before executing this report, you must: save a macro using the Indico Presentation Module and configure an excel sheet.

First, select **Report/New** and then select **Excel** in Report Type.

Select a domain and time resolution after selecting a template (AirRep, Graph Macro and Postfix) from the list, then a time serie and a macro (See *4.5.4. Example 4 Using excel report* to learn how to do it).

Finally, select a period (nr of hour, day, week, month, quarter or year) and Destination (See *4.3.4 Basic concept of Report Configuration*).

4.4.12. AWSData2

This report allows creation of up to 128 columns of time series data for AWS data export. First, select Station, parameter, instance, attribute and unit. Then select the period: 5min, 15min, 1hour, n-hour, day, week month, quarter, and year. Output format available are CVS or excel. Finally, the defined report can be scheduled or sent to different outputs and saved as a macro for future usage.

4.4.13. Hourly_Met

This process produces a hourly meterorological monthly summary table for one time series. The statistics value (average, minimum, maximun, des std.) will de displayed.

First, select station, parameter, instance, attribute and unit. Then type the title, edit number of decimals and select type report (csv, pdf or excel). Finally, the defined report can be scheduled or sent to different outputs and saved as a macro for future usage.

4.4.14. Daily_Rainfall

This process produces a daily rainfall by calendar year summary table form one station. First, select station, parameter, instance, attribute and unit. Then type the title and parameter name. Select the available report type: pdf or excel. Finally, the defined report can be scheduled or sent to different outputs and saved as a macro for future usage.

4.5. Examples

4.5.1. Example 1: Producing Monthly Summaries

Suppose that some of your real time data comes from an open path-measuring site (such as an Opsis analyzer). With this type data, it is not only necessary to pay attention to the data values but also to the standard deviations, light levels and status values associated with them. It is possible to print a monthly summary for each one of the substances measured at the site, and in this example a table for NO_2 data will be created.

First select Report and then New.

Now, in the Report Type subwindow, select Average from the list and click on [Next >>].

Now choose a time period for your report: daily, monthly, or specified if you want to set the number of hours back for your report. Then press [**Next >>]** to continue. Select the time series you are interested in, time period could be requested in some cases depending on whether your selected data consists of hourly, daily values, etc.

Choose an Opsis **Station** (in this case Molndal), the **Parameter** (NO2), the **Instance** (001 &002) and the **Attribute** (value). Then select the other **Attributes** (Std dev, light and status). Now the four relevant time series for path 1 have been selected. Click on [**Next >>]** to continue through the wizard entering Report title, data capture limit and exceedance.

In the next step, select an output format: plain text and click on [**Next >>]**, now you have to set up an instance. Under **Destination** choose **Mail** and specify your email address so that the report output will be sent to you when it is executed. Finally click [**Next >>]** and save the report entering a name for your instance.

It is quite important to give it a meaningful name especially if you intend to create a lot of other instances. This one will be called **opsis_month_no2**.

Preview.

Once you are satisfied with your instance you might decide that you want a similar table to be made every day. To print it automatically.

List Scheduled

The report output will be automatically sent out at a specified time every month. .

Title: Example 1
Period: 890101 - 890131
Date: 2025-03-13

	Molndal			
	NO2 /001 ppb Value	NO2 /002 ppb Value	NO2 /002 µg/m³ Value	NO2 /001 µg/m³ Value
01/01/1989	12.5	13.7	26.1	23.8
02/01/1989	16.8	19.5	37.2	32.1
03/01/1989	14.2	15.4	29.3	27.0
04/01/1989	21.4	22.5	42.9	40.8
05/01/1989	21.8	25.2	48.1	41.7
06/01/1989	25.6	30.0	57.2	48.9
07/01/1989	32.9	37.6	71.7	62.8
08/01/1989	12.9	15.2	29.1	24.6
09/01/1989	12.2	14.3	27.2	23.3
10/01/1989	15.2	17.1	32.6	28.9
11/01/1989	28.9	32.3	61.6	55.2
12/01/1989	33.0	33.9	64.8	63.0
13/01/1989	14.6	18.3	34.9	27.8
14/01/1989	12.2	14.2	27.1	23.3
15/01/1989	5.8	6.2	11.9	11.0
16/01/1989	13.8	15.3	29.2	26.3
17/01/1989	8.1	10.2	19.6	15.4
18/01/1989	15.0	16.4	31.3	28.6
19/01/1989	12.8	14.0	26.7	24.4
20/01/1989	17.0	19.0	36.2	32.4
21/01/1989	32.0	32.6	62.1	61.0
22/01/1989	19.0	21.9	41.7	36.2
23/01/1989	22.2	25.6	48.8	42.3
24/01/1989	21.3	22.5	42.9	40.6
25/01/1989	20.0	23.3	44.5	38.2
26/01/1989	42.2	43.9	83.7	80.5
27/01/1989	N/A	N/A	N/A	N/A
28/01/1989	N/A	N/A	N/A	N/A
29/01/1989	8.3	N/A	N/A	15.9
30/01/1989	10.3	N/A	N/A	19.7
31/01/1989	22.4	N/A	N/A	42.8
Std.dev.	8.6	9.0	17.2	16.5
Average	18.8	21.5	41.1	35.8
Max	42.2	43.9	83.7	80.5
Min	5.8	6.2	11.9	11.0
Exc.level	4.0	N/A	N/A	N/A
Exc.count	29	N/A	N/A	N/A

Figure 4.6 Example 1.

4.5.2. Example 2: Making Cumulative Reports

Create a new instance called **cumulative_so2**. Select the cumulative report type. Select one of the available Reports (daily, monthly or specified) and Click on [**Next >>]** to continue to the next step and select the time series in the **Time Series sub window**.

Choose some SO_2 time series. In this example the SO_2 levels from Molndal's three Opsis instances are used. Next you are asked to specify how many intervals to use. A cumulative ratio is the portion of a set of known values that are higher than a certain limit. These limits can be set up in one of two ways: 1) by specifying the number of intervals, the first limit value and the interval size. 2) By specifying the boundary limits for 8 intervals (in this way it is possible to have intervals of different sizes)

Select the first approach, that is, Equidistant intervals and press **[Next>>].** it is best if the distance between limits is not too large so you will need quite a few - say 15 intervals. Now you must specify the distance between limits, that is, the size of the intervals. This depends on the range of your data, but you can choose a size of 10 for now and change it later if you need to. Next you must specify the start limit, i.e. the level that you would like for the first limit. Enter 0. Finally, you will be asked for a table title, and next an output format : Plain and PDF formats, in particular the PDF grey scale format looks very good if you are using the reference database, then you can look at the days with data for Molndal station.

Choose **None:** under **Schedule** and press the **Next** button. Save the report.

To visualize the report, go to the **Output** menu, enter the date 890314 in the Time Period text-box and click on **Preview**, your instance will be run as if today's date were 14 March 1989 so it will use data from 13 March 1989. The data on that day had significantly higher values than usual and it is also interesting to see the big difference between the three different Opsis instances even though they are relatively close to each other.

Although this cumulative option might sound a bit complicated it is really quite simple. If you look at the results for path 1 (*Figure 4.7 Example 2)* you will see that:

All values are greater than 0 µg/m^3

62% of values are greater than 10 µg/m^3

42% of values are greater than 20 µg/m^3

4% of values (i.e. one value) are greater than 50 µg/m^3.

None of the values are greater than 60 µg/m^3.

For path 3 the values are much higher and there is a maximum value of 130 µg/m_3.

Gray levels: Here you can see two different examples of outputs. The first one is a plain output - it is made up of ASCII texts and symbols and can be printed out to any printer. In this particular case it is possible to show the percentages as a grey scale.

	Molndal SO2 /001 ug/m3 Value	Molndal SO2 /002 ug/m3 Value	Molndal SO2 /003 ug/m3 Value
0.00 ug/m3	100%	100%	100%
10.00 ug/m3	62%	58%	88%
20.00 ug/m3	42%	42%	58%
30.00 ug/m3	25%	25%	46%
40.00 ug/m3	8%	21%	29%
50.00 ug/m3	4%	21%	25%
60.00 ug/m3	0%	17%	21%
70.00 ug/m3	0%	8%	21%
80.00 ug/m3	0%	4%	8%
100.00 ug/m3	0%	0%	8%
110.00 ug/m3	0%	0%	4%
120.00 ug/m3	0%	0%	4%
130.00 ug/m3	0%	0%	0%
140.00 ug/m3	0%	0%	0%
Data capture	100%	100%	100%
Highest	55.30	88.90	130.00
Average	20.32	25.91	37.78

Figure 4.7 Example 2.

4.5.3. Example 3: Using the General Processor

First use Indico Presentation to define a new macro, such as a time series with 2 plot variables, x1 and x1+5. Put a title on the graph, as this will then be used as a title for the instance. Save the macro as **General_Macro_Example3** Now go back to the Indico Report Module.

Click on **NEW** and choose the **General** report type, then, click on the [**Next >>]** button,, write a title, then press [Next>>] again and select the macro on which the instance is going to be based (look for the macro **General_Macro_Example3** in the macro list).

Next you select a time period - in this example choose **Week**. Next you select a time resolution for the calculations, so choose **hour.** Click **[Next >>]** (in a weekly table daily values are displayed but you could use another resolution such as hourly or five minute values to calculate the mean, standard deviation, max. and min. values).

In the next step you select an output format - select **plain**. This example shows the calculated SO2 levels compared to the actual levels.

Finally, enter a destination and schedule Press [Next>>] Write **Example3_General** as the report name and save it clicking on **[Save Report] .**

Example#3

Computation: Average, 75% data capture
Data Period: 890522 0100 - 890528 2400

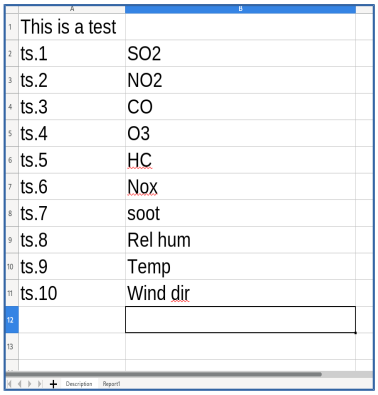
	Rya SO2 001[0] Value ppb	x1+5
890522	2.40	7.40
890523	8.43	13.43
890524	4.82	9.82
890525	5.65	10.65
890526	2.34	7.34
890527	1.17	6.17
890528	-	-
Average	4.11	9.11
Std Dev	3.52	3.52
Minimum	0.02	5.02
Maximum	16.84	21.84
Samples	147.00	147.00
Day Average	4.14	9.14
Std Dev	3.27	4.89
Minimum	0.00	0.00
Maximum	8.43	13.43
Samples	6.00	6.00

Figure 4.8. Example 3..

4.5.4. Example 4: Using Excel Report .

We have three examples of Excel reports available:

AirRep: Make a description sheet as follows:



	A	B
1	This is a test	
2	ts.1	SO2
3	ts.2	NO2
4	ts.3	CO
5	ts.4	O3
6	ts.5	HC
7	ts.6	Nox
8	ts.7	soot
9	ts.8	Rel hum
10	ts.9	Temp
11	ts.10	Wind dir
12		
13		

Figure 4.9. Description.

The following figure shows what a template looks like.

	A	B	C	D	E	F	G	H	I	J	K	L
1	IWTP - WATER PRODUCTION											
2	Industry Name:	Apertum										
3	Date:											
4												
5	Parameters	{ts1:par}	{ts2:par}	{ts3:par}	{ts4:par}	{ts5:par}	{ts6:par}	{ts7:par}	{ts8:par}	{ts9:par}	{ts10:par}	
6	Unit	{ts1:unit}	{ts2:unit}	{ts3:unit}	{ts4:unit}	{ts5:unit}	{ts6:unit}	{ts7:unit}	{ts8:unit}	{ts9:unit}	{ts10:unit}	
7	APHA Ref.Mothod	2500B	4500H⁻	2540C	4500-O-G	4500-Cl⁻ -B	2130B	5210B	5220-D		.....	
8	DATE											
9	{ts1:date}	{ts1}	{ts2}	{ts3}	{ts4}	{ts5}	{ts6}	{ts7}	{ts8}	{ts9}	{ts10}	
10	AVERAGE	#DIV/0!	#DIV/0!	#DIV/0!	###	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	
11	RCER Std.											
12	Max. Allowable	-	6 - 9	2,000	2.0	500	15	25	150	-	-	
13	Daily Avg.	-	6 - 9		5.0		8	15	75	-	-	
14												
15												
16												
17												

Figure 4.10. Excel.

Save the template as an .xlsx format file, then open the Indico Report Module, and import it using the Manage Template option from the main menu.

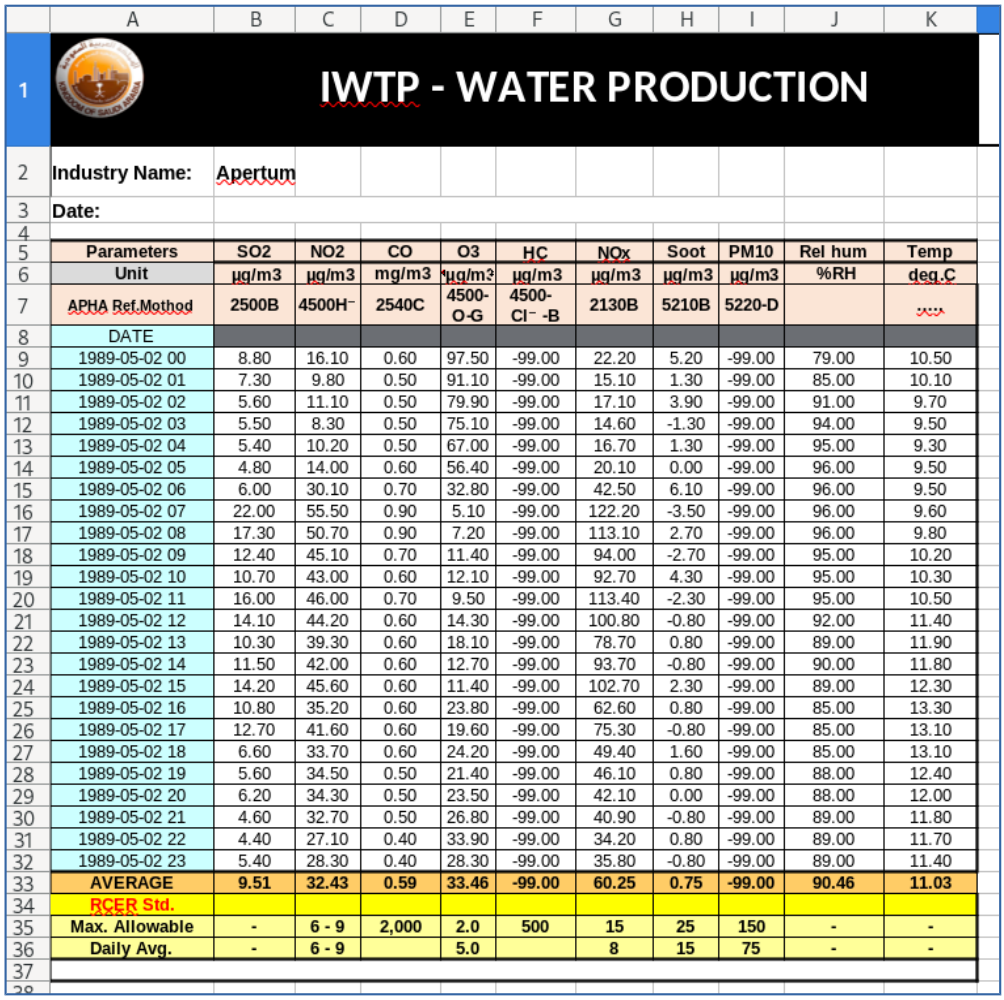
Now create a new Excel Report: Select the **Excel** report type, and press **[Next>>]**. Select a template from the list and click on [**Next >>]** again. Select a domain and time resolution, then select the time series in the Time Series sub window.

Click on [**Next >>]** and, in the next step, select the macro previously defined. (See item 3.3.1 Transforming variables in *UserReference_Volume3_ Indico Presentation*).

Finally, you are asked to enter a destination and schedule. Then press **[next>>],** enter a name and save the report.

The following figure shows an example of an excel report output.

Note: you can type some texts (logo header, title, data…) that are configured to have the same format in all excel reports.



	A	B	C	D	E	F	G	H	I	J	K
1	IWTP - WATER PRODUCTION										
2	Industry Name:	Apertum									
3	Date:										
4											
5	Parameters	SO2	NO2	CO	O3	HC	NOx	Soot	PM10	Rel hum	Temp
6	Unit	µg/m3	µg/m3	mg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	%RH	deg.C
7	APHA Ref.Mothod	2500B	4500H⁻	2540C	4500-O-G	4500-Cl⁻ -B	2130B	5210B	5220-D		
8	DATE										
9	1989-05-02 00	8.80	16.10	0.60	97.50	-99.00	22.20	5.20	-99.00	79.00	10.50
10	1989-05-02 01	7.30	9.80	0.50	91.10	-99.00	15.10	1.30	-99.00	85.00	10.10
11	1989-05-02 02	5.60	11.10	0.50	79.90	-99.00	17.10	3.90	-99.00	91.00	9.70
12	1989-05-02 03	5.50	8.30	0.50	75.10	-99.00	14.60	-1.30	-99.00	94.00	9.50
13	1989-05-02 04	5.40	10.20	0.50	67.00	-99.00	16.70	1.30	-99.00	95.00	9.30
14	1989-05-02 05	4.80	14.00	0.60	56.40	-99.00	20.10	0.00	-99.00	96.00	9.50
15	1989-05-02 06	6.00	30.10	0.70	32.80	-99.00	42.50	6.10	-99.00	96.00	9.50
16	1989-05-02 07	22.00	55.50	0.90	5.10	-99.00	122.20	-3.50	-99.00	96.00	9.60
17	1989-05-02 08	17.30	50.70	0.90	7.20	-99.00	113.10	2.70	-99.00	96.00	9.80
18	1989-05-02 09	12.40	45.10	0.70	11.40	-99.00	94.00	-2.70	-99.00	95.00	10.20
19	1989-05-02 10	10.70	43.00	0.60	12.10	-99.00	92.70	4.30	-99.00	95.00	10.30
20	1989-05-02 11	16.00	46.00	0.70	9.50	-99.00	113.40	-2.30	-99.00	95.00	10.50
21	1989-05-02 12	14.10	44.20	0.60	14.30	-99.00	100.80	-0.80	-99.00	92.00	11.40
22	1989-05-02 13	10.30	39.30	0.60	18.10	-99.00	78.70	0.80	-99.00	89.00	11.90
23	1989-05-02 14	11.50	42.00	0.60	12.70	-99.00	93.70	-0.80	-99.00	90.00	11.80
24	1989-05-02 15	14.20	45.60	0.60	11.40	-99.00	102.70	2.30	-99.00	89.00	12.30
25	1989-05-02 16	10.80	35.20	0.60	23.80	-99.00	62.60	0.80	-99.00	85.00	13.30
26	1989-05-02 17	12.70	41.60	0.60	19.60	-99.00	75.30	-0.80	-99.00	85.00	13.10
27	1989-05-02 18	6.60	33.70	0.60	24.20	-99.00	49.40	1.60	-99.00	85.00	13.10
28	1989-05-02 19	5.60	34.50	0.50	21.40	-99.00	46.10	0.80	-99.00	88.00	12.40
29	1989-05-02 20	6.20	34.30	0.50	23.50	-99.00	42.10	0.00	-99.00	88.00	12.00
30	1989-05-02 21	4.60	32.70	0.50	26.80	-99.00	40.90	-0.80	-99.00	89.00	11.80
31	1989-05-02 22	4.40	27.10	0.40	33.90	-99.00	34.20	0.80	-99.00	89.00	11.70
32	1989-05-02 23	5.40	28.30	0.40	28.30	-99.00	35.80	-0.80	-99.00	89.00	11.40
33	AVERAGE	9.51	32.43	0.59	33.46	-99.00	60.25	0.75	-99.00	90.46	11.03
34	RCER Std.										
35	Max. Allowable	-	6 - 9	2,000	2.0	500	15	25	150	-	-
36	Daily Avg.	-	6 - 9		5.0		8	15	75	-	-
37											

Figure 4.11. Example output AirRep

Graph Macro: Make an Excel template by entering the following in the columns I,J,K cells in the first row:

Date

Time series

Macro

In the second row, cells I, J, K enter

{ts1:date}

{ts1}

{macro1}

Set the format of the {ts1.date} cell to a *Date* format.

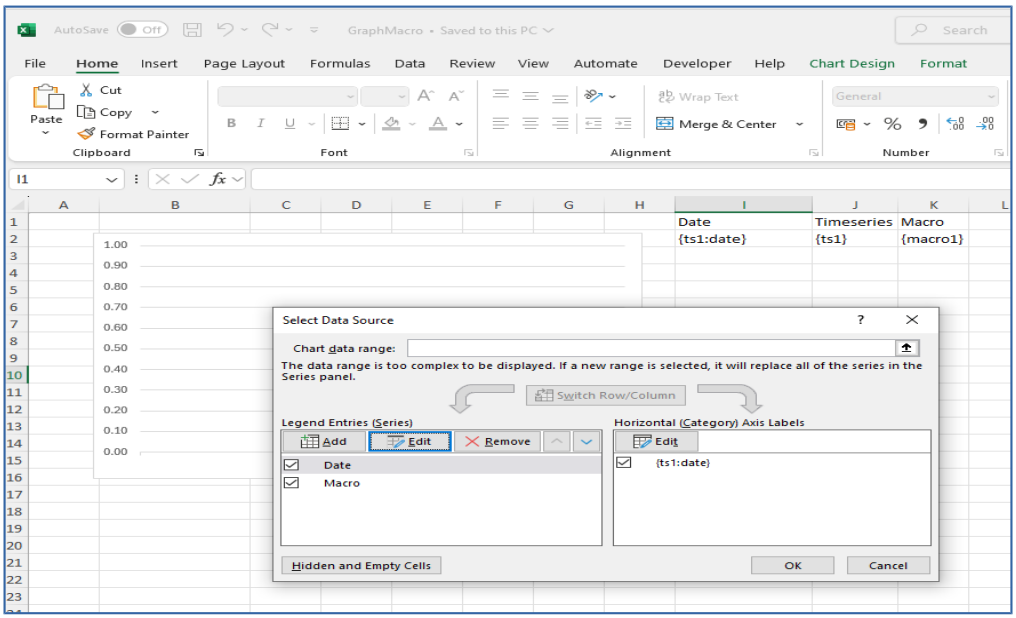
Set the following descriptions in the Description sheet:

ts.1 Temperature}

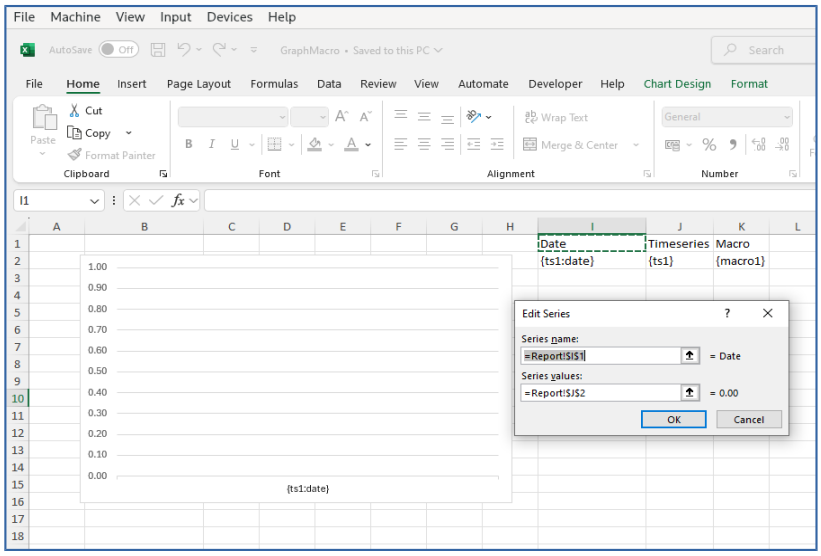
macro.1 Wind speed

The next step is to define a graph and to specify the data source for this graph. To create the graph in Excel, go to the **Insert** tab on your **Toolbar** and click on the **Line with markers** chart. Position the chart to the left of the data columns.

Press the right mouse button and choose **Select Data..**.



Then add “Legend entries”. Select the “Time serie” cell for **Series name**. Select the {ts1} cell for **Series values.** Add the second entry for the “Macro” cell with {macro} cell as the value.



Right click on the legend for the x-axis and set the Axis format to "Text axis".

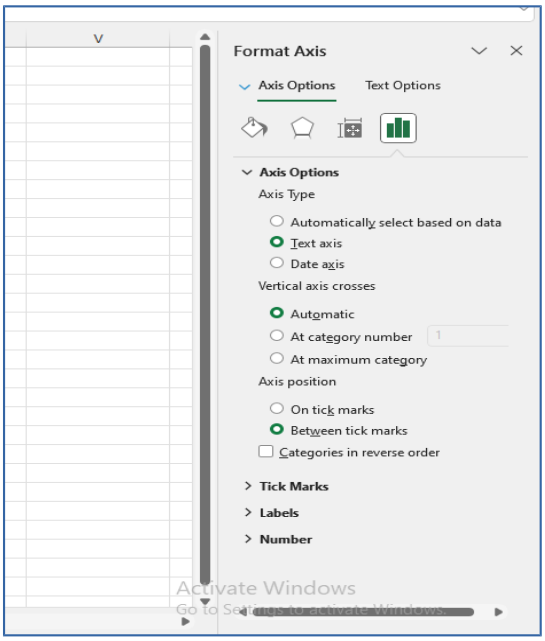


Figure 4.12. Steps in Excel

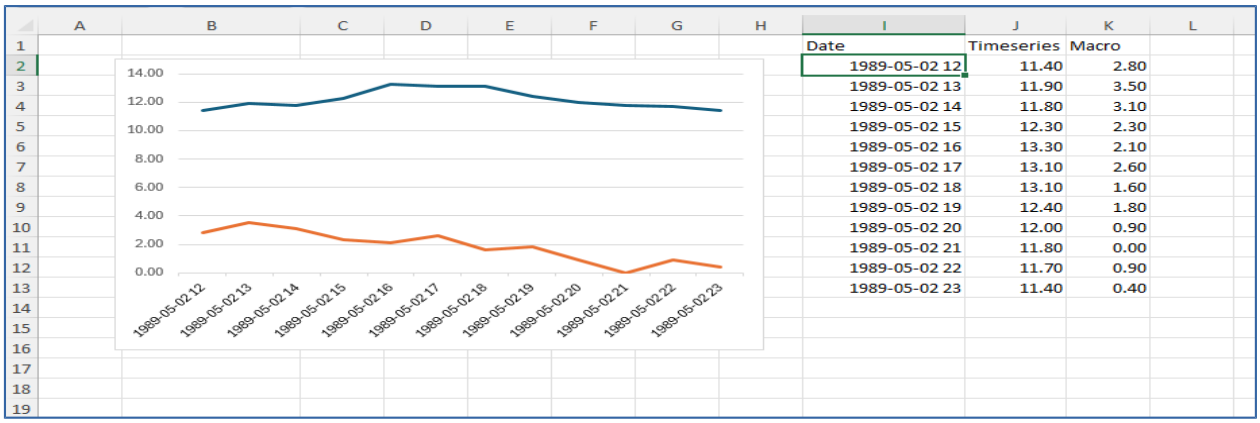
Save the template as an.xlsx format file and then, import it to airviro using the **Manage Template** menu option from the main menu.

Create a new Excel Report. Select the Excel report type. Select a template from the list and click on [**Next >>]**. then select a domain and time resolution and press **[Next>>],**then select the time series in the Time Series sub window .

Click on [**Next >>]** and, in the next step, select the macro previously defined.(See item 3.3.1 Transforming variables in *UserReference_Volume3_ Indico Presentation*)

Finally, select a period (nr of hour, day, week, month, quarter or year) and Destination.

The following figure shows an example of an excel report output



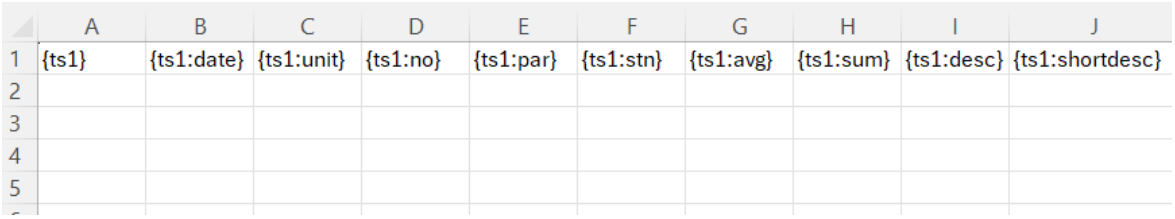
Date	Timeseries	Macro
1989-05-02 12	11.40	2.80
1989-05-02 13	11.90	3.50
1989-05-02 14	11.80	3.10
1989-05-02 15	12.30	2.30
1989-05-02 16	13.30	2.10
1989-05-02 17	13.10	2.60
1989-05-02 18	13.10	1.60
1989-05-02 19	12.40	1.80
1989-05-02 20	12.00	0.90
1989-05-02 21	11.80	0.00
1989-05-02 22	11.70	0.90
1989-05-02 23	11.40	0.40

Figure 4.13. Example output Graph Macro.

Postfix

This Excel report generates an Excel sheet containing a time series for the Station and Parameter/s included in the template. Also, some calculations can be included as Average, Sum, etc

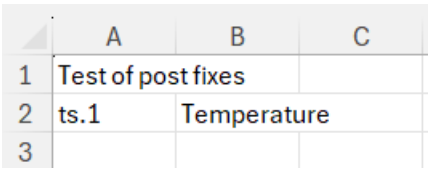
Make a template with the following excel cells containing this configuration in the sheet 1



	A	B	C	D	E	F	G	H	I	J
1	{ts1}	{ts1:date}	{ts1:unit}	{ts1:no}	{ts1:par}	{ts1:stn}	{ts1:avg}	{ts1:sum}	{ts1:desc}	{ts1:shortdesc}
2										
3										
4										
5										

{ts1}	{ts1:date}	{ts1:unit}	{ts1:no}	{ts1:par}
{ts1:stn}	{ts1:avg}	{ts1:sum}	{ts1:desc}	{ts1:shortdesc}

The excel template must contain another sheet named Description containing the following cells:



	A	B	C
1	Test of post fixes		
2	ts.1	Temperature	
3			

Test of post fixes report
ts.1 Temperature

Save the template as an .xlsx format file and then, import it to Airviro using the Manage Template menu option from the main menu.

Create a new Excel Report: Select the Excel report then select the Postfix template from the list and click on [**Next >>]**. Select a domain and time resolution , press **[Next>>],**then select the time series in the Time Series sub window.

Click on [**Next >>]** and, select the macro predefined.(See item 3.3.1 Transforming variables in *UserReference_Volume3_ Indico Presentation*).

Finally, you are prompted to enter the destination and schedule and then to enter a name.

The following figure shows an example of an excel report output.

	A	B	C	D	E	F	G	H	I	J
1	Values	Date	Unit	No values	Parameter	Station	Average	Sum	Description	Short desc.
2	{ts1}	{ts1:date}	{ts1:unit}	{ts1:no}	{ts1:par}	{ts1:stn}	{ts1:avg}	{ts1:sum}	{ts1:desc}	{ts1:shortdesc}
3										

	A	B	C	D	E	F	G	H	I	J	K
1	Values	Date	Unit	No values	Parameter	Station	Average	Sum	Description	Short desc.	
2	10.5	89-05-02 00	deg.C	24	Temp	Femman	11.0292	264.7	Femman, Temp, 025[M], Value, deg.C	Femman Temp deg.C	
3	10.1	89-05-02 01									
4	9.7	89-05-02 02									
5	9.5	89-05-02 03									
6	9.3	89-05-02 04									
7	9.5	89-05-02 05									
8	9.5	89-05-02 06									
9	9.6	89-05-02 07									
10	9.8	89-05-02 08									
11	10.2	89-05-02 09									
12	10.3	89-05-02 10									
13	10.5	89-05-02 11									
14	11.4	89-05-02 12									
15	11.9	89-05-02 13									
16	11.8	89-05-02 14									
17	12.3	89-05-02 15									
18	13.3	89-05-02 16									
19	13.1	89-05-02 17									
20	13.1	89-05-02 18									
21	12.4	89-05-02 19									
22	12	89-05-02 20									
23	11.8	89-05-02 21									
24	11.7	89-05-02 22									
25	11.4	89-05-02 23									
26											

Figure 4.14. Example output PostFix.