HOW TO GUIDE

Adjusting time zone and daylight saving time settings





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EMD International A/S Niels Jernes vej 10 9220 Aalborg Ø Denmark Phone: +45 9635 44444 e-mail: emd@emd.dk web: www.emd.dk

About energyPRO

energyPRO is a Windows-based modeling software package for combined techno-economic analysis and optimisation of complex energy projects with a combined supply of electricity and thermal energy from multiple different energy producing units.

The unique programming in energyPRO optimises the operations of the plant including energy storage (heat, fuel, cold and electrical storages) against technical and financial parameters to provide a detailed specification for the provision of the defined energy demands, including heating, cooling and electricity use.

energyPRO also provides the user with a detailed financial plan in a standard format approved by international banks and funding institutions. The software enables the user to calculate and produce a report of the emissions by the proposed project.

energyPRO is very user-friendly and is the most advanced and flexible software package for making a combined technical and economic analysis of multi-dimensional energy projects.

For further information concerning the applications of energyPRO please visit www.emd.dk.

Terms of application

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EMD International A/S, June 2016

Contents

In this How to Guide you will learn how to change the time zone and the daylight saving settings in energyPRO.

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Introduction

Time series is a fundamental data format in energyPRO, consisting of a set of values each connected to a specific date and time. Depending on the type of data, some time series are be in daylight saving time and some are not. Typically, time series with meteorological data is in standard time while time series with wholesale prices such as electricity prices are in daylight saving time. Furthermore, some time series are stated in a different time zone than the project.

This means that the selection of time zone and daylight saving time is important when it comes to correct use of time series and this guide therefore shows you how to change these in energyPRO.

Setting the project time zone

When creating a new project file, the time zone will automatically be the same as the time zone used by the computer. In order to change the time zone one must right-click on the "External conditions"-folder in the Input data-window and click "open". This will open the window shown in Figure 1.

External conditions	_		🗖 🗖 🗖		
			Add external conditions		
Planning period					
01-01-2016 💟 - 01-01-201	17 🔛				
Years to be planned	1				
Holidays					
British holidays	~				
Areas:	,				
England and Wales		\sim			
Predefined national holidays					
Holiday	Date	~			
New Year's Day	01-01-2016				
Good Friday	25-03-2016				
Easter Monday	28-03-2016	**			
Early May Bank Holiday	02-05-2016				
Spring Bank Holiday	30-05-2016				
August Bank Holiday	29-08-2016	\checkmark			
Time zone					
(UTC) Dublin, Edinburgh, Lissabon, London					
Edit					
(
			OK Cancel		

Figure 1. Appearing window when opening "External conditions"

If you wish to work on a project located in a different time zone press "Edit" and change the time zone accordingly.

Select time zone	X
Time zone	
(UTC) Dublin, Edinburgh, Lissabon, London	~
User defined time zone	
UTC 0 hours	
Daylight savings	
Start of day light savings	
Last 🔛 Sunday	🖂 March 🔛
1 Hours	
End of day light savings	
Last 🔛 Sunday	October 🔛
	<u>Ok</u> <u>C</u> ancel

Figure 2. Window for time zone and daylight saving settings

To change the time zone, press on the arrow in the right upper corner where a number of options appear as seen on Figure 3.

Select time zone					
Time zone					
(UTC) Dublin, Edinburgh, Lissabon, London	<u>~</u>				
(UTC) Coordinated Universal Time	^				
(UTC) Casablanca (UTC) Dublin, Edinburgh, Lissabon, London	::				
(UTC) Monrovia, Reykjavik (UTC+01:00) V. Centralafrika (UTC+01:00) Beograd, Bratislava, Budapest, Ljubljana, Prag (UTC-01:00) Cabo Verde					
(UTC-01:00) Azorerne	~				
Last 🔛 Sunday 🔛 March	\leq				
1 Hours					
End of day light savings					
Last Sunday October	$\mathbf{\nabla}$				
<u>O</u> k <u>C</u> ancel					

Figure 3. Select the preferred time zone.

You can also create a user-defined time zone like the one shown in Figure 4.

Select time zone	X
Time zone	
User defined time zone	
UTC 1 hours	
Daylight savings	
Start of day light savings	
Last 💟 Sunday	March 💟
1 Hours	
End of day light savings	
Last 💟 Sunday	✓ October
	<u>O</u> k <u>C</u> ancel

Figure 4. User-defined time zone

Here you can specify the offset to UTC. In this case the time zone is UTC +1 hour.

Furthermore, it is possible to enable/disable daylight savings or to further detail the daylight saving settings.

Setting daylight saving time in time series

When opening a time series, you can select if the time series is in daylight saving time or not. If the time series is in daylight saving time, mark the checkbox highlighted in Figure 5.

This will typically be the case for time series with wholesale prices such as electricity spot prices and electricity balancing prices. Meteorological data is usually not in daylight saving time.

CFSR2_Temperature_51_41N0_21W_2011								
Development of time series in Planning period								
Time series								
Cumb	T1							
Sync								
Unit	С							
#	Date D	T1 [C]	Copy all					
1	01-01-2011 00:00:00	4,680	0 II Conv selected					
2	01-01-2011 01:00:00	4,540	0					
3	01-01-2011 02:00:00	4,280	0 Paste					
4	01-01-2011 03:00:00	4,280	0 Delete all					
5	01-01-2011 04:00:00	4,130	0					
6	01-01-2011 05:00:00	4,060	0 Delete selected					
7	01-01-2011 06:00:00	3,930	0 🔯 🔀					
8	01-01-2011 07:00:00	3,930	0					
9	01-01-2011 08:00:00	4,110	0 Time series is in daylight saving time					
10	01-01-2011 09:00:00	4,500	0 Define location					
11	01-01-2011 10:00:00	4,950	0					
12	01-01-2011 11:00:00	5,300	0					
13	01-01-2011 12:00:00	5,480	0					
14	01-01-2011 13:00:00	5,430	0 Different time zone					
15	01-01-2011 14:00:00	5,260	0 🗸					
4	Add line Del	ete line						
Move	timeseries on	Deve	eloping over the years					
0 N	/eekly basis		<u>8</u>					
() Date basis								
Air temperature time series created from online CFSR2 data at position 51.41N -0.21W in the year 2011								
ê 🛛			OK Cancel					

Figure 5. Selecting if the time series is in daylight saving time

If the projects time zone is with daylight saving time and the time series is with daylight saving time, the time series is not changed. However, if the time series is in standard time, the values are moved one hour forward in the daylight saving time period.

Conversely, if the project's time zone is without daylight saving time and the time series is in daylight saving time, the values are moved one hour backward in the daylight saving time period.

The graph on Figure 6 shows the original time series, which is in standard time while the second graph on Figure 7 shows the time series in the planning period in daylight saving time. As it appears, the values are moved one hour forward.



Figure 6. Original time series in standard time



Figure 7. Original time seires in daylight saving time

Setting the time zone of time series

If the time series is in a different time zone than the time zone of the project, the checkbox, which is highlighted in Figure 8, should be selected. This gives you the possibility to edit the time zone for the time series.

CFSR:	2_Temperatur	e_51_41	N_0_21W_2	011			
Name: CFSR2_Temperature_51_41N0_2							
Development of time series in Planning period							
Time	series						
Symb	ol	T1					
Unit		C					
		<u> </u>					
#	Date	Û	T1 [C]		^	Copy all	
1	01-01-2011 0	0:00:00		4,6800	**	Copy selected	
2	01-01-2011 0	1:00:00		4,5400		Dente	
3	01-01-2011 0	2:00:00		4,2800		Paste	
4	01-01-2011 0	3:00:00		4,2800		Delete all	
c c	01-01-2011 0	4:00:00		4,1300		Delete selected	
7	01-01-2011 0	5:00:00		4,0000			
8	01-01-2011 0	7.00.00		3,9300		**	
9	01-01-2011 0	8.00.00		4 1100		Time series is in daylight saving til	me
10	01-01-2011 0	9:00:00		4,5000		Define location	
11	01-01-2011 1	0:00:00		4,9500			
12	01-01-2011 1	1:00:00		5,3000			
13	01-01-2011 12	2:00:00		5,4800			
14	01-01-2011 13	3:00:00		5,4300		Different time zone	
15	01-01-2011 14	4:00:00		5,2600			
					-((UTC) Dublin, Edinburgh, Lissabon, Lo	ndon
A	dd line	Dele	te line			Edit	
Move	timeseries on			Develo	onina o	ver the years	
() W	eekly basis			Deren	ping o		
Da	ate basis						
Air tempe	Air temperature time series created from online CFSR2 data at position 51.41N -0.21W in the year 2011						
						ОК	Cancel

Figure 8. Select the checkbox "Different time zone" to change the time zone.

Click on "Edit" to select a different time zone.

Select time zone	X
Time zone	
(UTC) Dublin, Edinburgh, Lissabon, London	
User defined time zone	
UTC 0 hours	
Daylight savings	
Start of day light savings	
Last 🔛 Sunday	🖂 March 🔛
1 Hours	
End of day light savings	
Last 🔛 Sunday	October 🔛
	<u>Ok</u> <u>C</u> ancel

Figure 9. Adjust the time zone of the time series

If the time series is in a different time zone than the project, it is converted according to the difference in UTC offset.

Setting the location of the time series

The geographical location related to the data in the time series can be specified by marking the checkbox "Define location" as indicated in .

🖸 CFSR2_Temperature_51_41N0_21W_2011									
Name: CFSR2_Temperature_51_41N0_2									
Develop	Development of time series in Planning period								
Time	Time series								
Symb	nol T1								
Unit	L								
#	Date Û	T1 [C]	Copy all						
1	01-01-2011 00:00:00	4,6800	Copy selected						
2	01-01-2011 01:00:00	4,5400							
3	01-01-2011 02:00:00	4,2800	Paste						
4	01-01-2011 03:00:00	4,2800	Delete all						
5	01-01-2011 04:00:00	4,1300	Delate colocted						
6	01-01-2011 05:00:00	4,0600	Delete selected						
7	01-01-2011 06:00:00	3,9300							
8	01-01-2011 07:00:00	3,9300	Time and a to be dealtable and a bine						
9	01-01-2011 08:00:00	4,1100	Time series is in davlight saving time						
10	01-01-2011 09:00:00	4,5000	✓ Define location						
11	01-01-2011 10:00:00	4,9500	Latitude						
12	01-01-2011 11:00:00	5,3000	Longitude -0,205						
13	01-01-2011 12:00:00	5,4800							
14	01-01-2011 13:00:00	5,4300	Different time zone						
15	01-01-2011 14:00:00	5,2600	V						
F	Add line Delete line								
Move	timeseries on	Develo	oping over the years						
	O Weekly basis								
	Date basis								
Air tempe	Air temperature time series created from online CFSR2 data at position 51.41N -0.21W in the year 2011								
È (OK Cancel						

Figure 10. Define the location related to the data in the time series

This checkbox has to be marked if the time series contains solar radiation values and is used in a solar collector or photovoltaic. To define the location, values for Latitude and Longitude has to be added.

The latitude and longitude are specified in decimal degrees. The latitude has positive values north of equator and negative values south of equator. The longitude has positive values east of Greenwich Mean Time (UTC) and negative values west of Greenwich Mean Time.

Please notice, that you can find more information on how to use energyPRO in the How to Guides, User's Guide and tutorials on EMD's website:

http://www.emd.dk/energypro/download/tutorials-and-how-to-guides/



Niels Jernes vej 10 • 9220 Aalborg Ø • Denmark tel.: +45 9635 4444 • e-mail: emd@emd.dk • www.emd.dk