



More free time by Asset Framework

Roy Nolf & Frederik Foulon





153,090
EMPLOYEES

€66.6 billion
OF REVENUES

OPERATIONS IN
70 countries
AROUND THE WORLD

€16 billion
OF INVESTMENTS

1,100
RESEARCHERS AND EXPERTS

no. 1 independent power
producer (IPP) in the world

no. 1 importer of liquefied gas
in Europe

A natural-gas
supply portfolio of **1,082 TWh** per year
or 105 billion m³

112,7 GW
OF INSTALLED POWER-PRODUCTION CAPACITY



Natural gas
57.9%

Renewable
energy
19.5%

Coal
9.4%

Nuclear
5.7%

Other
7.5%

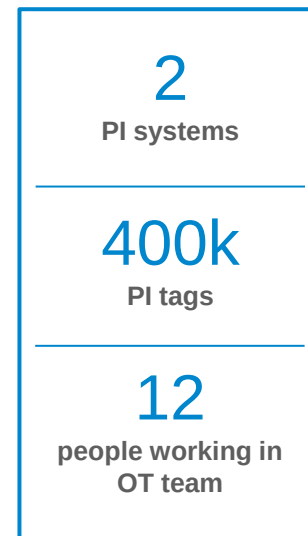
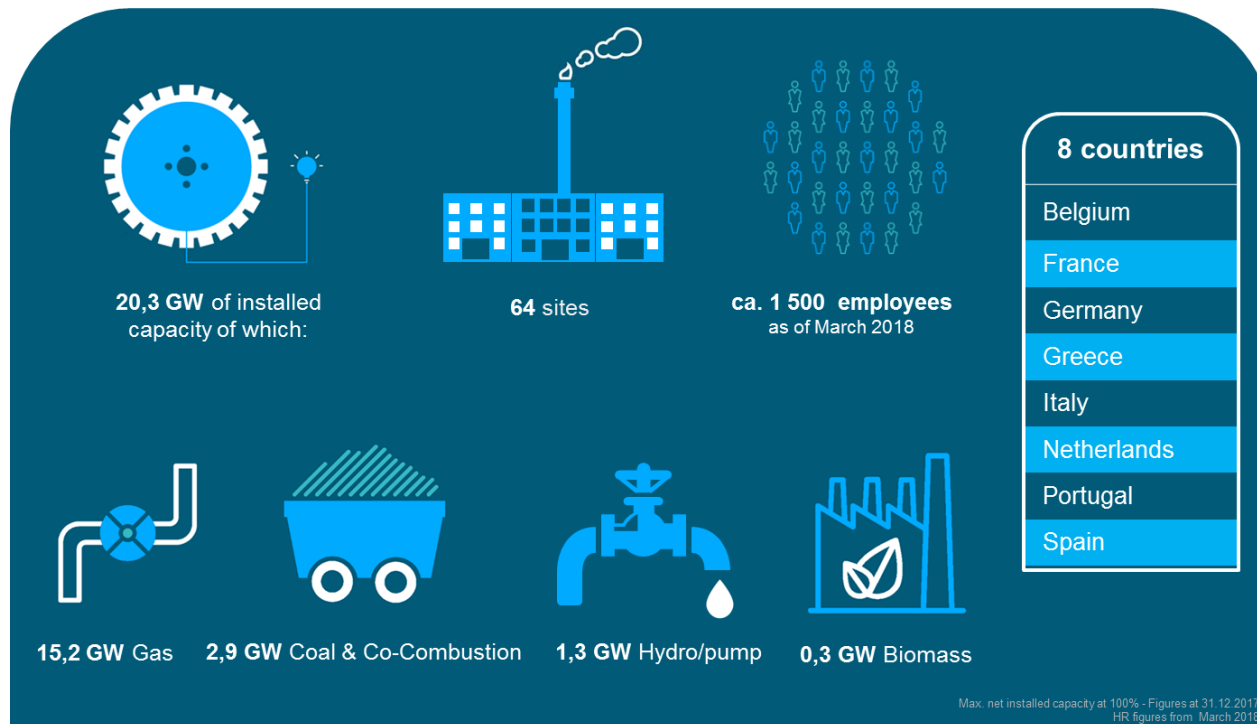
228
URBAN NETWORKS FOR HEATING AND COOLING
OPERATED IN **13** COUNTRIES



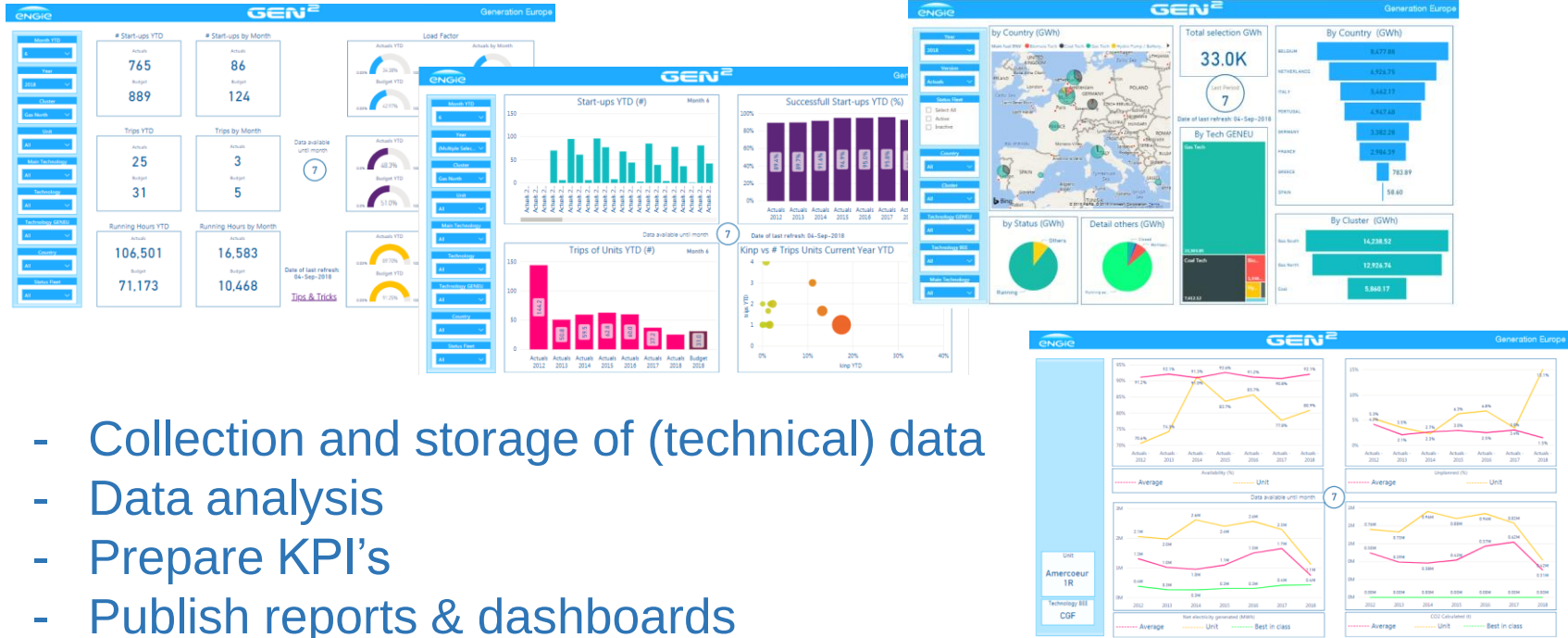
24 BUs close to clients



BU Generation Europe



Business Information Management



- Collection and storage of (technical) data
- Data analysis
- Prepare KPI's
- Publish reports & dashboards

Fast Close and Actuals Reporting

Fast Close ASAP

Monthly Figures of production data for financial closing

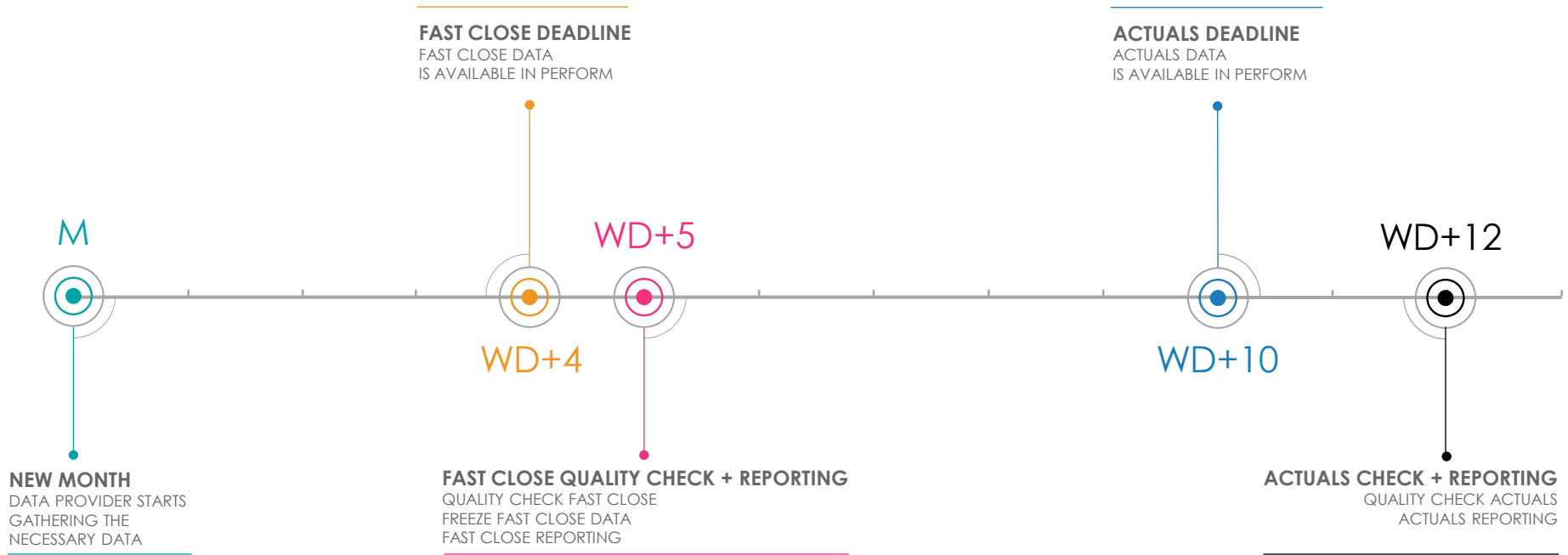
= *MWh of each plant*

Actuals TSTB

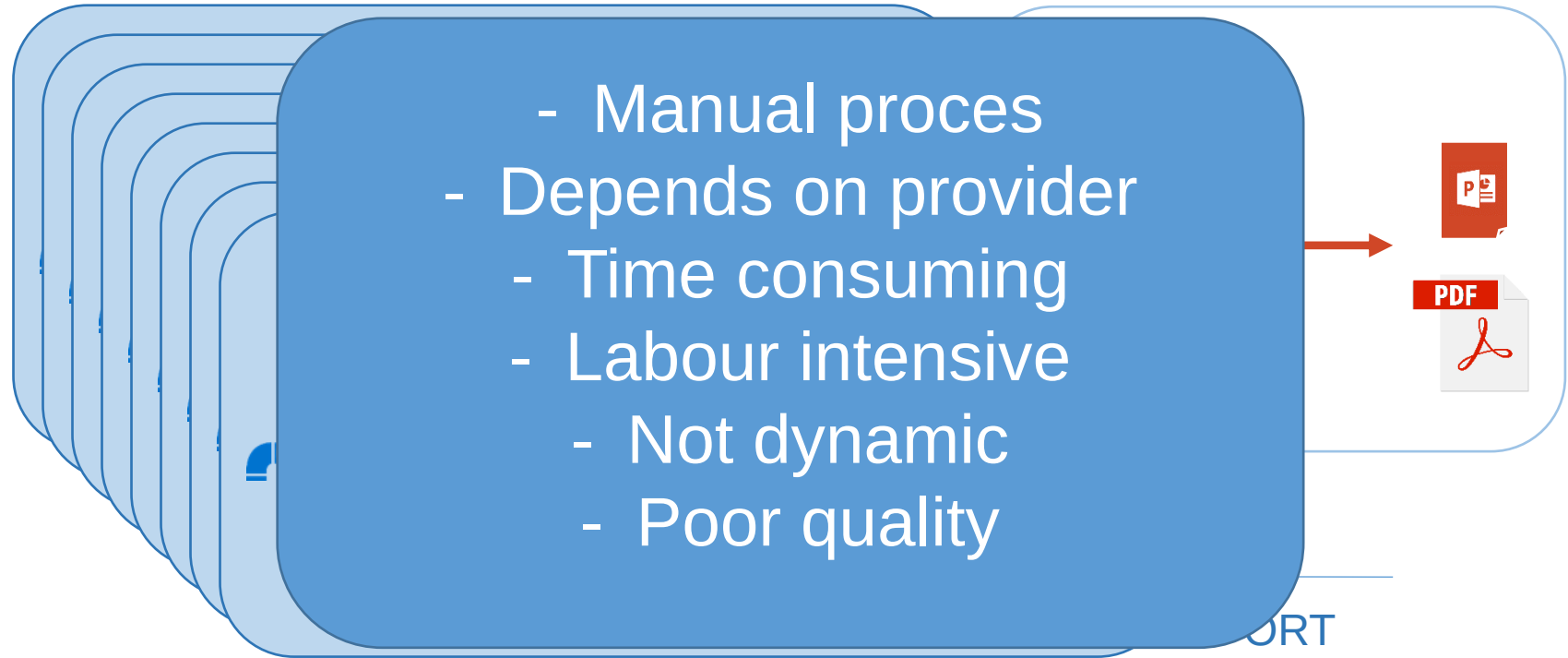
Monthly Figures for KPI reporting

= *Fuel cons; run hours; # start-ups; avail.; etc...*

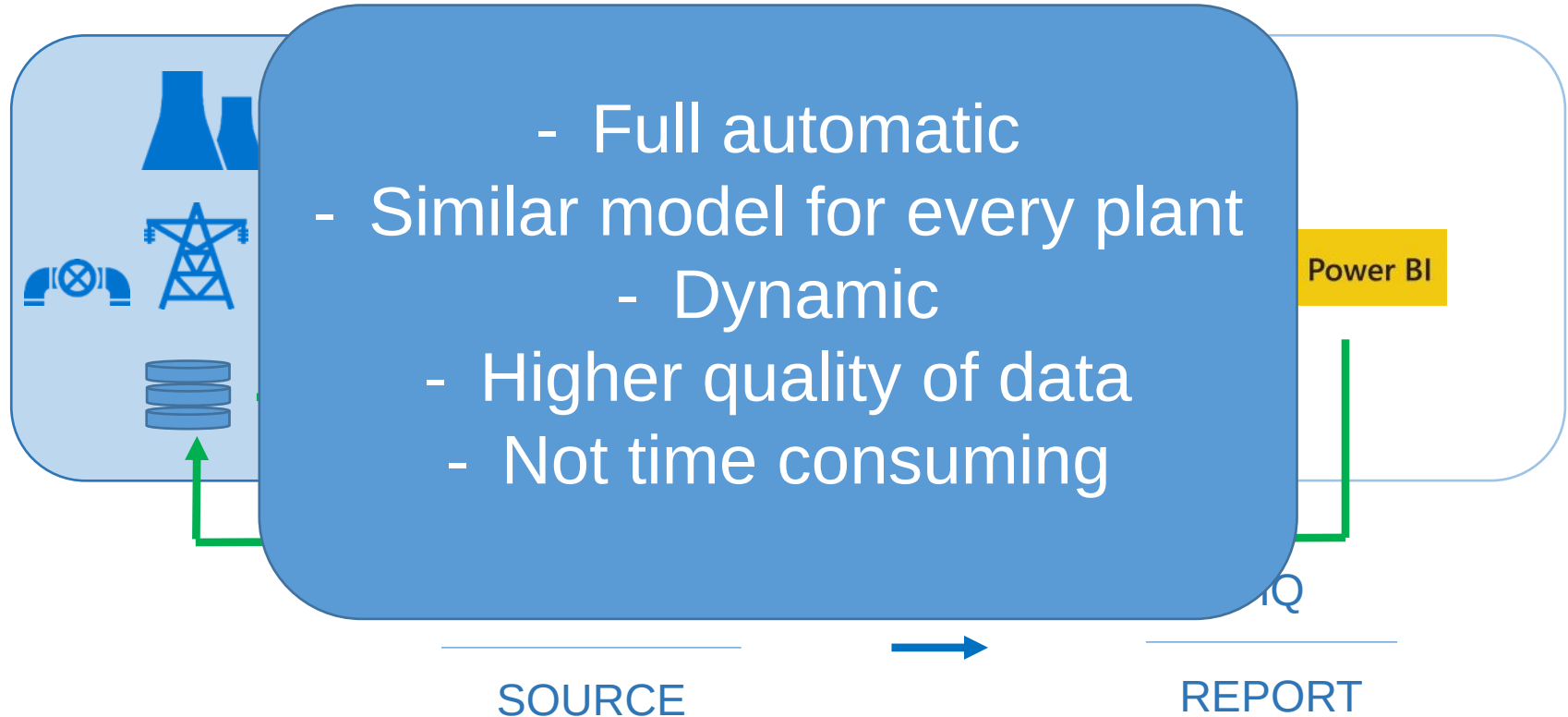
Previous Data Timeline



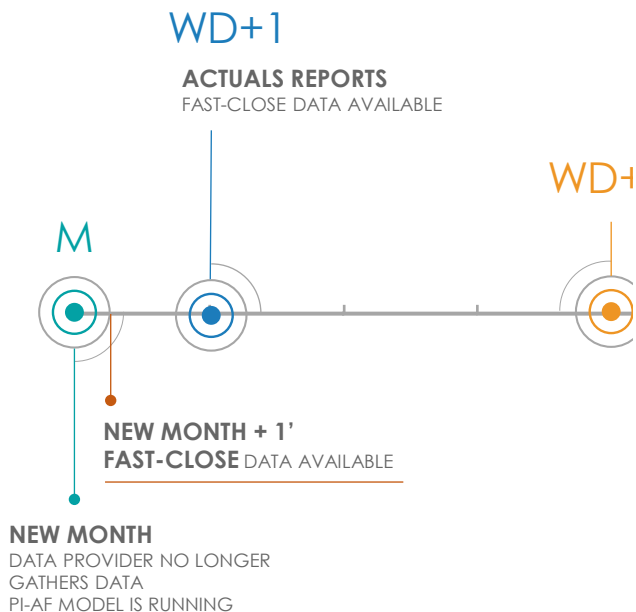
Previous proces



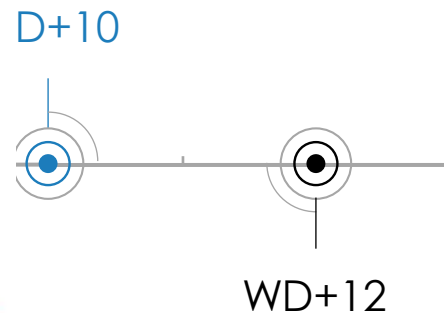
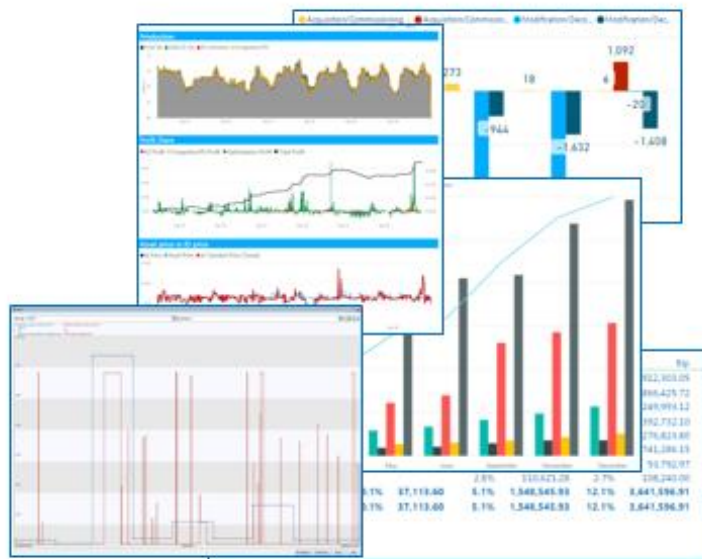
New Proces



Current Data Timeline



Time to ...



3 DEMO'S

1. **"Calculation"** of MWh based on raw data
2. **"Event Framing"** for quality control
3. Linking **"external tabular data"** for availability calculation

DEMO

Engie BU Generation Europe

Asset Framework in a business process



CHALLENGE

Plant operational data and KPI's lose many of their **steering value** as it is only available after a very time consuming process.

- Powerplants shattered over Europe
- For every plant different processes, tools and timelines

SOLUTION

Create power plant models which allow us to have **instant results**

- all needed data available in PI and external databases
- PI Asset Framework used for the modelling of the data.

RESULTS

The power plant operational data is available seconds after the day ended which increases the steering value of the data

- Fast close reporting available on WD+1' instead of WD+5
- Actuals reporting available on WD+1 instead of WD+12

Contact



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Questions?

Please wait for
the **microphone**

State your
name & company



Please rate this session in the mobile app!





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File Search View Go Tools Help

Database Query Date Back Refresh New Element New Attribute Search Elements

Elements

00

General Child Elements Attributes Ports Analyses Notification Rules Version

Excluded attributes are hidden.

Filter

Name	Value	Time Stamp	Description	Unit Of Measure	Data Reference
Category: 1. Manual input					
Category: 2. Intermediate calculations					
Category: 3. Production					
Category: 4. Fuel consumption					
Category: 5. Unavailabilities					

Name: <None>

Description: <None>

Categories: 1. Manual input

Default UOM: <Anything>

Value Type: <Anything>

Value: T

Data Reference: Settings...

78 Attributes

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File Search View Go Tools Help

Database Query Date Check In Refresh New Element New Attribute Search Elements

Elements

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General Child Elements Attributes Ports Analyses Notification Rules Version

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Name	Value	Time Stamp	Description	Unit Of Measure	Data Reference
Category: 1. Manual input					
Active	1	1/01/2010 0:00:00	Unit active?	<None>	PI Point
Main switch coupling	1	20/09/2018 9:15:20.066	Main switch coupling	<None>	PI Point
Perform plant code	BERODEN___4	1/01/1970 0:00:00	Plant code Perform	<None>	<None>
Power gross active	219,9609375 MW	20/09/2018 9:21:00.031	Gross active power	megawatt	PI Point
Power home load consumption in service	0,17 MW	1/01/1970 0:00:00	Home load consumption in service(fix value)	megawatt	<None>
Power home load consumption not in service	1,1 MW	1/01/1970 0:00:00	Home load consumption not in service (fix value)	megawatt	<None>
Power maximum	205 MW	20/09/2018 0:00:00	Maximum power	megawatt	PI Point
Power net active	204,2236328125 MW	20/09/2018 9:21:00.031	Net active power	megawatt	PI Point
Power non proces consumption	0,32 MW	1/01/1970 0:00:00	Non proces consumption power	megawatt	<None>
Category: 2. Intermediate calculations					
Category: 3. Production					
Category: 4. Fuel consumption					
Category: 5. Unavailabilities					

Name:

Description:

Properties:

Categories: 1. Manual input

Default UOM: <None>

Value Type: <Anything>

Value:

Data Reference:

Settings...

78 Attributes

Elements

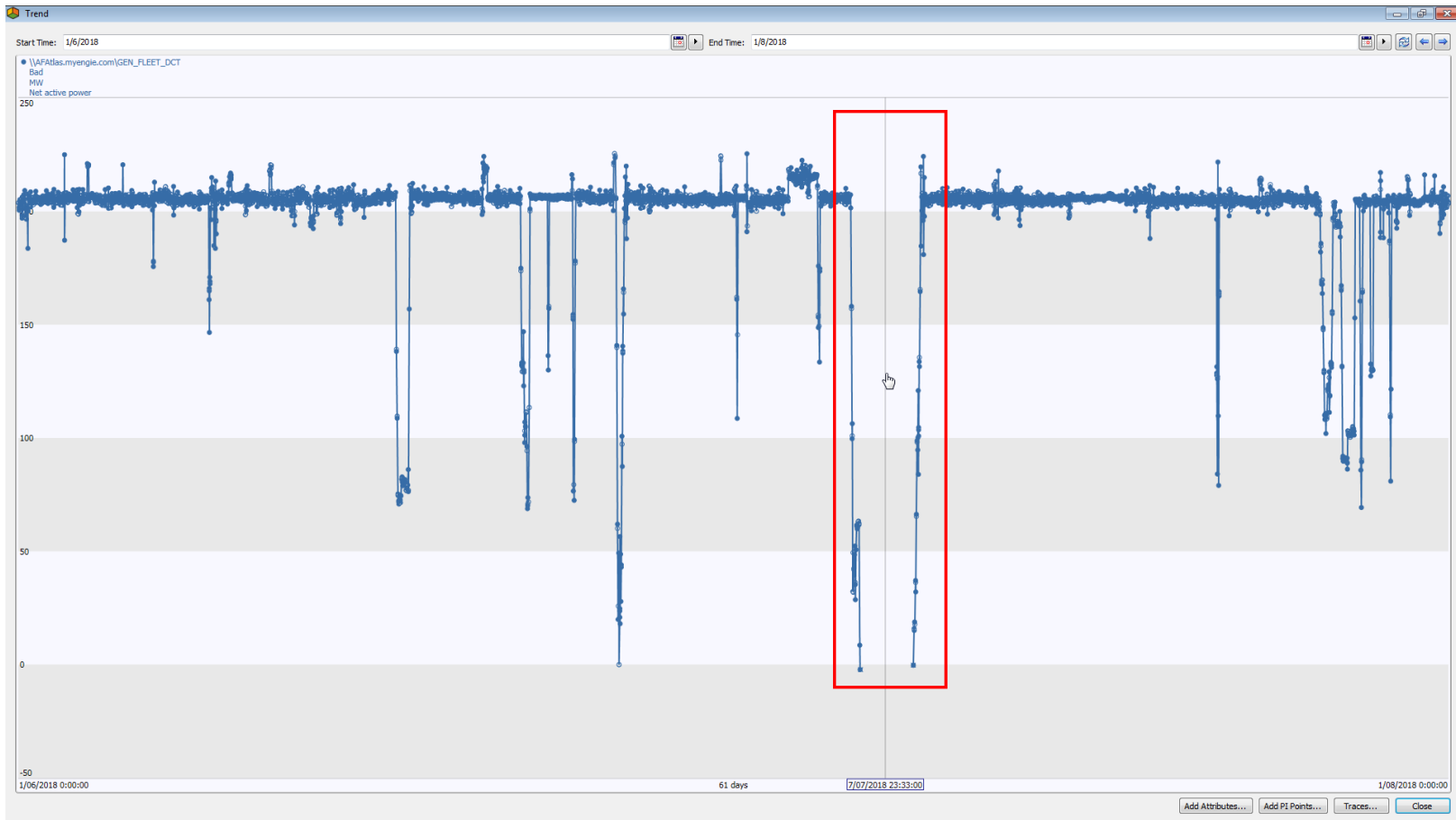
Event Frames

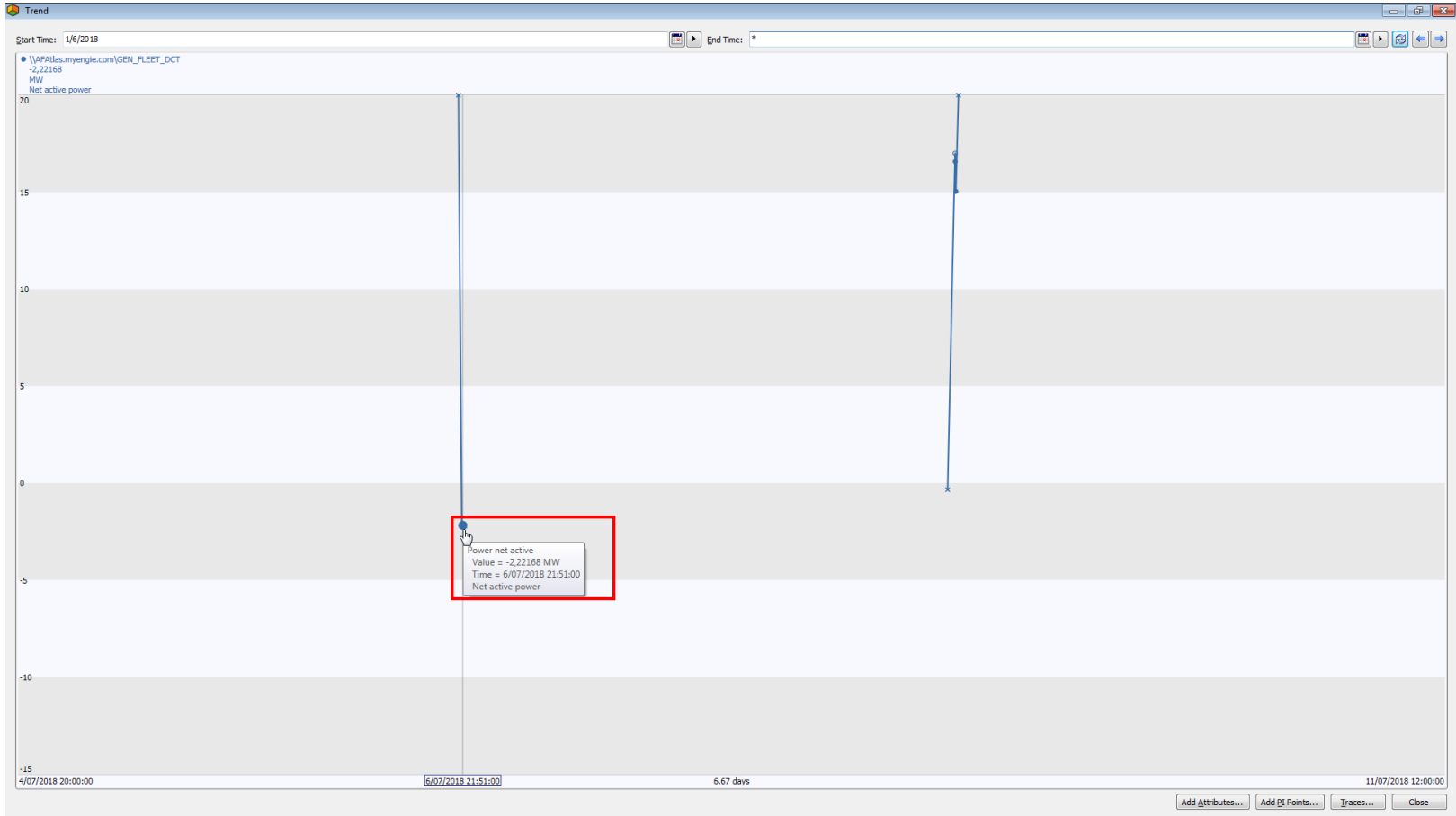
Library

Unit of Measure

Contacts

78 Attributes





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File Search View Go Tools Help

Database Query Date Refresh Check In New Element New Attribute Search Elements

Elements

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Power non proces consumption	0,32 MW	1/01/1970 0:00:00	Non proces consumption power	megawatt	<None>
Category: 2. Intermediate calculations					
Main switch coupling filtered	1	16/09/2018 17:12:00.016	Main switch coupling filtered (only status changes)	<None>	PI Point
Power gross active filtered	219,9609375 MW	20/09/2018 9:21:00.031	Gross active power filtered (Gross >= offset)	megawatt	Formula
Power net active filtered	204,2236328125 MW	20/09/2018 9:21:00.031	Net active power filtered (ANP >= 0)	megawatt	Formula
Category: 3. Production					
Category: 4. Fuel consumption					
Category: 5. Unavailabilities					

Name: Power net active filtered

Description: Net active power filtered (ANP >= 0)

Properties: <None>

Categories: 2. Intermediate calculations

Default UOM: megawatt

Value Type: Double

Value: 204,2236328125 MW

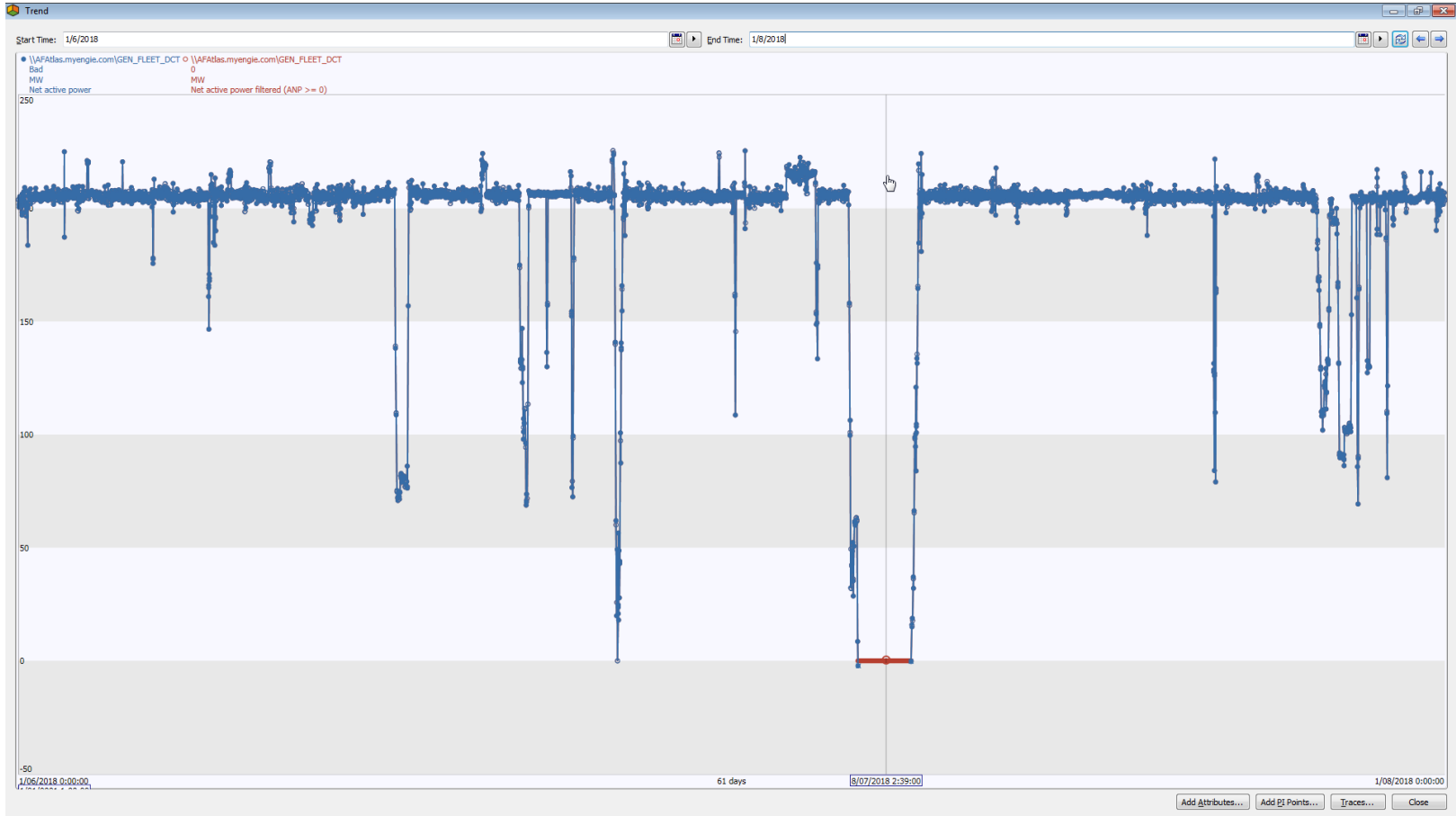
Data Reference: Formula

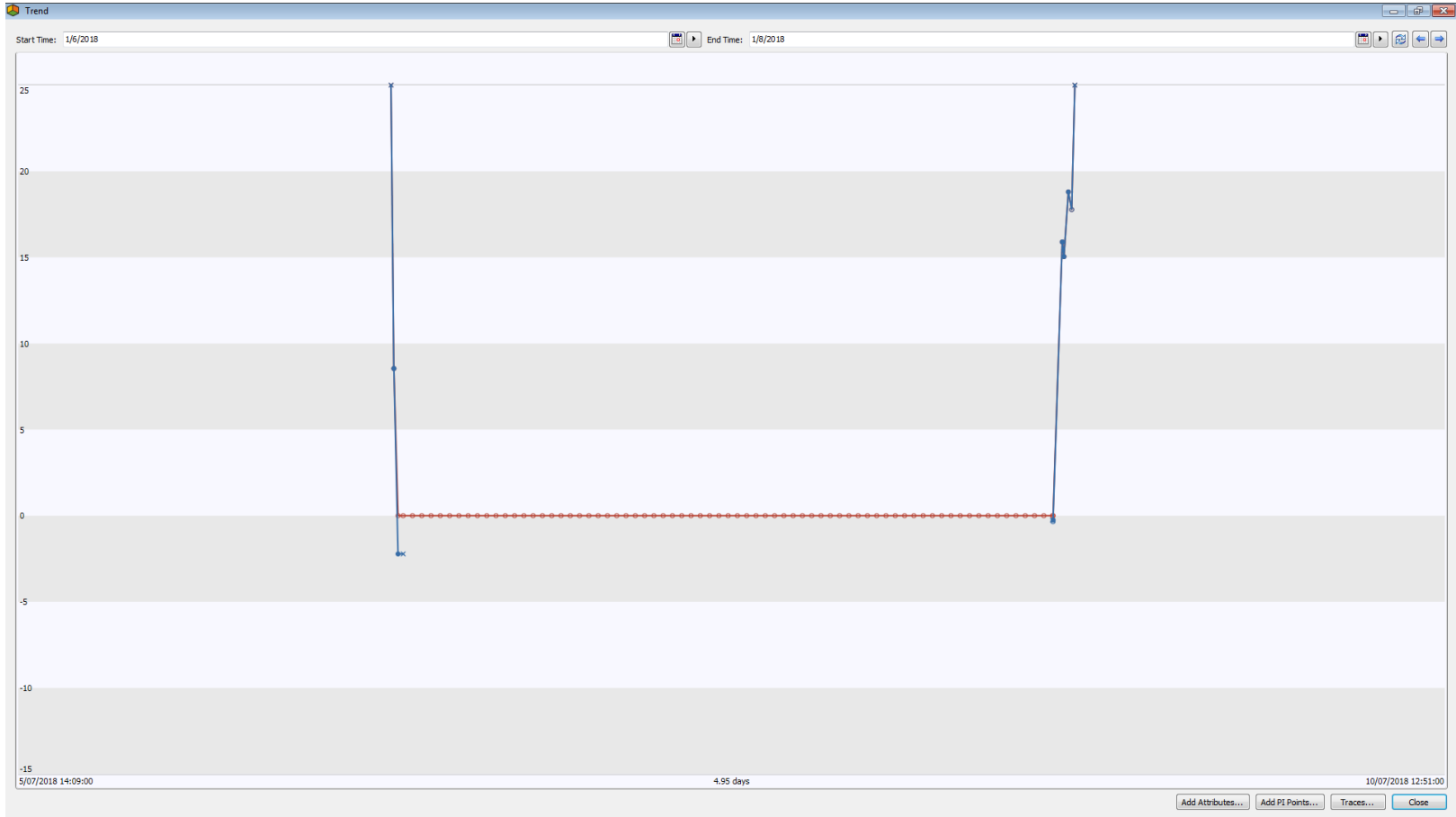
Settings...

A=Power net active; if not badval(A) then if (A>=0) then A else 0 else 0

Units Forecasts

Power net active filtered





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File Search View Go Tools Help

Database Query Date Refresh New Element New Attribute

Search Elements

Elements

General Child Elements Attributes Ports **Analyses** Notification Rules Version

Excluded attributes are hidden.

Filter

Name	Value	Time Stamp	Description	Unit Of Measure	Data Reference
Category: 1. Main switch coupling					
Active	1	1/01/2010 0:00:00	Unit active	<None>	PI Point
Main switch coupling	1	20/09/2018 9:15:20.066	Main switch coupling	<None>	PI Point
Perform plant code	BERODEN ____4	1/01/1970 0:00:00	Plant code Perform	<None>	<None>
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Main switch coupling filtered	1	16/09/2018 17:12:00.016	Main switch coupling filtered (only status changes)	<None>	PI Point
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Power net active filtered	204,2236328125 MW	20/09/2018 9:21:00.031	Net active power filtered (ANP >= 0)	megawatt	Formula
Category: 3. Production					
Energy electrical consumption daily	4,0799992370605 MWh	19/09/2018 0:00:00	Daily electrical consumption energy	megawatt hour	PI Point
Energy electrical consumption monthly	126,479995727539 MWh	1/08/2018 0:00:00	Monthly electrical consumption energy	megawatt hour	PI Point
Energy final net active daily	2221,81420898438 MWh	19/09/2018 0:00:00	Daily final net active energy	megawatt hour	PI Point
Energy final net active monthly	147813,703125 MWh	1/08/2018 0:00:00	Monthly final net active energy	megawatt hour	PI Point
Energy gross active daily	2403,70361328125 MWh	19/09/2018 0:00:00	Daily gross active energy	megawatt hour	PI Point
Energy gross active monthly	159177,78125 MWh	1/08/2018 0:00:00	Monthly gross active energy	megawatt hour	PI Point
Energy home load consumption daily	174,2094 MWh	19/09/2018 0:00:00	Daily home load consumption energy	megawatt hour	PI Point
Energy home load consumption monthly	11126 MWh	1/08/2018 0:00:00	Monthly home load consumption energy	megawatt hour	PI Point
Energy load factor daily	46,1588249206543 %	19/09/2018 0:00:00	Daily load factor	percent	PI Point
Energy load factor monthly	96,914306640625 %	1/08/2018 0:00:00	Monthly load factor	percent	PI Point
Energy maximum daily	4920 MWh	19/09/2018 0:00:00	Daily maximum energy	megawatt hour	PI Point
Energy maximum monthly	152520 MWh	1/08/2018 0:00:00	Monthly maximum energy	megawatt hour	PI Point
Energy net active daily	2233,57421875 MWh	19/09/2018 0:00:00	Daily net active energy	megawatt hour	PI Point
Energy net active monthly	148178,265625 MWh	1/08/2018 0:00:00	Monthly net active energy	megawatt hour	PI Point
Energy non proces consumption daily	7,6799998283862 MWh	19/09/2018 0:00:00	Daily non proces consumption	megawatt hour	PI Point
Energy non proces consumption monthly	238,080001831055 MWh	1/08/2018 0:00:00	Monthly non proces consumption	megawatt hour	PI Point
Operating hours daily	24 h	19/09/2018 0:00:00	Daily operating hours (OH)	hour	PI Point
Operating hours monthly	744 h	1/08/2018 0:00:00	Monthly operating hours (OH)	hour	PI Point

Group by: ☒ Category ☐ Template

Name: Energy net active daily

Description: Daily net active energy

Properties: <None>

Categories: 3. Production

Default UOM: megawatt hour

Value Type: Double

Value: 2233,57421875 MWh

Data Reference: **PI Point**

Settings...

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Units Forecasts

Energy net active daily

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File Search View Go Tools Help

Database Query Date Refresh New Element

Search Elements

Elements

- BU GEN
 - Coldwave
 - Datasquare
 - Fast Close
 - Belgium
 - Amercoeur
 - Arlanxo
 - Coo
 - Covestro
 - Drogenbos
 - Fluxys Zeebrugge
 - Hendersbrug
 - Ineos Phend
 - Isvag
 - Ixelles
 - Knippegroen
 - Les Avlirs
 - Lilo Energy
 - Rodenhuize
 - 00
 - Saint-Ghislain
 - Sagpi Lanaken
 - Tereos
 - Total
 - Zandvliet
 - France
 - Germany
 - Greece
 - Italy
 - Spain
 - The Netherlands
 - Load forecast

- BUGEN_XYZ
- Test environment
- WBK
- Element Searches

General Child Elements Attributes Ports Analyses Notification Rules Version

Name: Energy net active daily

Description: Daily net active energy

Categories: DatasquareFastClose,DatasquareFastCloseEnergy/Ne...

Analysis Type: ☒ Expression ☐ Rollup ☐ Event Frame Generation ☐ SQC

Name	Expression	Value at Evaluation	Value at Last Trig:	Output Attribute
BOP	//Begin of period 'y'			Map
EOP	//End of period 't'			Map
HoursInDay	//Count the number of hours in a day Convert(Convert(Float((EOP - BOP)), "s"), "h")			Map
Energy/NetActiveDaily	//Active net power on daily basis (produced) If Not BadVal(TagVal('Active', ''')) then //Check whether power plant is still in service If TagVal('Active', ''') = 1 then TagTot('Power net active filtered', BOP, EOP) * HoursInDay Else NoOutput() Else NoOutput()			Energy net active daily

Add a new variable

Scheduling: ☐ Event-Triggered ☒ Periodic

Run every day at 07:15

Advanced...
Output time stamp override: t-1d

Connected to the PI Analysis Service.

00 Modified:19/09/2018 16:16:38. Version: 1/01/1970 0:00:00, Revision 44



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File Search View Go Tools Help

Database Query Date Refresh New Element New Attribute

Search Elements

Elements

General Child Elements Attributes Ports **Analyses** Notification Rules Version

Excluded attributes are hidden.

Filter

Name	Value	Time Stamp	Description	Unit Of Measure	Data Reference
Category: 1. Main switches					
Active	1	1/01/2010 0:00:00	Unit active	<None>	PI Point
Main switch coupling	1	20/09/2018 9:15:20.066	Main switch coupling	<None>	PI Point
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Operating hours monthly	744 h	1/08/2018 0:00:00	Monthly operating hours (OH)	hour	PI Point

Group by: ☒ Category ☐ Template

Name: Energy net active monthly

Description: Monthly net active energy

Properties: <None>

Categories: 3. Production

Default UOM: megawatt hour

Value Type: Double

Value: 148178,265625 MWh

Data Reference: PI Point

Settings...

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Units Forecasts

Energy net active monthly

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File Search View Go Tools Help

Database Query Date Refresh New Element Search Elements

Elements

- BU GEN
 - Coldwave
 - Datasquare
 - Fast Close
 - Belgium
 - Amercoeur
 - Arlanxo
 - Coo
 - Covestro
 - Drogenbos
 - Fluxys Zeebrugge
 - Hendersbrug
 - Ineos Phend
 - Isvag
 - Ixelles
 - Knippegroen
 - Les Avirs
 - Lilo Energy
 - Rodenhuize
 - 00
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 - The Netherlands
 - Load forecast
- BUGEN_XYZ
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 - WKB
 - Element Searches

General Child Elements Attributes Ports Analyses Notification Rules Version

Name Backfilling

Name	Backfilling
f0 Energy final net active monthly	
f0 Energy gross active daily	
f0 Energy gross active monthly	
f0 Energy home load consumption daily	
f0 Energy home load consumption monthly	
f0 Energy load factor daily	
f0 Energy load factor monthly	
f0 Energy maximum daily	
f0 Energy maximum monthly	
f0 Energy net active daily	
f0 Energy net active monthly	
f0 Energy non proces consumption daily	
f0 Energy non proces consumption monthly	
f0 Energy unavailable external planned monthly	✓
f0 Energy unavailable external total monthly	✓

Name: Energy net active monthly

Description: Monthly net active energy

Categories: DatasquareFastClose;DatasquareFastCloseEnergy/Ne...

Analysis Type: ☒ Expression ☐ Rollup ☐ Event Frame Generation ☐ SQC

Name	Expression	Value at Evaluation	Value at Last Trig:	Output Attribute
BOP	//Begin of period Bow(Bow('t')-1)			Map
EOP	//End of period Bow('t')-1			Map
EnergyNetActiveMonthly	<pre> //Check whether power plant is still in service If TagVal('Active', BOP) = 1 then //Only activate when it's the first day of the month If (Day('*') = 1) Then //Event weighted total of energy net active daily TagMean('Energy net active daily', BOP, EOP) * EventCount('Energy net active daily', BOP, EOP) Else NoOutput() </pre>			Energy.net.active.monthly

Add a new variable

Scheduling: ☐ Event-Triggered ☒ Periodic

Run every day at 07:25 [Configure](#)

Advanced...
Output time stamp override: t-1mo

Connected to the PI Analysis Service.

00 Modified:19/09/2018 16:16:38. Version: 1/01/1970 00:00, Revision 44



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File Search View Go Tools Help

Database Query Date Check In Refresh New Element

Search Elements

Elements

00

General Child Elements Attributes Ports Analyses Notification Rules Version

Name: Fuel consumption woodpellets daily

Description: Fuel consumption woodpellets daily

Categories: DatasquareFastClose; DatasquareFastCloseFuelCons...

Analysis Type: ☒ Expression ☐ Rollup ☐ Event Frame Generation ☐ SQC

Name	Expression	Value at Evaluation	Value at Last Trigg	Output Attribute
TimestampDaily	't-1d'			Map
BOPMonthly	Bom(Bom('')-1)			Map
EOPMonthly	Bom('')-1			Map
MSCTimestamp	//Timestamp last change of main switch coupling (close -> open or open -> close) PrevEvent('Main switch coupling filtered','')			Map
IndexY	//Check whether power plant is still in service If TagVal('Active', TimestampDaily) = 1 Then If Not BadVal(TagVal('Woodpellets consumption metric daily Metric consumption ind Then TagVal('Woodpellets consumption metric daily Metric consumption index','t-1d' Else PrevVal('Woodpellets consumption metric daily Metric consumption index', MSC Else NoOutput()			Map
IndexT	//Check whether power plant is still in service If TagVal('Active', TimestampDaily) = 1 Then If Not BadVal(TagVal('Woodpellets consumption metric daily Metric consumption ind Then TagVal('Woodpellets consumption metric daily Metric consumption index','t') Else If Not BadVal(PrevVal('Woodpellets consumption metric daily Metric consumption Then PrevVal('Woodpellets consumption metric daily Metric consumption index', Else IndexY Else NoOutput()			Map
MetricConsIndex	//Check whether power plant is still in service If TagVal('Active', TimestampDaily) = 1 Then IndexT-IndexY Else NoOutput()			Map
Silo1Y	//Check whether power plant is still in service If TagVal('Active', TimestampDaily) = 1 Then // If power plant is out of service, Silo1Y results in 'Bad' value. This if state If Not BadVal(TagVal('Woodpellets consumption metric daily Level Silo 1','t-1d')) Then TagVal('Woodpellets consumption metric daily Level Silo 1','t-1d') Else PrevVal('Woodpellets consumption metric daily Level Silo 1', MSCTimestamp) Else NoOutput()			Map

Add a new variable

Scheduling: ☐ Event-Triggered ☒ Periodic

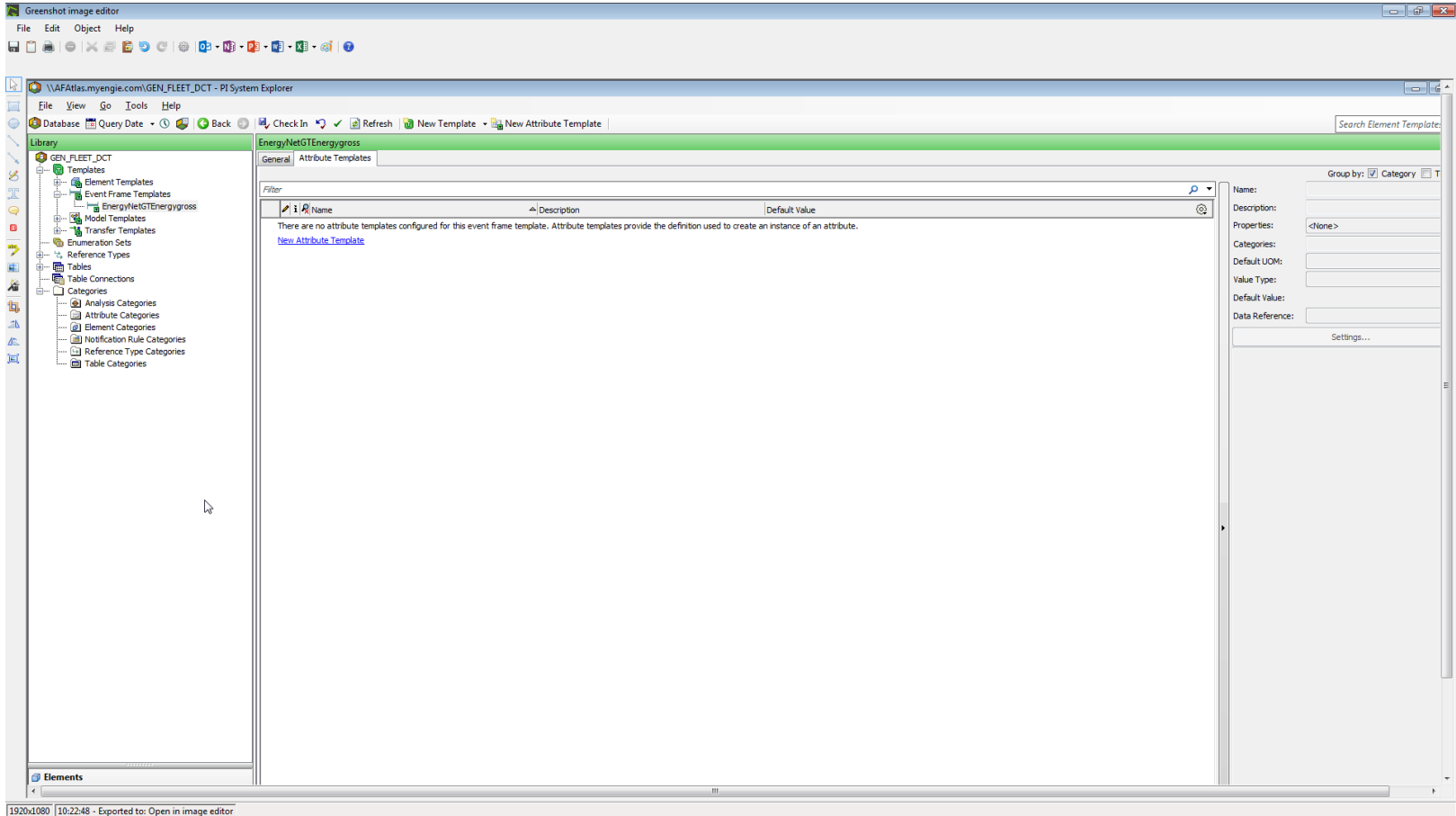
Run every day at 07:25

Advanced...
Output time stamp override: t-1d

Connected to the PI Analysis Service.

00 Modified:19/09/2018 16:16:38. Version: 1/01/1970 00:00:00, Revision 44

Year		2018																	
Data type	Description		b	b	b	b	b												
			Rodenhuize	Herdersbrug	Knippagroen	Total	Saint-Ghislain	Amercoeur	Arlanxo	Drogenbos CCGT	Isag Wilrijk	Aalst Syral	Sappi Lanaken	COO I	COO II	Covestro	Lillo Energy	Ineos Phenol	Fluys Zeebrugge
			\\AFAtlas	\\AFAtlas	\\AFAtlas	\\AFAtlas	\\AFAtlas	\\AFAtlas	\\AFAtlas	\\AFAtlas	\\AFAtlas	\\AFAtlas	\\AFAtlas	\\AFAtlas	\\AFAtlas	\\AFAtlas	\\AFAtlas	\\AFAtlas	\\AFAtlas
			DSQ-FCL	DSQ-FCL	DSQ-FCL	DSQ-FCL	DSQ-FCL	DSQ-FCL	DSQ-FCL	DSQ-FCL	DSQ-FCL	DSQ-FCL	DSQ-FCL	DSQ-FCL	DSQ-FCL	DSQ-FCL	DSQ-FCL	DSQ-FCL	DSQ-FCL
			[%]	[%]	[%]	[%]	[%]	[%]	[%]	[%]	[%]	[%]	[%]	[%]	[%]	[%]	[%]	[%]	[%]
Energy	Gross active		0,02	-0,23	0,02	0,04	0,35	-0,72	0,04	-1,63	-0,95	-0,03	0,00	0,00	0,00	0,04	0,00	0,02	0,00
	Net active		0,43	-0,55	-0,02	-0,38	-0,70	-0,12	0,02	-1,29	-1,19	0,06	0,00	0,00	0,00	0,01	0,00	0,00	0,00
	Final net		0,14	-2,10	-0,05	-0,38	-0,73	0,30	0,02	-1,28	-1,19	0,06	0,00	0,00	0,00	0,01	0,00	0,00	0,11
	Maximum		0,00	0,41	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,02	0,02	0,00	0,00	0,00	0,00
	Load factor		0,14	-2,51	-0,05	-0,37	-0,73	0,30	0,02	-2,16	-1,90	0,06	0,00	-0,02	-0,02	0,01	0,00	0,00	0,11
	Operating hours		0,02	0,62	1,84	0,03	0,02	0,01	0,00	0,01	0,00	0,00	0,02	-0,45	0,01	0,01	0,05	0,01	-2,47
	Steam delivery to client								0,00			0,01							-21,89
Fuels	Natural gas	Volume	0,03	0,00	0,12	0,15	-0,96	-0,04	1,50	-0,57		0,36	-0,04			-0,05	0,01	0,00	
		LHV	-0,08	0,00	0,00	-0,02	0,01	-0,02	-0,10	0,00		-0,03	0,00				0,00	0,00	
		Energy	0,02	0,00	0,12	0,13	-0,96	-0,04	1,41	-0,57		0,32	-0,04			-0,05	0,01	0,00	
	Woodpellets	Mass	0,00																
		LHV	-0,46																
		Energetic	-0,44																
	Blast furnace gas	Volume	-1,54		2,15														
		LHV	0,03		1,11														
		Energetic	-1,53		3,10														
	Refinery gas	Volume				-0,35													
		LHV				0,16													
		Energetic				-0,40													
	BPA	Volume														0,02			
		LHV														-1,31			
		Energetic														-1,24			
	Paraffine	Volume																	-0,58
		LHV																	12,50
		Energetic																	-0,58
	Heat	Energetic									-1,19								
	Pumps	Energetic												0,00	0,00				
CO2	Total fuel consumption energetic		-0,38	0,01	1,39	0,14	-0,50	0,17	1,41	-0,54	-1,19	0,32	-0,04			-0,10	0,01	0,00	-0,58
	Natural gas		0,31	0,72	0,51	9,13	0,17	1,02	1,78			1,06	0,54			6,17	0,48	19,79	
	Woodpellets		0,00																
	Blast furnace gas		0,13		2,66														
	Refinery gas					0,00													
	BPA					0,00													
	Paraffine																		
	Total CO2 emission		0,13	0,73	1,74	2,27	0,20	1,02	1,78			1,06	0,54				0,48	19,79	+



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File Search View Go Tools Help

Database Query Date Back Check In Refresh New Element Search Elements

Elements

00

General Child Elements Attributes Ports Analyses Notification Rules Version

Name: EnergyNetGTEnergyGross

Description: Energy net is greater than energy gross

Categories:

Analysis Type: ☐ Expression ☐ Rollup ☒ Event Frame Generation ☐ SQC

[Create a new notification rule for EnergyNetGTEnergyGross](#)

Event Frame Template: EnergyNetGTEnergyGross

Name	Expression	True for	Severity	Value at Evaluatio	Value at Last Trigg
Start triggers					
StartTrigger1	'Energy net active daily' > 'Energy gross active daily'	Set (optional)	None		
End trigger					
EndTrigger	PrevVal('Energy gross active daily', '**-1d') <> TagVal('Energy gross active daily', '**')				

Add a new variable Add a new start trigger

Scheduling: ☒ Event-Triggered ☐ Periodic

Trigger on: Any Input

Functions

Insert functions into the expression

All

Abs
Abs(number x)
Return the absolute value of an integer or real number.
Example: Abs(1)

Attributes

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Connected to the PI Analysis Service.

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File Search View Go Tools Help

Database Query Date Back Check In Refresh New Event Frame Search Event Frames

Event Frame Searches

Event Frame Searches
Transfer Searches
Transfer Search 1

Name Query

Event Frame Search

Enter Event Frame Criteria Search

Criteria

Search: Starting Before In Progress
Search start: 31/12/9999 23:59:59 All Descendants

Analysis Name:
Element Name:
Category: <All>
Template: <All>
Add Criteria EnergyNetCTEnergygross

Results

Group by: Category Template

Name Gantt Duration Start Time

Status

OK Cancel Reset

Elements
Event Frames
Library
Unit of Measure
Contacts

0 Event Frame Searches

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File Search View Go Tools Help

Database Query Date Back Check In Refresh New Event Frame Search Event Frames

Event Frame Search 1

Group by: Category Template

Name	2.. [00:00:01] ...	Duration	Start Time	End Time	Description	Category	Severity	Template	Primary Element
EnergyNetGTEnergyGross 2017-09-23 00:00:00		0:00:00	23/09/2017 0:00:00	23/09/2017 0:00:00	Energy net greater than energy gross		None	EnergyNetGTE...	00

Event Frame Search



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File View Go Tools Help

Database Query Date Back Check In Refresh New Table Search Tables

Library

- LINK_KWIS
 - Templates
 - Element Templates
 - Event Frame Templates
 - Model Templates
 - Transfer Templates
 - Enumeration Sets
 - Reference Types
 - Tables
 - KWIS.NodeId.Signal.Values
 - KWIS.NodeId.Signals
 - KWIS.NodeId.Title
 - KWIS.NodeTypes
 - KWIS.PerformCodes
 - KWIS.Period
 - KWIS.PmaxRef
 - KWIS.ReferencePMAx (TPD)
 - KWIS.SignalTemplates
 - KWIS.SignalValueVersions
 - KWIS.Unavailabilities
 - KWIS.Unavailabilities_future
 - KWIS.Unavailabilities_past_present
 - KWIS.UnavailabilitiesAll
 - KWIS.VersionInformation
 - StringToInt
 - Table Connections
 - Categories
 - Analysis Categories
 - Attribute Categories
 - Element Categories
 - Notification Rule Categories
 - Reference Type Categories
 - Table Categories

Elements

Event Frames

Library

Unit of Measure

Contacts

KWIS.Unavailabilities

General Table Define Table Version

KWIS.Unavailabilities

Filter

	Id	EventId	Co	UnavailabilityType	RequestedBy	Descript	Model	Comment	Title	TjId	EndTjId	PowerActualMax	PowerActualMin	PowerLostTotal
	53358	463461	UN	Unplanned, postponable	Generation (Internal)	Finished	1374	Reparatur Inertdampfschieber Mühlen	Kohleblock WHV	24/02/2017 0:00:00	27/02/2017 0:00:00	0,0000	0,0000	731,0000
	53358	463461	UN	Unplanned, postponable	Generation (Internal)	Finished	1374	Reparatur Inertdampfschieber Mühlen	Kohleblock WHV	27/02/2017 0:00:00	27/02/2017 0:00:00	0,0000	0,0000	0,0000
	56400	479212	UN	Unplanned, postponable	Generation (Internal)	Finished	1374	Reparation on the boiler recirculation pump	Kohleblock WHV	29/06/2017 11:00:00	3/07/2017 3:00:00	0,0000	0,0000	726,0000
	56400	479212	UN	Unplanned, postponable	Generation (Internal)	Finished	1374	Reparation on the boiler recirculation pump	Kohleblock WHV	3/07/2017 3:00:00	3/07/2017 3:00:00	0,0000	0,0000	0,0000
	57301		UN	Unplanned, postponable	Generation (Internal)	Finished	1374	Auf Grund Redispacht, Wieder anfahrt nicht ...	Kohleblock WHV	3/08/2017 12:00:00	5/08/2017 0:00:00	0,0000	168,4900	726,0000
	57301		UN	Unplanned, postponable	Generation (Internal)	Finished	1374	Auf Grund Redispacht, Wieder anfahrt nicht ...	Kohleblock WHV	5/08/2017 0:00:00	5/08/2017 0:00:00	0,0000	168,4900	0,0000
	58250	489667	DE	Unplanned, postponable	Generation (Internal)	Finished	1374	Emission measurements required by DEKRA.	Kohleblock WHV	14/09/2017 7:00:00	14/09/2017 18:00:00	710,0000	650,0000	16,0000
	58250	489667	DE	Unplanned, postponable	Generation (Internal)	Finished	1374	Emission measurements required by DEKRA.	Kohleblock WHV	14/09/2017 18:00:00	14/09/2017 18:00:00	710,0000	650,0000	0,0000
	59351	495801	DE	Unplanned, postponable	Generation (Internal)	Finished	1374	Feeding water pump must be repaired	Kohleblock WHV	17/10/2017 8:00:00	17/10/2017 14:00:00	350,0000	0,0000	376,0000
	59351	495801	DE	Unplanned, postponable	Generation (Internal)	Finished	1374	Feeding water pump must be repaired	Kohleblock WHV	17/10/2017 14:00:00	17/10/2017 14:00:00	350,0000	0,0000	0,0000
	59990	500001	UN	Unplanned, postponable	Generation (Internal)	Finished	1374	Repair on the primary air fan (replacing the d...	Kohleblock WHV	11/11/2017 0:00:00	11/11/2017 14:28:00	0,0000	0,0000	726,0000
	59990	500001	UN	Unplanned, postponable	Generation (Internal)	Finished	1374	Repair on the primary air fan (replacing the d...	Kohleblock WHV	11/11/2017 14:28:00	11/11/2017 14:28:00	0,0000	0,0000	0,0000
	60849	504603	UN	Unplanned, postponable	Generation (Internal)	Finished	1374	necessary repair turbine condensor / Reper...	Kohleblock WHV	9/12/2017 10:00:00	9/12/2017 14:52:00	0,0000	0,0000	726,0000
	60849	504603	UN	Unplanned, postponable	Generation (Internal)	Finished	1374	necessary repair turbine condensor / Reper...	Kohleblock WHV	9/12/2017 14:52:00	9/12/2017 14:52:00	0,0000	0,0000	0,0000
	61291	508529	DE	Unplanned, postponable	Generation (Internal)	Finished	1374	Burner level 40 unavailable	Kohleblock WHV	2/01/2018 13:30:00	8/01/2018 4:32:00	600,0000	0,0000	126,0000
	61291	508529	DE	Unplanned, postponable	Generation (Internal)	Finished	1374	Burner level 40 unavailable	Kohleblock WHV	8/01/2018 4:32:00	8/01/2018 4:32:00	600,0000	0,0000	0,0000
	68155	537602	UN	Unplanned, postponable	Generation (Internal)	Finished	1374	Inspection on the connection pipes of a wate...	Kohleblock WHV	9/06/2018 0:00:00	10/06/2018 23:59:00	0,0000	0,0000	726,0000
	68155	537602	UN	Unplanned, postponable	Generation (Internal)	Finished	1374	Inspection on the connection pipes of a wate...	Kohleblock WHV	10/06/2018 23:59:00	10/06/2018 23:59:00	0,0000	0,0000	0,0000
	68164	537606	DE	Unplanned, postponable	Generation (Internal)	Finished	1374	Repair of the feed water pump's motor (see e...	Kohleblock WHV	11/06/2018 0:00:00	17/06/2018 17:22:00	358,0000	0,0000	368,0000
	68164	537606	DE	Unplanned, postponable	Generation (Internal)	Finished	1374	Repair of the feed water pump's motor (see e...	Kohleblock WHV	17/06/2018 17:22:00	17/06/2018 17:22:00	358,0000	0,0000	0,0000
	68757	543401	DE	Unplanned, postponable	Generation (Internal)	Finished	1374	Reduced output due to small defect, awaiting...	Kohleblock WHV	15/07/2018 0:00:00	18/07/2018 0:00:00	700,0000	0,0000	26,0000
	68757	543401	DE	Unplanned, postponable	Generation (Internal)	Finished	1374	Reduced output due to small defect, awaiting...	Kohleblock WHV	18/07/2018 0:00:00	18/07/2018 0:00:00	700,0000	0,0000	0,0000

KWIS.Unavailabilities: 22 Rows.

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File Search View Go Tools Help

Database Query Date Back Check Refresh New Element New Attribute Search Elements

Elements

Unavailability calculations attribute

General Child Elements Attributes Ports Analyses Notification Rules Version

Excluded children are hidden.

Filter

Name	Value	Time Stamp	Description	Unit Of Measure	Data Reference
Category: BU GEN > Link_KWIS > Unavailability calculations input					
Available power	110 MW	18/09/2018 20:30:00	Available power (maximum power - unavailable po...	megawatt	Formula
Maximum power	205 MW	19/09/2018 11:22:19.769	Maximum power (linked with STONE)	megawatt	Table Lookup
Requested by	Generation (internal)	19/09/2018 11:22:19.769	Requested by	<None>	Table Lookup
Requested by numeric	1	18/09/2018 20:30:00	Numeric requested by	<None>	Table Lookup
Unavailability type	Unplanned, not postponable	19/09/2018 11:22:19.769	Type of unavailability	<None>	Table Lookup
Unavailability type numeric	3	18/09/2018 20:30:00	Numeric unavailability type	<None>	Table Lookup
Unavailable power	95 MW	19/09/2018 11:22:19.769	Unavailable power	megawatt	Table Lookup
Category: BU GEN > Link_KWIS > Unavailability calculations output					
Power available	110 MW	18/09/2018 20:30:00	Available power (Pd)	megawatt	Formula
Power available internal	110 MW	18/09/2018 20:30:00	Available internal power (Pd)	megawatt	Formula
Power maximum	205 MW	18/09/2018 20:30:00	Maximum power (Pmax)	megawatt	Formula
Power unavailable external planned	0 MW	18/09/2018 20:30:00	External planned unavailable power	megawatt	Formula
Power unavailable external total	0 MW	18/09/2018 20:30:00	External total planned unavailable power	megawatt	Formula
Power unavailable external unplanned	0 MW	18/09/2018 20:30:00	External unplanned unavailable power	megawatt	Formula
Power unavailable external unplanned not postponable	0 MW	18/09/2018 20:30:00	External unplanned not postponable unavailable p...	megawatt	Formula
Power unavailable external unplanned postponable	0 MW	18/09/2018 20:30:00	External unplanned postponable unavailable power	megawatt	Formula
Power unavailable internal planned	0 MW	18/09/2018 20:30:00	Internal planned unavailable power	megawatt	Formula
Power unavailable internal total	95 MW	18/09/2018 20:30:00	Internal total planned unavailable power	megawatt	Formula
Power unavailable internal unplanned	95 MW	18/09/2018 20:30:00	Internal unplanned unavailable power	megawatt	Formula
Power unavailable internal unplanned not postponable	95 MW	18/09/2018 20:30:00	Internal unplanned not postponable unavailable p...	megawatt	Formula
Power unavailable internal unplanned postponable	0 MW	18/09/2018 20:30:00	Internal unplanned postponable unavailable power	megawatt	Formula
Power unavailable total	95 MW	18/09/2018 20:30:00	Total unavailable power	megawatt	Formula
Power unavailable total planned	0 MW	18/09/2018 20:30:00	Total planned unavailable power	megawatt	Formula
Power unavailable total unplanned	95 MW	18/09/2018 20:30:00	Total unplanned unavailable power	megawatt	Formula
Power unavailable total unplanned not postponable	95 MW	18/09/2018 20:30:00	Total unplanned not postponable unavailable power	megawatt	Formula
Power unavailable total unplanned postponable	0 MW	18/09/2018 20:30:00	Total unplanned postponable unavailable power	megawatt	Formula

Properties

Name: Unavailable power

Description: Unavailable power

Properties: Hidden

Categories: BU GEN > Link_KWIS > Unavailability calculations inq

Default UOM: megawatt

Value Type: Double

Value: 95 MW

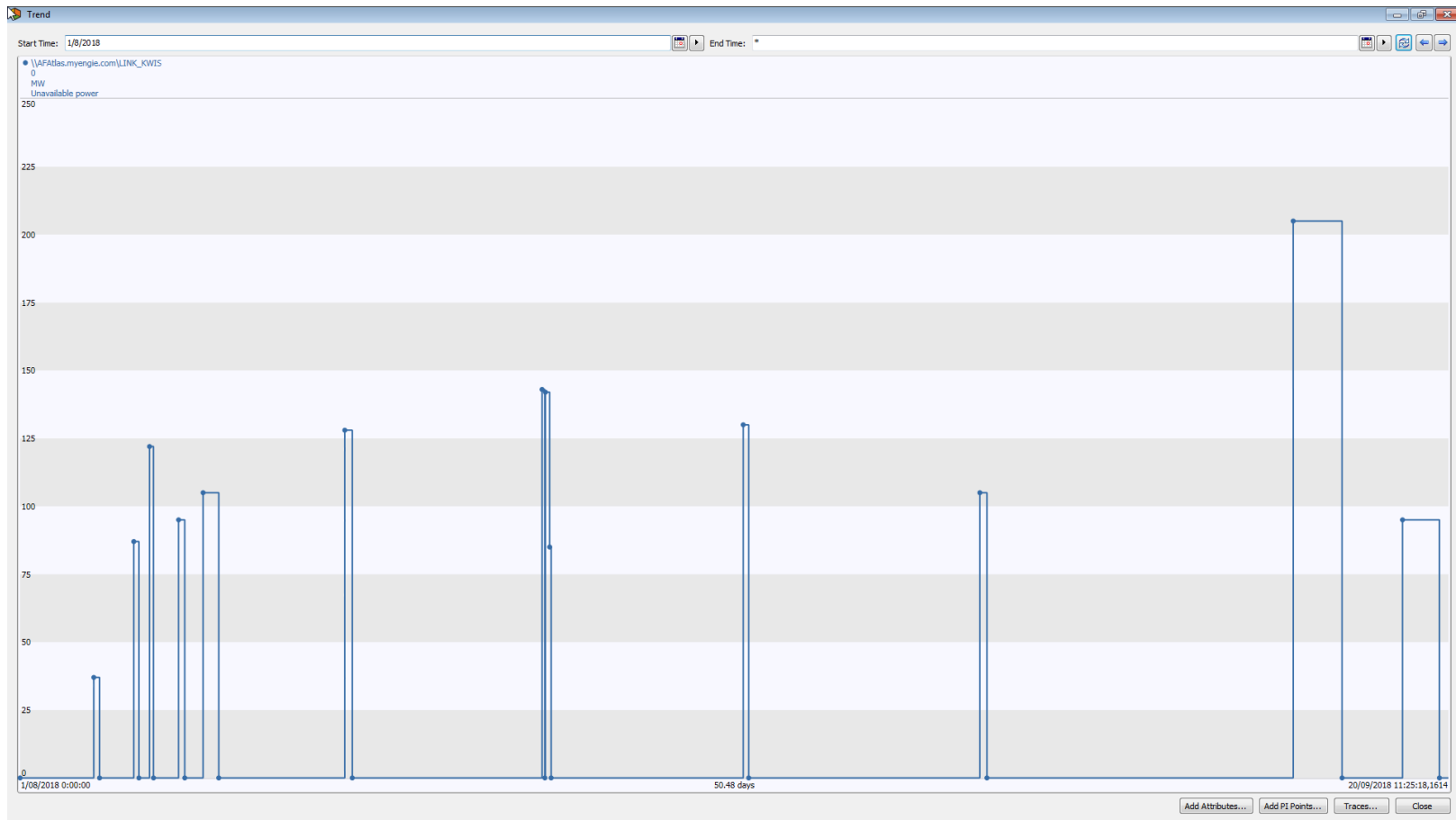
Data Reference: Table Lookup

Settings...

SELECT PowerLostTotal FROM
[KWIS.UnAvailabilitiesAll]; TC=TimeStepped=True; @StartTime=1-1-
2017; @NodeID=%@.[NodeID]%

Units Forecasts

Unavailability power



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File Search View Go Tools Help

Database Query Date Back Check Refresh New Element New Attribute

Search Elements

Elements

Unavailability calculations attribute

General Child Elements Attributes Ports Analyses Notification Rules Version

Excluded attributes are hidden.

Filter

Name	Value	Time Stamp	Description	Unit Of Measure	Data Reference
Category: BU GEN > Link_KWIS > Unavailability calculations input					
Available power	110 MW	18/09/2018 20:30:00	Available power (maximum power - unavailable po...	megawatt	Formula
Maximum power	205 MW	19/09/2018 11:22:19.769	Maximum power (linked with STONE)	megawatt	Table Lookup
Requested by	Generation (internal)	19/09/2018 11:22:19.769	Requested by	<None>	Table Lookup
Requested by numeric	1	18/09/2018 20:30:00	Numeric requested by	<None>	Table Lookup
Unavailability type	Unplanned, not postponable	19/09/2018 11:22:19.769	Type of unavailability	<None>	Table Lookup
Unavailability type numeric	3	18/09/2018 20:30:00	Numeric unavailability type	<None>	Table Lookup
Unavailable power	95 MW	19/09/2018 11:22:19.769	Unavailable power	megawatt	Table Lookup
Category: BU GEN > Link_KWIS > Unavailability calculations output					
Power available	110 MW	18/09/2018 20:30:00	Available power (Pd)	megawatt	Formula
Power available internal	110 MW	18/09/2018 20:30:00	Available internal power (Pd)	megawatt	Formula
Power maximum	205 MW	18/09/2018 20:30:00	Maximum power (Pmax)	megawatt	Formula
Power unavailable external planned	0 MW	18/09/2018 20:30:00	External planned unavailable power	megawatt	Formula
Power unavailable external total	0 MW	18/09/2018 20:30:00	External total planned unavailable power	megawatt	Formula
Power unavailable external unplanned	0 MW	18/09/2018 20:30:00	External unplanned unavailable power	megawatt	Formula
Power unavailable external unplanned not postponable	0 MW	18/09/2018 20:30:00	External unplanned not postponable unavailable p...	megawatt	Formula
Power unavailable external unplanned postponable	0 MW	18/09/2018 20:30:00	External unplanned postponable unavailable power	megawatt	Formula
Power unavailable internal planned	0 MW	18/09/2018 20:30:00	Internal planned unavailable power	megawatt	Formula
Power unavailable internal total	95 MW	18/09/2018 20:30:00	Internal total planned unavailable power	megawatt	Formula
Power unavailable internal unplanned	95 MW	18/09/2018 20:30:00	Internal unplanned unavailable power	megawatt	Formula
Power unavailable internal unplanned not postponable	95 MW	18/09/2018 20:30:00	Internal unplanned not postponable unavailable p...	megawatt	Formula
Power unavailable internal unplanned postponable	0 MW	18/09/2018 20:30:00	Internal unplanned postponable unavailable power	megawatt	Formula
Power unavailable total	95 MW	18/09/2018 20:30:00	Total unavailable power	megawatt	Formula
Power unavailable total planned	0 MW	18/09/2018 20:30:00	Total planned unavailable power	megawatt	Formula
Power unavailable total unplanned	95 MW	18/09/2018 20:30:00	Total unplanned unavailable power	megawatt	Formula
Power unavailable total unplanned not postponable	95 MW	18/09/2018 20:30:00	Total unplanned not postponable unavailable power	megawatt	Formula
Power unavailable total unplanned postponable	0 MW	18/09/2018 20:30:00	Total unplanned postponable unavailable power	megawatt	Formula

Power unavailable internal total

Name: Power unavailable internal total

Description: Internal total planned unavailable power

Properties: <None>

Categories: BU GEN > Link_KWIS > Unavailability calculations ou

Default UOM: megawatt

Value Type: Double

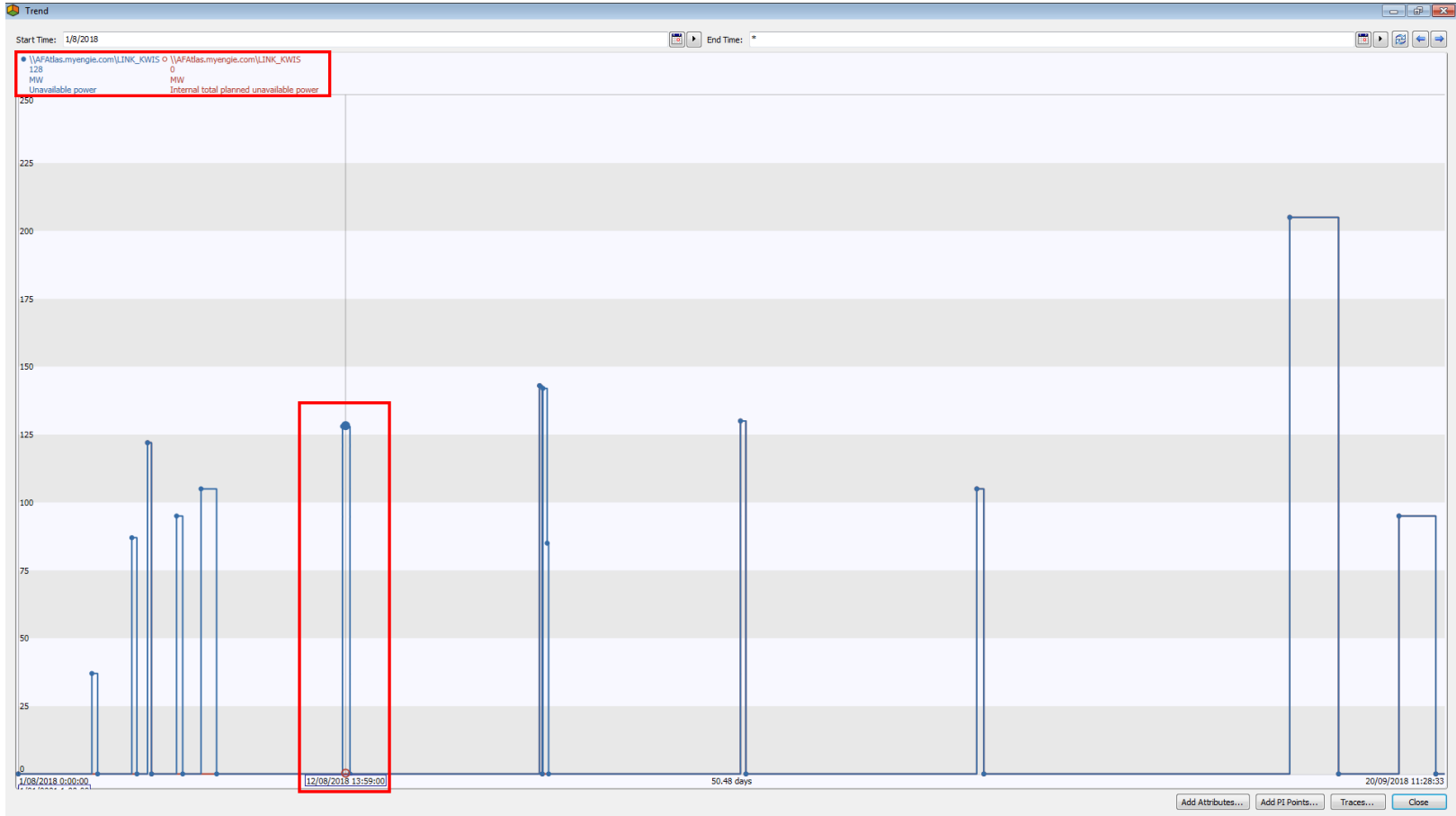
Value: 95 MW

Data Reference: Formula

Settings...

A=Available power;M=Maximum power;R=Requested by numeric;T=Unavailability type numeric;U=Unavailable power;[if R=R=1 then U else 0]stepped=True

Units Forecasts



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File Search View Go Tools Help

Database Query Date Refresh Check In Refresh New Element New Attribute

Search Elements

Elements

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General Child Elements Attributes Ports Analyses Notification Rules Version

Excluded attributes are hidden.

Filter

Name	Value	Time Stamp	Description	Unit Of Measure	Data Reference
Category: 1. Manual input					
Category: 2. Intermediate calculations					
Category: 3. Production					
Category: 4. Fuel consumption					
Category: 5. Unavailabilities					
Energy available internal monthly	151162,046875 MW	1/08/2018 0:00:00	Monthly available internal energy (Ed)	megawatt	PI Point
Energy available monthly	147283,90625 MW	1/08/2018 0:00:00	Monthly available energy (Ed)	megawatt	PI Point
Energy unavailable external planned monthly	0 MW	1/08/2018 0:00:00	Monthly external planned unavailable energy	megawatt	PI Point
Energy unavailable external total monthly	3878,14990234375 MW	1/08/2018 0:00:00	Monthly external total planned unavailable energy	megawatt	PI Point
Energy unavailable external unplanned monthly	3878,14990234375 MW	1/08/2018 0:00:00	Monthly external unplanned unavailable energy	megawatt	PI Point
Energy unavailable external unplanned not postponable monthly	3878,14990234375 MW	1/08/2018 0:00:00	Monthly external unplanned not postponable unavailable energy	megawatt	PI Point
Energy unavailable external unplanned postponable monthly	0 MW	1/08/2018 0:00:00	Monthly external unplanned postponable unavailable energy	megawatt	PI Point
Energy unavailable internal planned monthly	0 MWh	1/08/2018 0:00:00	Monthly internal planned unavailable energy	megawatt hour	PI Point
Energy unavailable internal total monthly	1357,94995117188 MW	19/08/2018 0:00:00	Monthly internal total planned unavailable energy	megawatt	PI Point
Power unavailable internal total	0 MW	20/09/2018 3:48:00	Internal total unavailable power	megawatt	Formula
Energy unavailable internal unplanned monthly	1357,94995117188 MW	1/08/2018 0:00:00	Monthly internal unplanned unavailable energy	megawatt	PI Point
Energy unavailable internal unplanned not postponable monthly	0 MW	1/08/2018 0:00:00	Monthly internal unplanned not postponable unavailable energy	megawatt	PI Point
Energy unavailable internal unplanned postponable monthly	1357,94995117188 MW	1/08/2018 0:00:00	Monthly internal unplanned postponable unavailable energy	megawatt	PI Point
Energy unavailable total monthly	5236,10009765625 MW	1/08/2018 0:00:00	Monthly total unavailable energy	megawatt	PI Point
Energy unavailable total planned monthly	0 MW	1/08/2018 0:00:00	Monthly total planned unavailable energy	megawatt	PI Point
Energy unavailable total unplanned monthly	5236,10009765625 MW	1/08/2018 0:00:00	Monthly total unplanned unavailable energy	megawatt	PI Point
Energy unavailable total unplanned not postponable monthly	3878,14990234375 MW	1/08/2018 0:00:00	Monthly total unplanned not postponable unavailable energy	megawatt	PI Point
Energy unavailable total unplanned postponable monthly	1357,94995117188 MW	1/08/2018 0:00:00	Monthly total unplanned postponable unavailable energy	megawatt	PI Point

Properties:

Name: Power unavailable internal total

Description: Internal total unavailable power

Properties: <None>

Categories: 5. Unavailabilities

Default UOM: megawatt

Value Type: Single

Value: 0 MW

Data Reference: Formula

Settings...

A=\\LINK_KWIS\BEP\PRO\00\04\Unavailability calculators attribute\Power unavailable internal total;[A];stepped=True

Units Forecasts

Power unavailable internal total

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File Search View Go Tools Help

Database Query Date Check In Refresh New Element New Attribute

Search Elements

Elements

00

General Child Elements Attributes Ports **Analyses** Notification Rules Version

Excluded attributes are hidden.

Filter

Name	Value	Time Stamp	Description	Unit Of Measure	Data Reference
Category: 1. Manual input					
Category: 2. Intermediate calculations					
Category: 3. Production					
Category: 4. Fuel consumption					
Category: 5. Unavailabilities					
Energy available internal monthly	151162,046875 MW	1/08/2018 0:00:00	Monthly available internal energy (Ed)	megawatt	PI Point
Energy available monthly	147283,90625 MW	1/08/2018 0:00:00	Monthly available energy (Ed)	megawatt	PI Point
Energy unavailable external planned monthly	0 MW	1/08/2018 0:00:00	Monthly external planned unavailable energy	megawatt	PI Point
Energy unavailable external total monthly	3878,14990234375 MW	1/08/2018 0:00:00	Monthly external total planned unavailable energy	megawatt	PI Point
Energy unavailable external unplanned monthly	3878,14990234375 MW	1/08/2018 0:00:00	Monthly external unplanned unavailable energy	megawatt	PI Point
Energy unavailable external unplanned not postponable monthly	3878,14990234375 MW	1/08/2018 0:00:00	Monthly external unplanned not postponable una...	megawatt	PI Point
Energy unavailable external unplanned postponable monthly	0 MW	1/08/2018 0:00:00	Monthly external unplanned postponable unavala...	megawatt	PI Point
Energy unavailable internal planned monthly	0 MWh	1/08/2018 0:00:00	Monthly internal planned unavailable energy	megawatt hour	PI Point
Energy unavailable internal total monthly	1357,94995117188 MW	19/08/2018 0:00:00	Monthly internal total planned unavailable energy	megawatt	PI Point
Power unavailable internal total	0 MW	20/09/2018 3:48:00	Internal total unavailable power	megawatt	Formula
Energy unavailable internal unplanned monthly	1357,94995117188 MW	1/08/2018 0:00:00	Monthly internal unplanned unavailable energy	megawatt	PI Point
Energy unavailable internal unplanned not postponable monthly	0 MW	1/08/2018 0:00:00	Monthly internal unplanned not postponable unav...	megawatt	PI Point
Energy unavailable internal unplanned postponable monthly	1357,94995117188 MW	1/08/2018 0:00:00	Monthly internal unplanned postponable unavala...	megawatt	PI Point
Energy unavailable total monthly	5236,10009765625 MW	1/08/2018 0:00:00	Monthly total unavailable energy	megawatt	PI Point
Energy unavailable total planned monthly	0 MW	1/08/2018 0:00:00	Monthly total planned unavailable energy	megawatt	PI Point
Energy unavailable total unplanned monthly	5236,10009765625 MW	1/08/2018 0:00:00	Monthly total unplanned unavailable energy	megawatt	PI Point
Energy unavailable total unplanned not postponable monthly	3878,14990234375 MW	1/08/2018 0:00:00	Monthly total unplanned not postponable unavala...	megawatt	PI Point
Energy unavailable total unplanned postponable monthly	1357,94995117188 MW	1/08/2018 0:00:00	Monthly total unplanned postponable unavailable ...	megawatt	PI Point

Name: Energy unavailable internal total monthly

Description: Monthly internal total planned unavailable energy

Properties: <None>

Categories: 5. Unavailabilities

Default UOM: megawatt

Value Type: Double

Value: 1357,94995117188 MW

Data Reference: PI Point

Settings...

\\piatlas.myengie.com\DSQ-FCL-BE-PRO-00-IMO-ENERGY-UNAVAILABLE-INTERNAL-TOTAL

Units Forecasts

Energy unavailable internal total monthly

\\AFAtlas.myengie.com\GEN_FLEET_DCT - PI System Explorer

File Search View Go Tools Help

Database Query Date Back Refresh New Element Search Elements

Elements

- BU GEN
 - Coldwave
 - Datasquare
 - Fast Close
 - Belgium
 - Amercoeur
 - Arianxo
 - Coo
 - Covestro
 - Drogenbos
 - Fluxys Zeebrugge
 - Henderbrug
 - Ineos Phend
 - Isvag
 - Ixelles
 - Knippegroen
 - Les Avirs
 - Lilo Energy
 - Rodenhuize
 - 00
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 - Sappi Lanaken
 - Tereos
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 - France
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 - Italy
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 - The Netherlands
 - Load forecast

BU GEN_XYZ

Test environment

WKB

Element Searches

General Child Elements Attributes Ports Analyses Notification Rules Version

00

Name: Energy unavailable internal total monthly

Description: Energy unavailable internal total monthly

Categories: DatasquareFastClose;DatasquareFastCloseEnergy/Un...

Analysis Type: ☒ Expression ☐ Rollup ☐ Event Frame Generation ☐ SQC

Name	Expression	Value at Evaluation	Value at Last Trigi	Output Attribute
BOP	//Begin of period Bom(Bom('t')-1)			Map
EOP	//End of period Bom('t')			Map
HoursInMonth	//Count the number of hours in a day Convert(Convert(Float((EOP - BOP)), "s"), "h")			Map
DaysInMonth	//Count the number of hours in a day Convert(Convert(Float((EOP - BOP)), "s"), "d")			Map
EnergyNetActiveMonthly	//Check whether power plant is still in service If TagVal('Active', BOP) = 1 then //Only activate when it's the first day of the month If (Day('*') = 19) Then //Event weighted total of energy net active daily TagTot('Energy unavailable internal total monthly Power unavailable internal total', BOP, EOP) * HoursInMonth/DaysInMonth Else NoOutput() Else NoOutput()			Energy unavailable internal total monthly

Add a new variable

Scheduling: ☐ Event-Triggered ☒ Periodic

Run every day at 07:25

Advanced...
Output time stamp override: t-1mo

Connected to the PI Analysis Service.

00 Modified:20/09/2018 10:23:42. Version:1/01/1970 0:00:00, Revision 45

