

PETRO MODULE 2016



1

GRIF PETRO MODULE 2016

SUMMARY (1/2)

- Ramp-up table
- Statistical data table
- Copy/paste without resource
- New equipments
- Variable percentage for critical failure
- Critical failure name in simulation
- Additional failure



2

SUMMARY (2/2)

- Optimization to create utility sub-system
- State of components with sojourn time
- Up to 100 repair teams
- Verification
- Variable profiled with flow profile
- Attributes on stocks and maintenance teams
- On hold



RAMP-UP TAB

In tabs in the right of the window, ramp-up tab describes all the ramp-up block in the model.

User can use multiple modifications, search,...

Ramp-up								
ID	Name	Delay before	Preservation	Delay before	Preservat duration	Cool down duration	Warm restart	Cold restart
1	ICS...	0	<input type="checkbox"/>	-	-	0	2	2
2	ICS...	0	<input type="checkbox"/>	-	-	0	2	2
3	AQU...	0	<input type="checkbox"/>	-	-	0	2	2
4	Rest...	0	<input type="checkbox"/>	-	-	6	3	16



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STATISTICAL DATA TAB

In tab in the right of the window, statistical tab describes all the statistical data in the model.

User can use multiple modifications, search,...

Statistical data

ID	Name	Total period (h)	Impacted components	Number	Ev1 Name	Ev1 min	Ev1 max	Ev1 Nb/period	Ev2 Name	Ev2 min	Ev2 max	Ev2 N...	Ev3 Name	Ev3 min	Ev3
1	ICS1_Stat	8760.0	ICS1_WellUCS1_HPUUCS1...	3	Leaks	3.9	4.1	1.0	BlackOut	3.9	4.1	0.1	FandG	2.9	3.1
2	ICS2_Stat	8760.0	ICS2_WellUCS2_HPUUCS2...	3	Leaks	3.9	4.1	1.0	BlackOut	3.9	4.1	0.1	FandG	2.9	3.1
3	AQUIO_Stat	8760.0	AQUIO_WellAQUIO_HPU...	3	Leaks	3.9	4.1	1.0	BlackOut	3.9	4.1	0.1	FandG	2.9	3.1
4	Stat	8760.0	All	2	Leaks	23.9	24.1	1.0	BlackOut	9.9	10.1	0.1			

5

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COPY/PASTE WITHOUT RESOURCE

If resources exist in the new document, it is possible to copy/paste equipment without the associated resources.

Bin1

Prep_Compressor

EM

Bout1

SP_Kprop_K_BE

SP_Kprop_D_RO

MachinesTournantes

SP_Kprop_K_RO

SP_Kprop_D_ST

EquipementsStatiques

SP_Kprop_K_Seals

SP_Kprop_D_BE

VannesCapteurs

SP_Kprop_K_OT

SP_Kprop_D_OT

Vendeur

My first document

GRIF - Module Petro

Specify name of new data

Rename : All types in the same way

☐ Automatic names

☒ Keep same names

☐ With prefix

☐ With suffix

☐ User choice (with find/replace)

Find the word

Replace by

OK

Cancel

Help

Adria...

My new document

6

3

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NEW EQUIPMENTS

EG


New type of driver

EG


ElectricGenerator




New type of compressor




ReciprocatingCompressor



New icon for basic component



Basic



7

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VARIABLE PERCENTAGE FOR CRITICAL FAILURE

Properties of 'Rotating machines' - Prop_Compressor

Description

Start-up phase

Critical failures

Degraded failure

Additional failures

Lambda (λ in h^{-1})

CO_SC_CRI_L*0.5

MTTR (h)

1/CO_SC_CRI_M

Other components in series

Component	λ (h^{-1})	MTTR (h)	Qty
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Critical failures


Condition to repair

Name	% λ c	Maintenance crew	Spare parts
Rotor_V_Fail	Percent_Rotor_CO*1.	Vendeur	SP_Kprop_K_RO
Seal_V_Fail	Percent_Seal_CO*1.	Vendeur	SP_Kprop_K_Seals
Bearings_V_Fail	Percent_Bearing_CO*0.8	Vendeur	SP_Kprop_K_BE
Bearings_NV_Fail	Percent_Bearing_CO*0.2	MachinesTournantes	SP_Kprop_K_BE
Others_V_Fail	Percent_Other_CO*0.4	Vendeur	SP_Kprop_K_OT
Others_NV_Fail	Percent_Other_CO*0.6	MachinesTournantes	SP_Kprop_K_OT

OK

Cancel

Help



8

4

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CRITICAL FAILURE NAME IN SIMULATION

Critical failures

Condition to repair

Name	% Ac	Maintenance crew	Spare parts
Rotor_V_Fail	Percent_Rotor_CO*1.	Vendeur	SP_Kprop_K_RO
Seal_V_Fail	Percent_Seal_CO*1.	Vendeur	SP_Kprop_K_Seals
Bearings_V_Fail	Percent_Bearing_CO*0.8	Vendeur	SP_Kprop_K_BE
Bearings_NV_Fail	Percent_Bearing_CO*0.2	MachinesTournantes	SP_Kprop_K_BE
Others_V_Fail	Percent_Other_CO*0.4	Vendeur	SP_Kprop_K_OT
Others_NV_Fail	Percent_Other_CO*0.6	MachinesTournantes	SP_Kprop_K_OT

Bin1

Prop_Com

FM

Additional failures

Prop_Compressor_Failure_D

Prop_Compressor_End_StartUp_on_delay

Prop_Compressor_Failure_Bearings_V_Fail

Prop_Compressor_Failure_Rotor_V_Fail

Prop_Compressor_Failure_Bearings_NV_Fail

Prop_Compressor_Failure_Seal_V_Fail

Prop_Compressor_Failure_Others_NV_Fail

Prop_Compressor_Failure_Others_V_Fail

Name of the failure instead of CriticalFailurei in the previous version

9

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ADDITIONAL FAILURE

News columns are added

Columns manager

Select columns that have to be displayed and their order

☒ Name

☒ Failure law

☒ Capacity during failure (%)

☒ Repair law

☒ Capacity during repair (%)

☒ Maintenance crew

☒ Spare parts

☒ Memory

☐ CCF

☐ SARCPS

☐ Teething

☐ Priority

☐ CoefDD

☐ Inhibition

☐ After failure assignment

☐ After repair assignment

Disable sorting data

Data will be displayed in the order of creation

OK

Cancel

Help

Additional failures

9 hidden columns

Name	Failure law	Capacity duri...	Repair law	Capacity duri...	Maintenance ...	Memory
DV_Fail	exp VA_SV_S...	0%	unif 3 0.5 0	0%	VannesCapte...	<input type="checkbox"/>
V_Fail	exp VA_SV_S...	0%	unif 2 0.4 0	0%	VannesCapte...	<input type="checkbox"/>
V_Fail	exp VA_SC_S...	0%	unif 2 0.4 0	0%	VannesCapte...	<input type="checkbox"/>
V_Fail	exp VA_BV_S...	0%	unif 3 0.5 0	0%	VannesCapte...	<input type="checkbox"/>
F_Fail	exp VA_CV_C...	0%	exp VA_CV_C...	0%	VannesCapte...	<input type="checkbox"/>
F_Fail	exp IP_SS_S...	0%	unif 2 0.4 0	0%	VannesCapte...	<input type="checkbox"/>
F_Fail	exp HE_ST...	0%	exp HE_ST...	0%	Equipements...	<input type="checkbox"/>
F_Fail	exp VE_SE...	0%	exp VE_SE...	0%	Equipements...	<input type="checkbox"/>
F_Fail	exp HE_AC...	0%	exp HE_AC...	0%	Equipements...	<input type="checkbox"/>
F_Fail	exp VE_DC...	0%	exp VE_DC...	0%	Equipements...	<input type="checkbox"/>
IFil_Fail	exp FI_IWA...	0%	exp FI_IWA...	0%	Equipements...	<input type="checkbox"/>

Memory: transition with memory

CoefDD: if the capacity during repair in not 0, this coefficient is applied to the critical failure rate

Inhibition: to inhibit the failure in case of specific condition

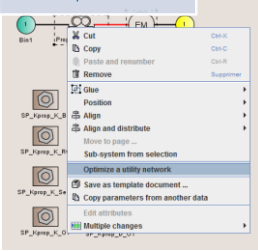
10

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OPTIMIZATION TO CREATE UTILITY SUB-SYSTEM

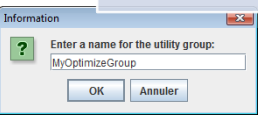
1

Select the system to be optimized



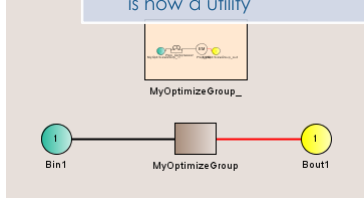
2

Enter a name



3

A perfect component is created and the system is now a utility



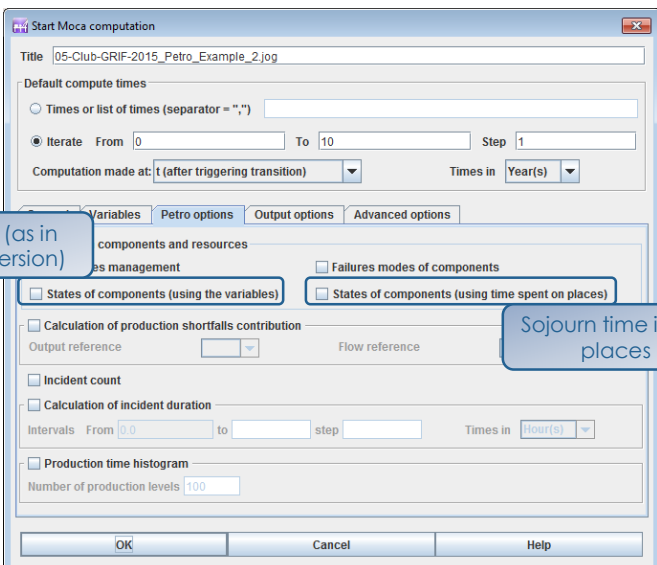
This optimization can be used to speed the calculation up.
If the system can be considered as a utility, i.e. only the production level is important.

11

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STATE OF COMPONENTS WITH SOJOURN TIME

Variables (as in previous version)



Sojourn time in the places

12

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UP TO 100 REPAIR TEAMS

Properties of 'Maintenance crew' - RotatingMachines

Number

1

Name (☐ Automatic)

RotatingMachines

Number of maintenance crews

10

93

94

95

96

97

98

99

100

☐ With mobilization

Mobilization time (h)

Repair after Xth failure

☒ Without working hours

☐ Never stop

☐ With limited working hours (simplified)

From

8.0

To

18.0

☐ With limited working hours (detailed)

☒ Monday

From

8.0

To

18.0

☒ Tuesday

From

8.0

To

18.0

☒ Wednesday

From

8.0

To

18.0

☒ Thursday

From

8.0

To

18.0

☒ Friday

From

8.0

To

18.0

☐ Saturday

From

8.0

To

18.0

☐ Sunday

From

8.0

To

18.0

OK

Cancel

Help

13

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VERIFICATION

In the document option

Maximal and minimal values

Simulation - display

Curves

Prototypes

Petri export

Options

Graphics

Digital format

Blocks

Threshold maximal for lambdas :

1.0

Null transition rate produces a warning:

☒

Threshold minimal for MTTR (0.0 authorized) :

1.0

OK

Cancel

Errors

2 error(s), 35 warning(s)

Type	Localization	Source	Message
ADVERTISEMENT	Page 1 LP Bare system	Flare	Flare - Addition
ADVERTISEMENT	Page 1	Condensate Treatment	Condensate Tre.

Message

CondensateTreatment - Additional failures ESDV_Fail Failure law input value (2.0) exceeds the authorized maximal value (1).

Cancel

Errors

2 error(s), 34 warning(s)

Type	Localization	Source	Message
ADVERTISEMENT	Page 1 Flare gas sys	PDS_Ed	Additional failures ESDV_Fail Failure law Exponential transitions with a null rate will never be fired
ADVERTISEMENT	Page 1 Maintenance	BP	Additional failures ESDV_Fail Failure law Exponential transitions with a null rate will never be fired
ADVERTISEMENT	Page 1 LP Bare system	Flare	Additional failures ESDV_Fail Failure law Exponential transitions with a null rate will never be fired
ADVERTISEMENT	Page 1 Instruments	BP	Additional failures CV_Fail Failure law Exponential transitions with a null rate will never be fired
ADVERTISEMENT	Page 1 LoadExport	LoadExp_Valves	LoadExp_Valves - Additional failures PDS_Fail Failure law Exponential transitions with a null rate will never be fired
ADVERTISEMENT	Page 1 LoadExport	LoadExp_Valves	LoadExp_Valves - Additional failures ESDV_Fail Failure law Exponential transitions with a null rate will never be fired
ADVERTISEMENT	Page 1 Condensate	Condensate	Condensate - Additional failures ESDV_Fail Failure law Exponential transitions with a null rate will never be fired

Message

NEOS_Ed - Additional failures ESDV_Fail Failure law Exponential transitions with a null rate will never be fired

Cancel

14

7

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VARIABLE PROFILED WITH FLOW PROFILE

1

Create the variable

Variable/Parameter creation

Type

Variable

Name

Profil_Oil

Domain

Float

Value

0.0

OK

Cancel

Help

2

Selection of the flow

Code editor

Choose to define the variable:

- is a specific formula
- is an array of profiling
- is a condition from model elements
- is a data from model elements

Definition

Profiles

Condition

Data

Profiles

Profile_Global

Gas

Gas

Condensate

Water

OK

Cancel

Help

15

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ATTRIBUTES ON STOCKS AND MAINTENANCE TEAMS

Stock_1

MaintenanceCrew1

Stock_2

MaintenanceCrew2

Stock_3

MaintenanceCrew3

Global list

Attributes

Name	Location	Mode	Vendor_Reference
Stock_1	Page 1	Process	Emerson
Stock_2	Page 1	Process	Solar
Stock_3	Page 1	Process	RollRoyce
MaintenanceCrew1	Page 1	Process	Emerson
MaintenanceCrew2	Page 1	Process	Solar
MaintenanceCrew3	Page 1	Process	RollRoyce

16

ON HOLD

- Difference between initial level and nominal level for the tank
- In case of very limited flaring, the flare can become the main contributor. A new result will display the last component that failed just before the flare “overlimit”.



17

THE END



SATODEV
SAFETY TOOLS DEVELOPMENT

18