



Assisting our customers make informed choices improving their business

Specialist Process Services

Software Development

Digital Operator Support System

map navigation

wo

statistics

data control

```

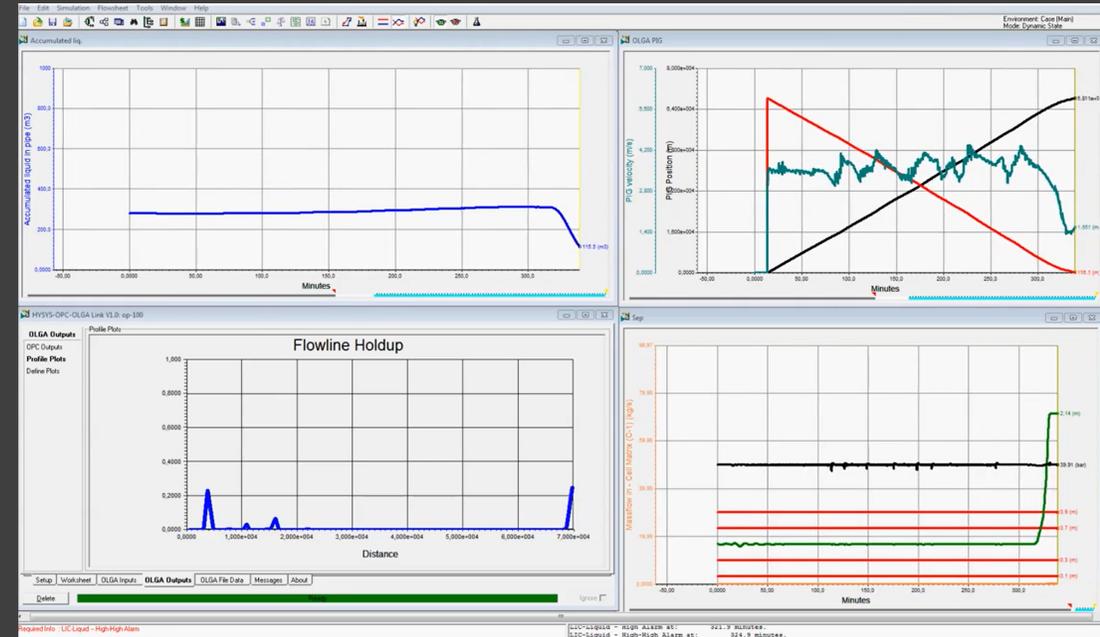
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  parameter 42 "imageSampler_type" 1
  parameter 6 "filter_on" 0
  parameter 105 "filter_kernel" 2066008390 8 4254
  parameter 7 "filter_size" 4.000000
  parameter 8 "filter_param0" 0.000000
  parameter 9 "filter_param0" 0.000000
  parameter 10 "filter_param0" 0.000000
}
rollup 2 "DRC Sampler" {
  parameter 94 "qmc_timeDependent" 1
  parameter 95 "qmc_importanceSampling" 1000000
  parameter 96 "qmc_earlyTermination_amount" 0.000000
  parameter 97 "qmc_earlyTermination_threshold" 0.000000
  parameter 148 "qmc_earlyTermination_minSamples" 1000000
  parameter 211 "qmc_subdivs_mult" 2.000000
  parameter 257 "qmc_pathSampler_type" 2
}
rollup 3 "Indirect illumination (GI)" {
  parameter 15 "gi_on" 1
  parameter 179 "giRefractCaustics" 1
  parameter 188 "giReflectCaustics" 0
  parameter 16 "gi_primary_type" 0
  parameter 57 "gi_primary_multiplier" 0.000000
  parameter 17 "gi_secondary_type" 3
  parameter 58 "gi_secondary_multiplier" 0.500000
  parameter 215 "gi_saturation" 8.700000
  parameter 216 "gi_contrast" 1.000000
  parameter 217 "gi_contrast" 1.000000
  parameter 239 "gi"
}

```

Value Creation by efficient linking of transient OLGA to process simulators

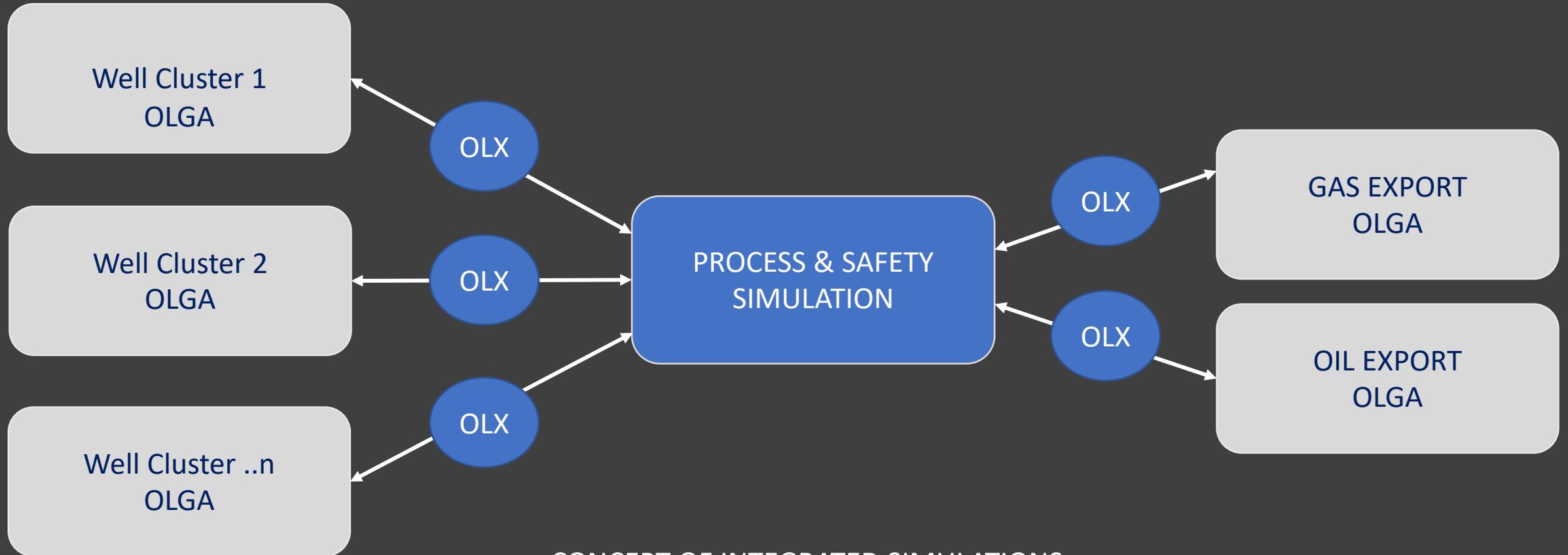
Typical use of linked simulations

Asset operability studies
Operator Training Systems
Transient Digital Twins



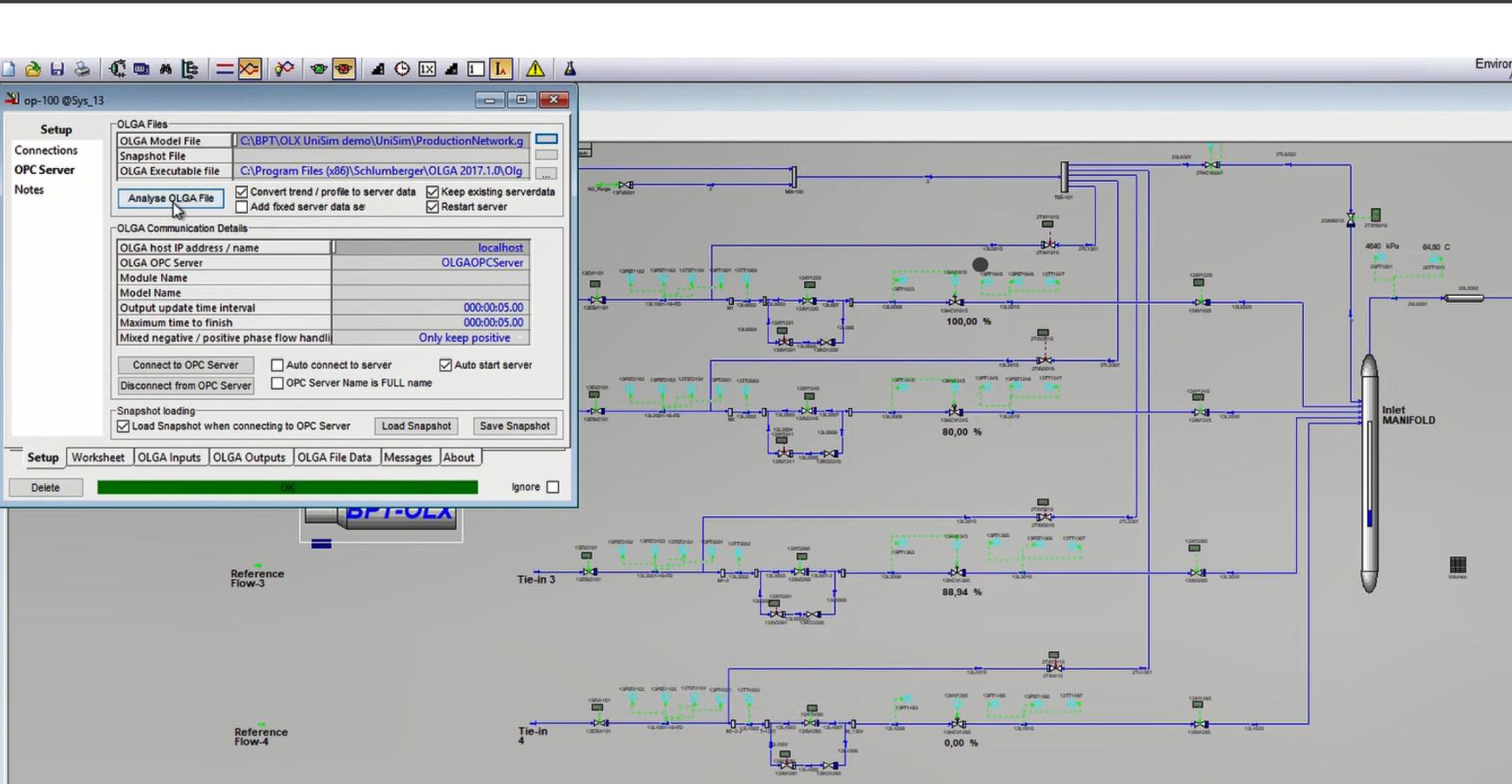
Maximizing asset utilization – Subsea Tie-backs

OLX[®] Configurations – One or multiple OLGA Servers



CONCEPT OF INTEGRATED SIMULATIONS

OLX[®] Linking made simple



1. Select OLGA model file & exe, Analyze OLGA file
2. Map tags
3. Select OLGA parameters to control
4. All parameters available, select trend parameters
5. Run Simulations

OLX[®] Linking made simple

The screenshot displays the BPT-OLX software interface. The main window shows a process flow diagram with four tie-in points (Tie-in 1 to Tie-in 4) and four reference flow streams (Reference Flow-1 to Reference Flow-4). A BPT-OLX unit is connected to the system. A configuration window titled 'op-100 @Sys_13' is open, showing the 'Setup' tab. The window includes a 'Name' field set to 'op-100' and a 'Notes' field. The 'Inlets' section contains a table with 'UniSim Inlet Stream' and 'OLGA Sources'. The 'Feed Stream' section contains a table with 'Available Positions'. The 'Outlets' section contains a table with 'UniSim Outlet Stream', 'OLGA Boundaries', and 'Reference Stream'. The 'Outlets' table is currently selected, and a dropdown menu is open, showing options like 'Reference Flow-2 @Sys_13', 'Reference Flow-3 @Sys_13', 'Reference Flow-4 @Sys_13', 'Tie-in 1 @Sys_13', 'Tie-in 2 @Sys_13', and 'Tie-in 4 @Sys_13'. The 'Setup' window also has tabs for 'Worksheet', 'OLGA Inputs', 'OLGA Outputs', 'OLGA File Data', 'Messages', and 'About'. A 'Delete' button is visible at the bottom left of the window.

UniSim Inlet Stream	OLGA Sources
<empty>	SLM
<empty>	Sour 3
<empty>	Sour 4
<empty>	SOUR-1

Feed Stream	Available Positions
	OLXS_SLM
	OLXS_Sour 3
	OLXS_Sour 4

UniSim Outlet Stream	OLGA Boundaries	Reference Stream
Tie-in 3 @Sys_13	Tie-in 3	<empty>
	Tie-in 4	<empty>
	Tie-in 1	<empty>
	Tie-in 2	<empty>

1. Select OLGA model file & exe, Analyze OLGA file
2. Map tags
3. Select OLGA parameters to control
4. All parameters available, select trend parameters
5. Run Simulations

OLX[®] Linking made simple

The screenshot displays the BPT-OLX software interface. On the left, a process flow diagram shows a well labeled 'BPT-OLX' connected to a 'Tie-in 3' node. Three reference flow points are marked: Reference Flow, Reference Flow-2, and Reference Flow-3. A 'Data to OLGA @Sys_13' dialog box is open, showing a spreadsheet with the following data:

	A	B	C	D	E
1					
2		Input	To OLGA		
3	SOUR-1.PRESSURE [kPa]	2000	2000	KPa	
4	SOUR-1.GOR [Sm ³ /Sm ³]	1200	1200	[Sm ³ /Sm ³]	
5					
6					
7					
8					
9					
10					

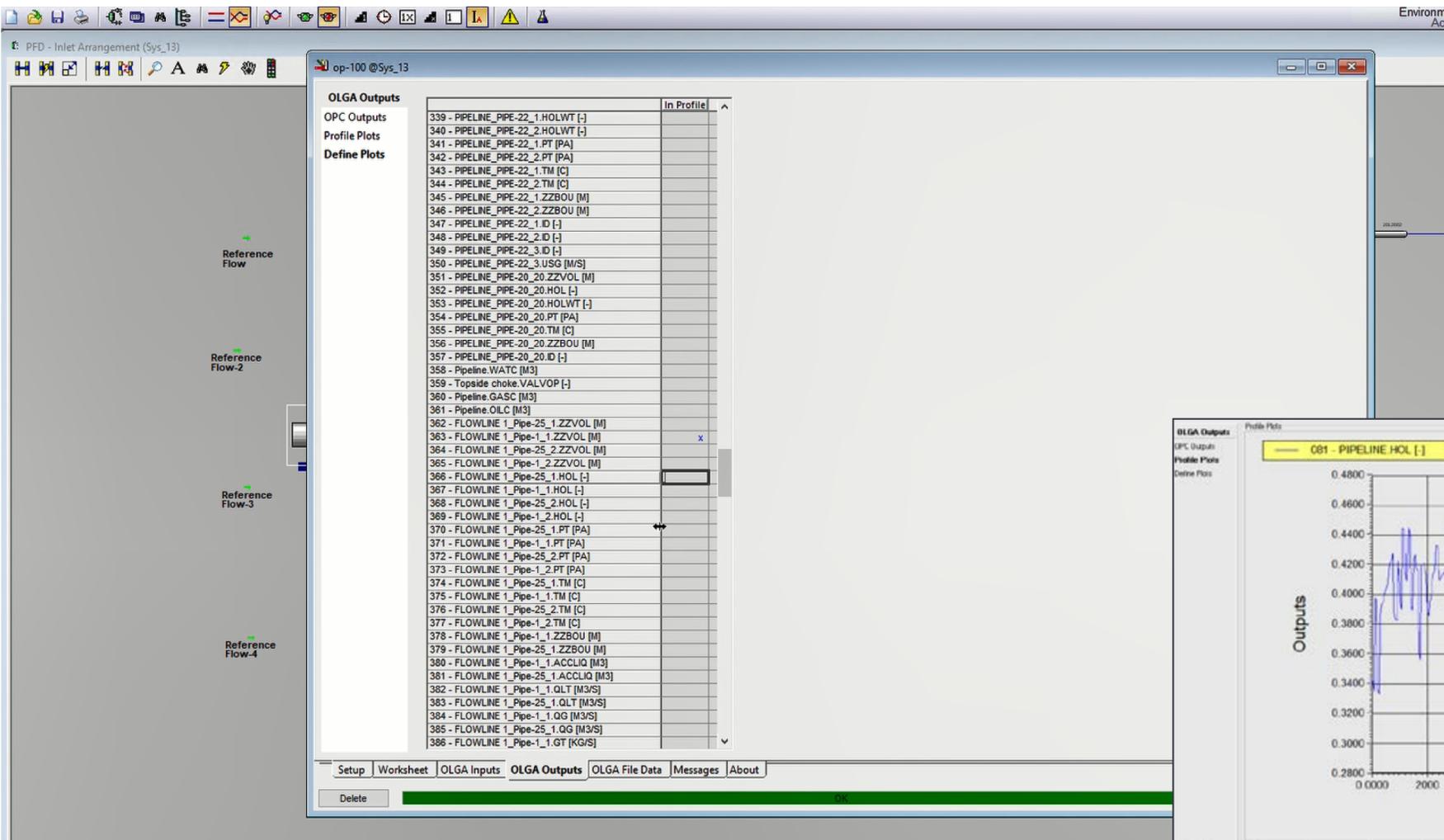
Below the spreadsheet, there are tabs for 'Connections', 'Parameters', 'Formulas', 'Spreadsheet', 'Calculation Order', 'Initialize From', and 'ables'. The 'Spreadsheet' tab is active. A 'Delete' button, 'Function Help...' button, and 'Spreadsheet Only...' button are visible at the bottom of the dialog.

On the right side of the interface, a window titled 'OLGA Inputs' displays a list of parameters and their values:

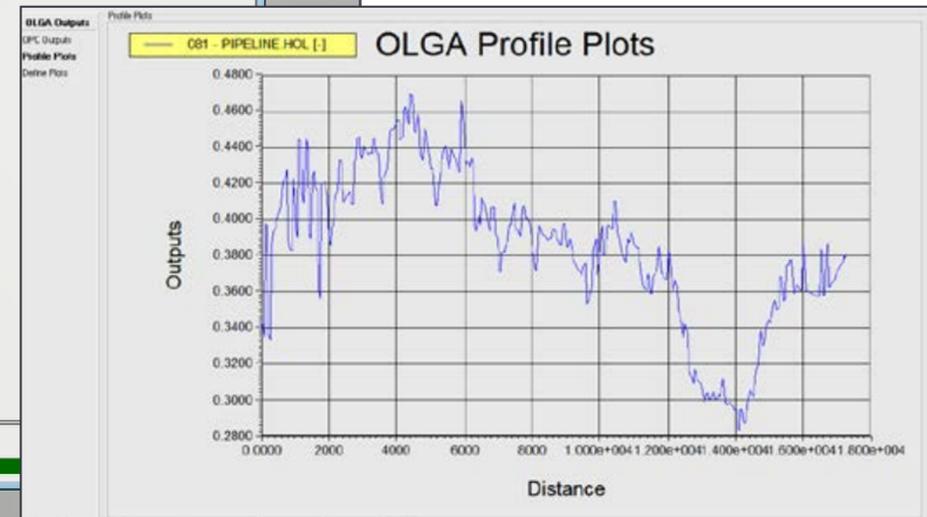
OLGA Inputs	Value
029 - SLM.WATERCUT [-]	0,3000
030 - SLM.PRESSURE [kPa]	2000
031 - Topsidechoke.STROKETIME	0,0000
032 - Topsidechoke.OPENING	0,0000
033 - Aprod.STROKETIME	0,0000
034 - Aprod.OPENING	1,000
035 - Sour 3.TEMPERATURE [C]	90,00
036 - Sour 3.DGGDP	0,0000
037 - Sour 3.DGLTHLDP	0,0000
038 - Sour 3.DGLTWTDTP	0,0000
039 - Sour 3.HTEXT	-1,000
040 - Sour 3.STDFLOWRATE [Sm3/d]	1000
041 - Sour 3.GOR [Sm ³ /Sm ³]	1200
042 - Sour 3.WATERCUT [-]	0,0000
043 - Sour 3.PRESSURE [kPa]	2000
044 - Sour 4.GASFRACTION [-]	-1,000
045 - Sour 4.TEMPERATURE [C]	60,00
046 - Sour 4.DGGDP	0,0000
047 - Sour 4.DGLTHLDP	0,0000
048 - Sour 4.DGLTWTDTP	0,0000
049 - Sour 4.HTEXT	-1,000
050 - Sour 4.MASSFLOW [kg/s]	45,00
051 - Sour 4.PRESSURE [kPa]	500,0
052 - VALVE-1.STROKETIME	0,0000
053 - VALVE-1.OPENING	1,000
054 - Topside choke.STROKETIME	0,0000
055 - Topside choke.OPENING	0,0000
056 - SOUR-1.TEMPERATURE [C]	100,0
057 - SOUR-1.DGGDP	0,0000
058 - SOUR-1.DGLTHLDP	0,0000
059 - SOUR-1.DGLTWTDTP	0,0000
060 - SOUR-1.HTEXT	-1,000
061 - SOUR-1.STDFLOWRATE [Sm3/d]	500,0
062 - SOUR-1.GOR [Sm ³ /Sm ³]	1200
063 - SOUR-1.WATERCUT [-]	0,9000
064 - SOUR-1.PRESSURE [kPa]	2000
065 - VALVE-3.STROKETIME	0,0000
066 - VALVE-3.OPENING	0,6000
067 - SOUR-2.TEMPERATURE [C]	138,0
068 - SOUR-2.DGGDP	0,0000
069 - SOUR-2.DGLTHLDP	0,0000
070 - SOUR-2.DGLTWTDTP	0,0000
071 - SOUR-2.HTEXT	-1,000
072 - SOUR-2.MASSFLOW [kg/h]	100,0
073 - SOUR-2.GOR [Sm ³ /Sm ³]	-1,000
074 - SOUR-2.WATERCUT [-]	-1,000
075 - SOUR-2.PRESSURE [kPa]	2000
076 - Tie-in 3.DPDGG	0,0000

1. Select OLGA model file & exe, Analyze OLGA file
2. Map tags
3. Select OLGA parameters to control
4. All parameters available, select trend parameters
5. Run Simulations

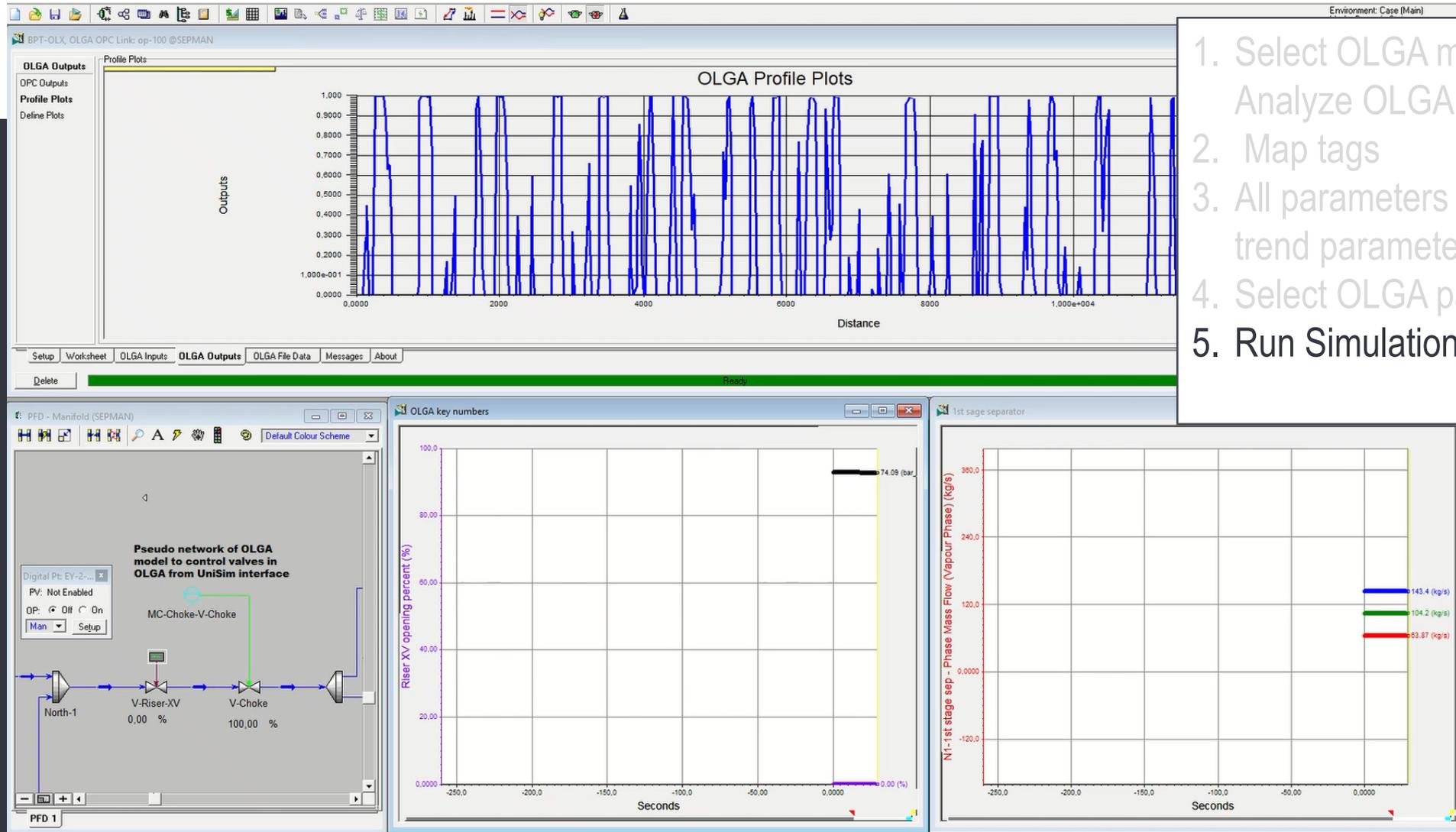
OLX[®] Linking made simple



1. Select OLGA model file & exe, Analyze OLGA file
2. Map tags
3. Select OLGA parameters to control
4. All parameters available, select trend parameters
5. Run Simulations



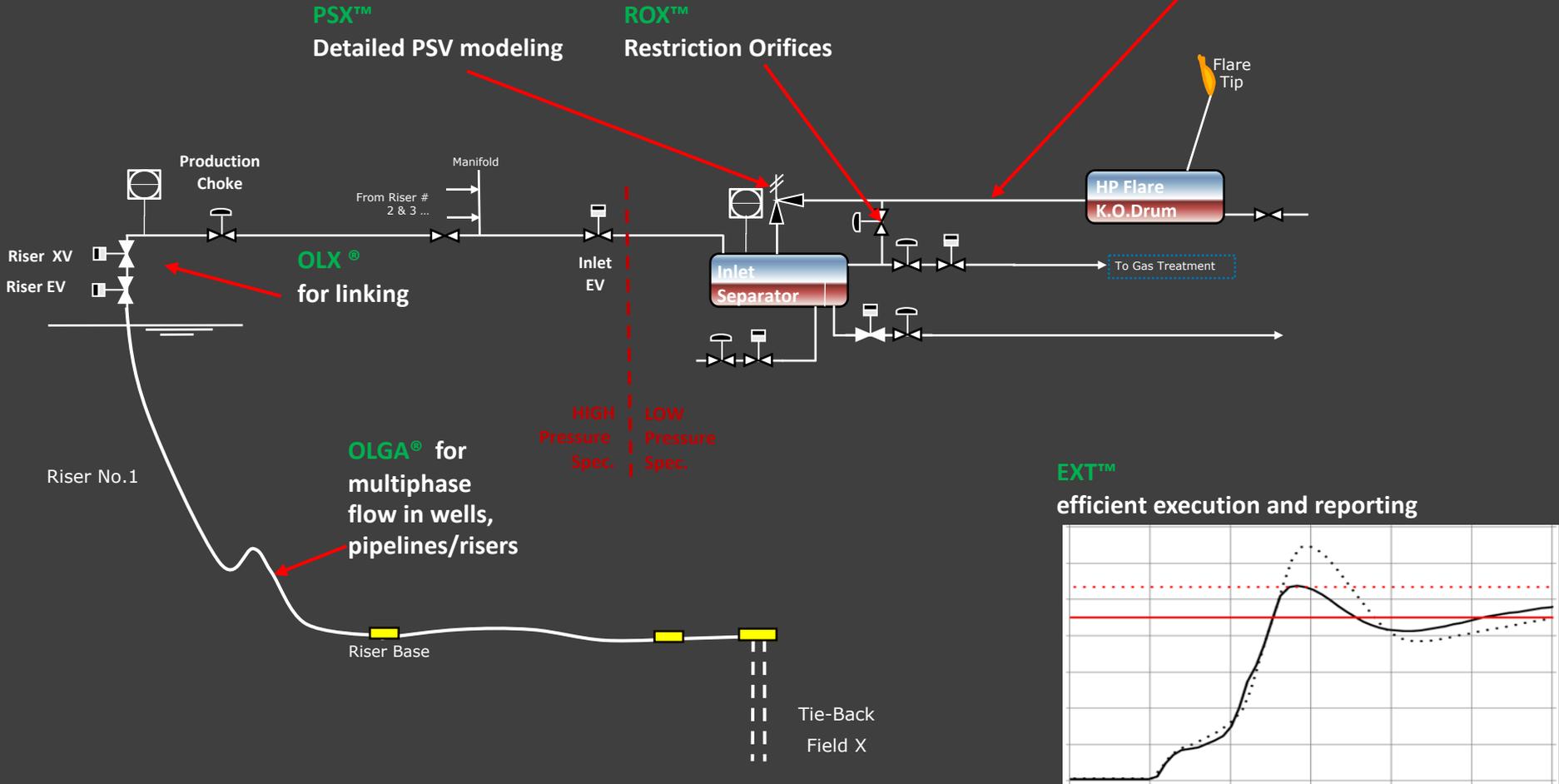
Controlling OLGA through Process Simulator



1. Select OLGA model file & exe, Analyze OLGA file
2. Map tags
3. All parameters available, select trend parameters
4. Select OLGA parameters to control
5. Run Simulations

Typical Subsea Tie-back configuration

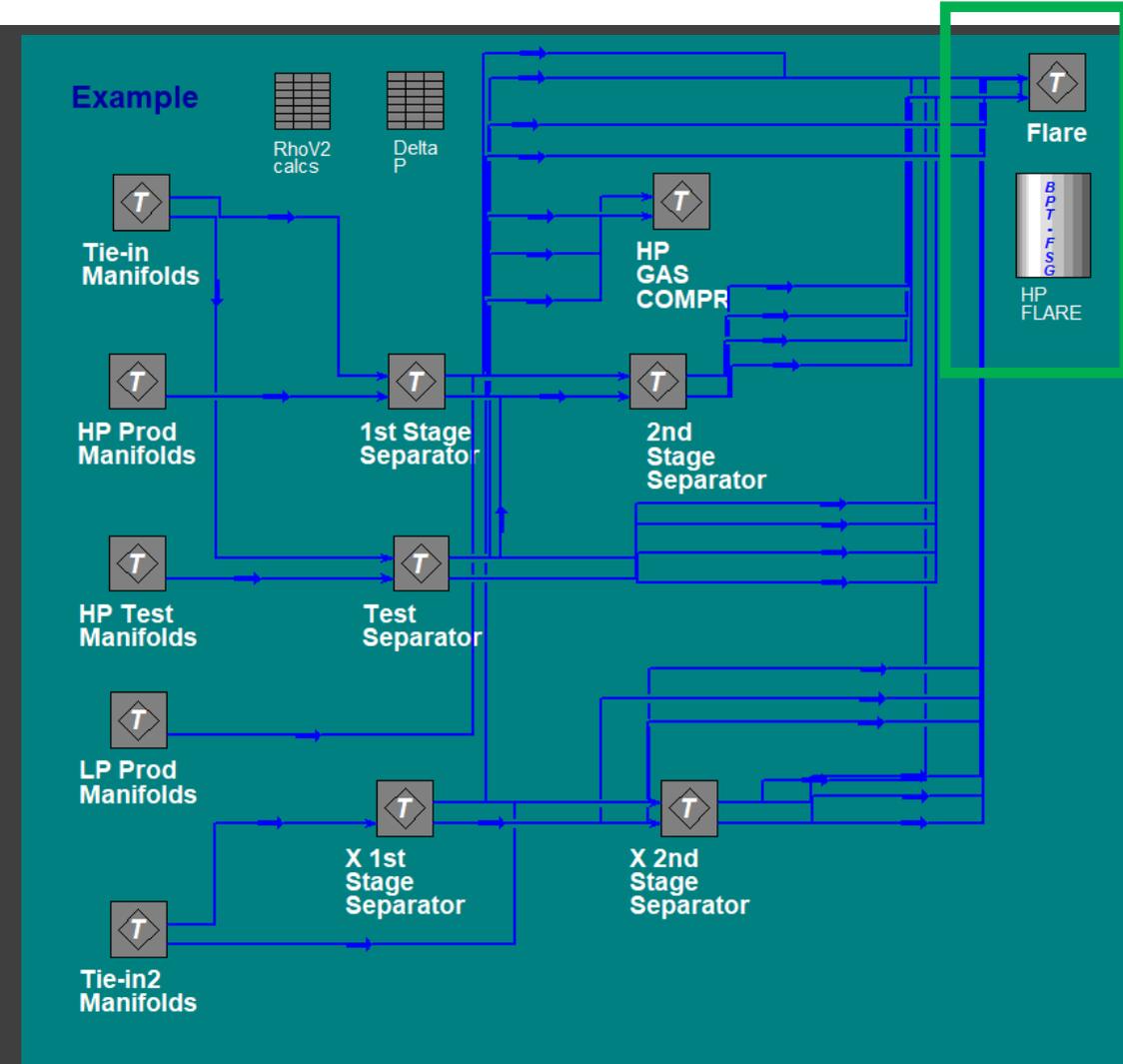
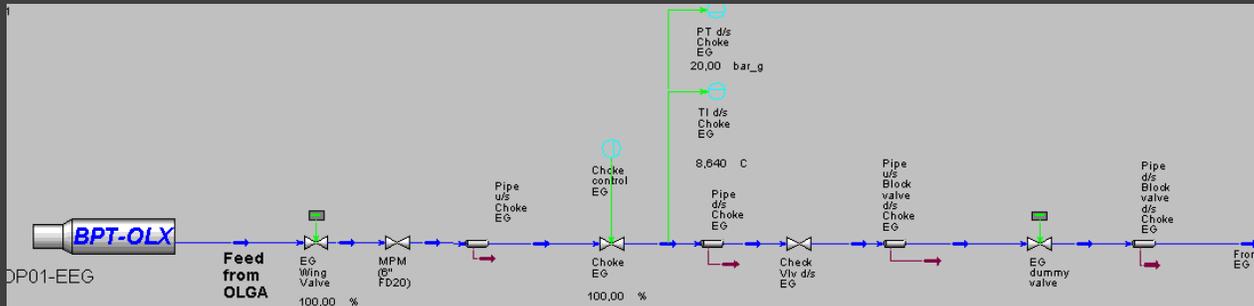
FSG™ to automate workprocess with flare design tool



Process Safety Modelling using linked simulations

Consistency between plant, report and prediction tools ...”one-to-one“ from wells to flare tip

- Individual production pipelines modeled
- Detailed modeling of Inlet arrangement
- PSV's & RO's individually modeled
- PSV tail piping individually modeled
- All relevant sources to Flare modeled
- All relevant sources to Flare linked in BPT FSG™



Automated workflow for flare design & verification

From transient analysis, results are captured and used in the flare design tool for final and verification

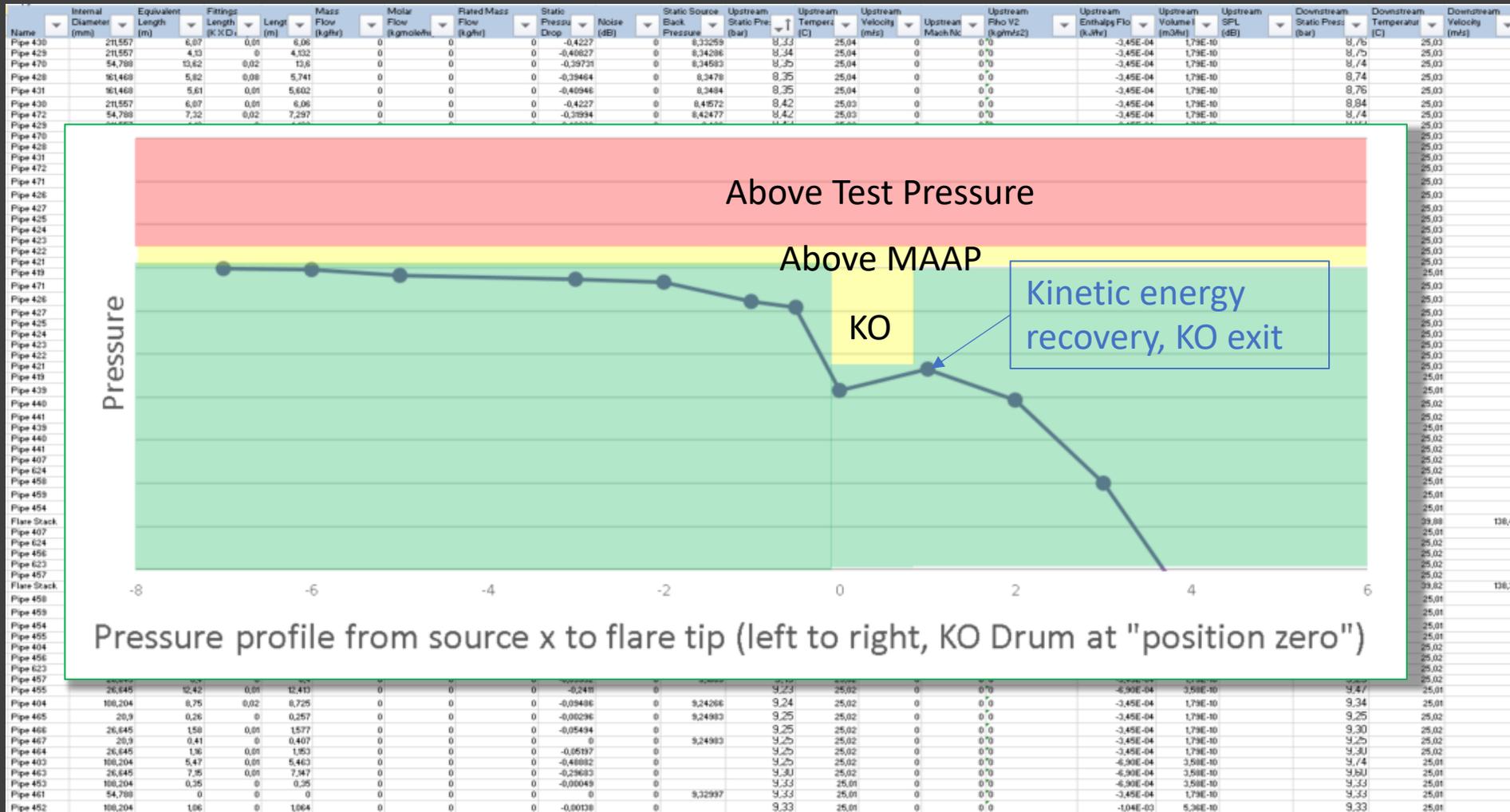
The screenshot displays the BPT-FSG software interface. The main window, titled "BPT-FSG, Flare Network Scenario Generator: HP FLARE", features a "Results" tab. A "Scenario Profile Plots" graph shows "Source Flows (kg/s)" on the y-axis (ranging from -20.00 to 120.00) and "Time (seconds)" on the x-axis (ranging from 10.00 to 100.00). A red line represents the total flow, which rises to a peak of approximately 110 kg/s around 50 seconds. Other colored lines represent individual source flows. A vertical green line is drawn at 50 seconds, indicating a specific time point of interest.

Below the graph, a table lists source flow values at four time points: 50.4, 51.8, 100.6, and 102.6 seconds. The table has 20 rows, with the first row highlighted in green. The values in the first row are 50.4, 51.8, 100.6, and 102.6. The values in the second row are 108.7, 108.6, 97.48, and 97.80. The values in the third row are 9.564e-1, 8.623e-1, 5.877e-1, and 5.819e-1. The values in the fourth row are 0.3720, 0.4071, 3.118, and 3.270. The values in the fifth row are 7.945e-1, 8.216e-1, 5.880e-1, and 5.836e-1. The values in the sixth row are 7.186e-1, 4.658e-1, 3.756e-1, and 7.885e-1. The values in the seventh row are 6.595e-1, 6.594e-1, 6.610e-1, and 6.610e-1. The values in the eighth row are 37.75, 37.85, 40.50, and 40.53. The values in the ninth row are 10.49, 10.63, 12.73, and 12.75. The values in the tenth row are 3.259e-1, 3.275e-1, 2.932e-1, and 2.932e-1. The values in the eleventh row are 24.41, 24.20, 25.25, and 25.36. The values in the twelfth row are 17.86, 17.76, 7.937, and 7.912. The values in the thirteenth row are 17.81, 17.72, 7.940, and 7.961. The values in the fourteenth row are 3.321e-1, 3.321e-1, 3.321e-1, and 3.321e-1. The values in the fifteenth row are 3.212e-1, 3.217e-1, 3.404e-1, and 3.411e-1. The values in the sixteenth row are 20.00, 20.00, 20.00, and 20.00. The values in the seventeenth row are 20.00, 20.00, 20.00, and 20.00. The values in the eighteenth row are 20.00, 20.00, 20.00, and 20.00. The values in the nineteenth row are 20.00, 20.00, 20.00, and 20.00. The values in the twentieth row are 20.00, 20.00, 20.00, and 20.00.

A "Triggered by..." dialog box is overlaid on the bottom right, listing the following items:

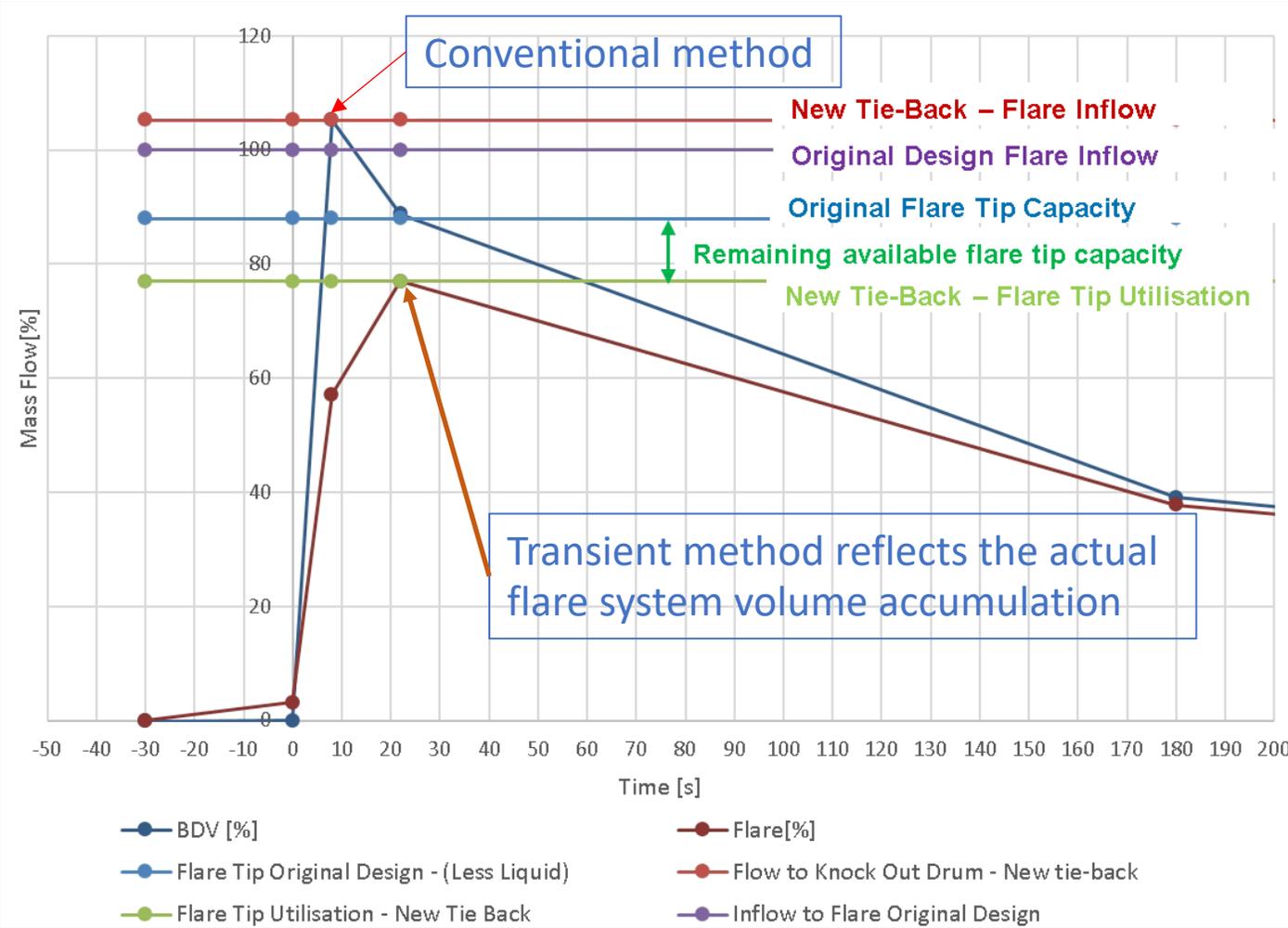
Name	Type
BPT OVERPRESSURE MODEL OPP STUDY REV00-10 - test x	HYSYS Simulation Ca...
BPT OVERPRESSURE MODEL OPP STUDY REV00-10 - test_x_3732036726,348.snp	SNP File
Dynamic results to Flarenet - test x peak y	XML Document
Flarenet Full model - test x peak y	FNWX File
Flarenet Pressure Flow Summary - test x peak y	Microsoft Excel Work...
Flarenet xExport - test x peak y	Microsoft Excel Work...

Flare design tool results for final verification



Emergency depressurisation

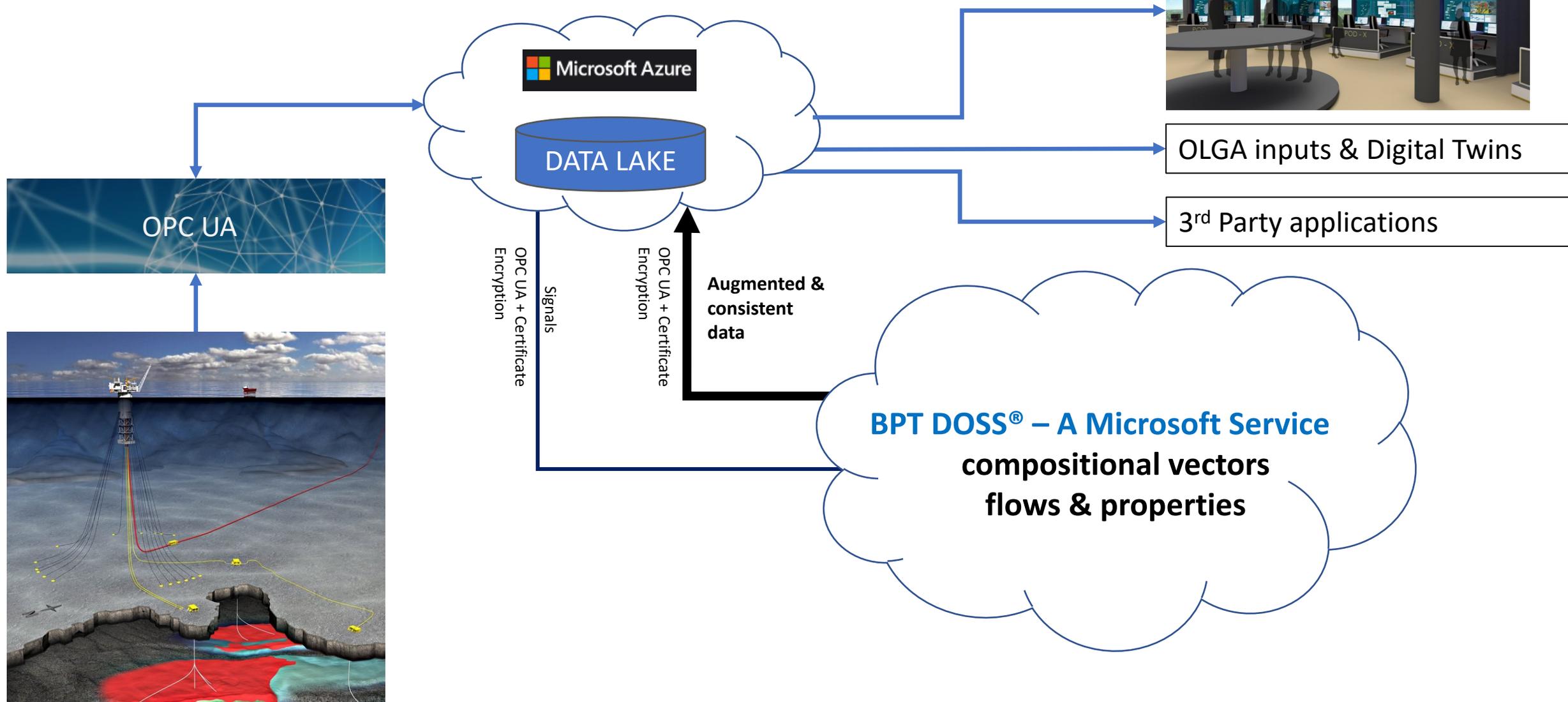
New tie-back to existing installation



Transient method identifies:

- 10 % remaining capacity in the original flare tip
- 20 % remaining capacity in the flare system
- Peak heat flare radiation and heat release duration the scenario significantly less than installed design

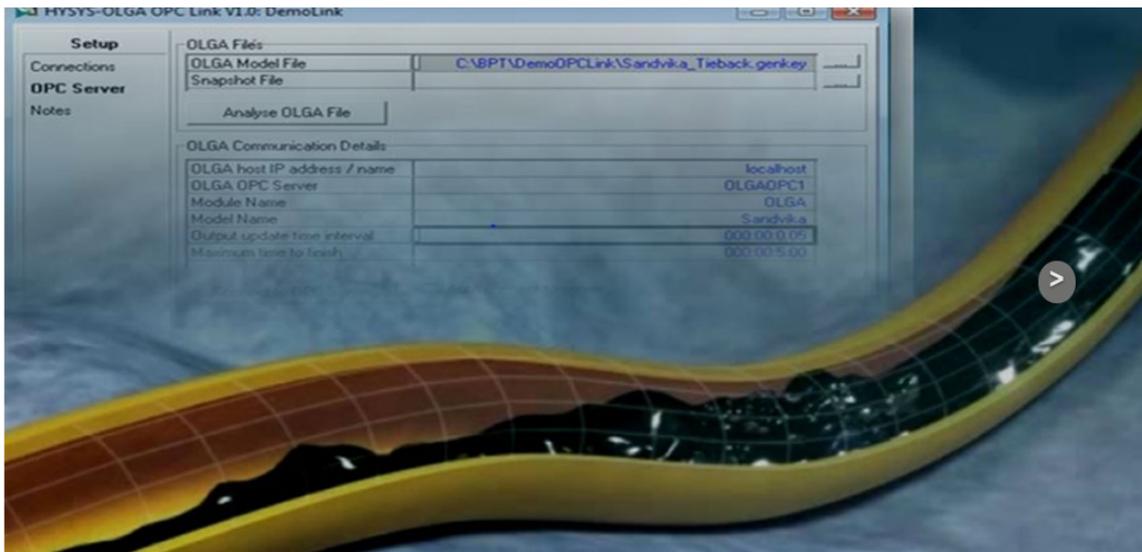
Interlinked Digital Twins using the Cloud





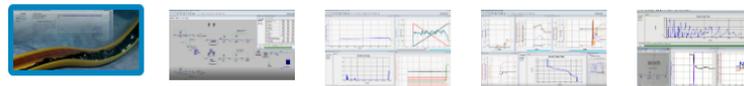
BPT OLX®

By Billington Process Technology AS



OLX

The OLX is developed to link OLGA to transient process simulators



Plug-in Attributes

Platform: OLGA

Domain: [Process Safety](#) | [Development](#) | [Flow Assurance](#) | [Production](#)

Challenges: Real-Time Operations | Enhanced Oil Recovery

ECCN: Norway, EAR99

Version

2017 | 2018 | 2019

14Days - Evaluation ▾

Quantity:

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Add to WishList

Request Quote

Overview

OLX® is the only commercially available Extension Unit Operation that allows seamless integration between OLGA® - Version 7 and later, and dynamic simulations using all Hyprotech heritage simulators. (KBC AT Petro-SIM, Honeywell UniSim Design & Aspen HYSYS)

Specifications

OLX® reduces project risk by enabling evaluation of topside, well or flowline integration at the conceptual stage thus avoiding expensive FEED studies or later rework. OLX® reduces the interface work between flow assurance, process and process safety engineers required during the detailed design phase as the study has been concluded and design completed during FEED. By doing a rigorous integrated simulation the required modification scope can be optimised and a less expensive solution selected. This applies to both new tie-ins as well as modification projects.

Features

- Time saving in use - automatically analyses an OLGA file and suggests the connectivity.
- Provides a visualization of the OLGA, a new insight, during transient simulations.
- Supports automatically initiates snapshots to ensure that the simulator and OLGA® are in consistent states after reloading a model. In this way, various scenarios can be run starting from the identical initial conditions and can easily be compared.

Summary

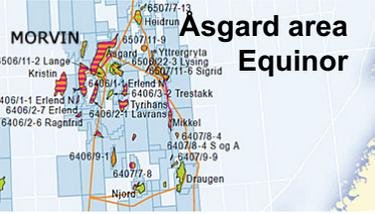
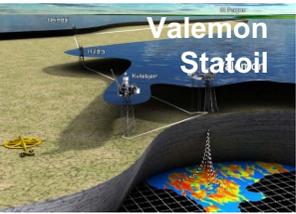
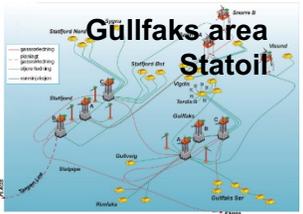
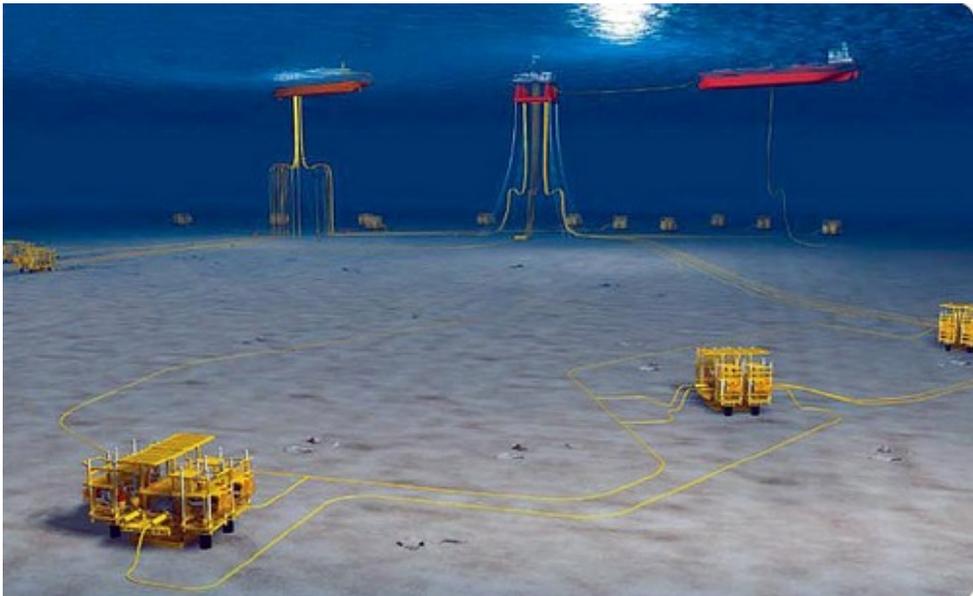
Linked transient simulation maximizes utilization of installed flare capacities

Increased Restriction Orifices may be installed to improve safety

Insulation for equipment protection from heat dissipation may be omitted

Improved Discipline Collaboration - Flow assurance, Process & Process Safety

BPT is building on 20+ Years of Process Optimization Experience on the NCS



THANK YOU!