



Assisting our customers make informed choices improving their business

Specialist Process Services

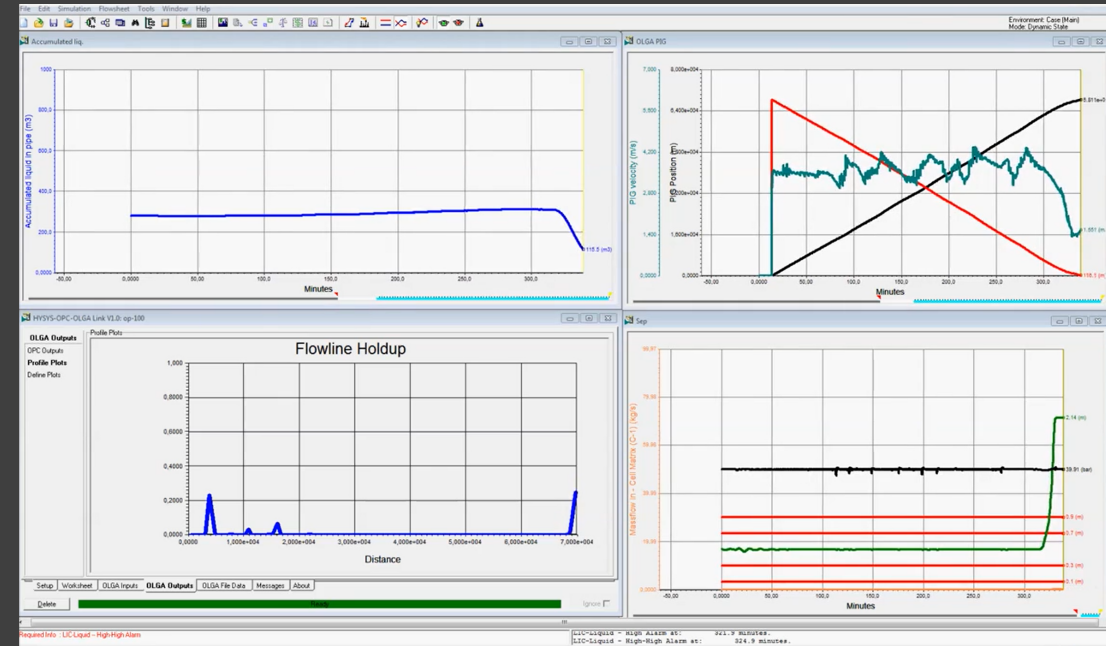
Software Development

Digital Operator Support System

Value Creation by efficient linking of
transient OLGA to process simulators

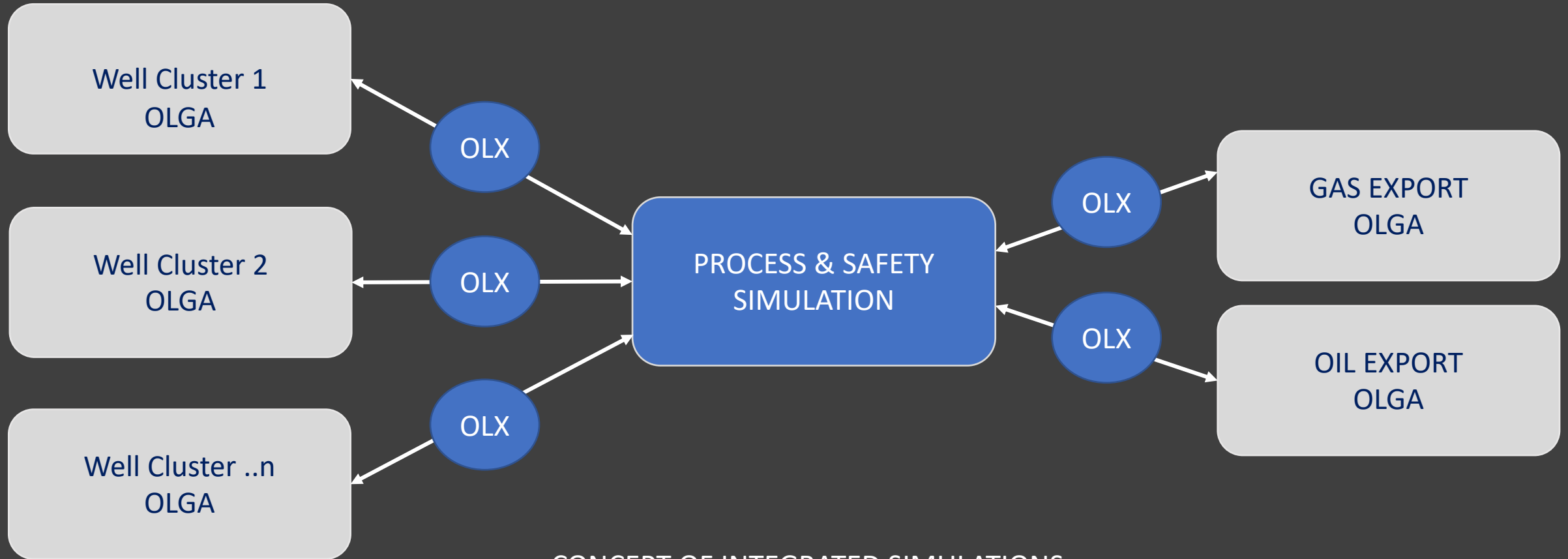
Typical use of linked simulations

Asset operability studies
Operator Training Systems
Transient Digital Twins



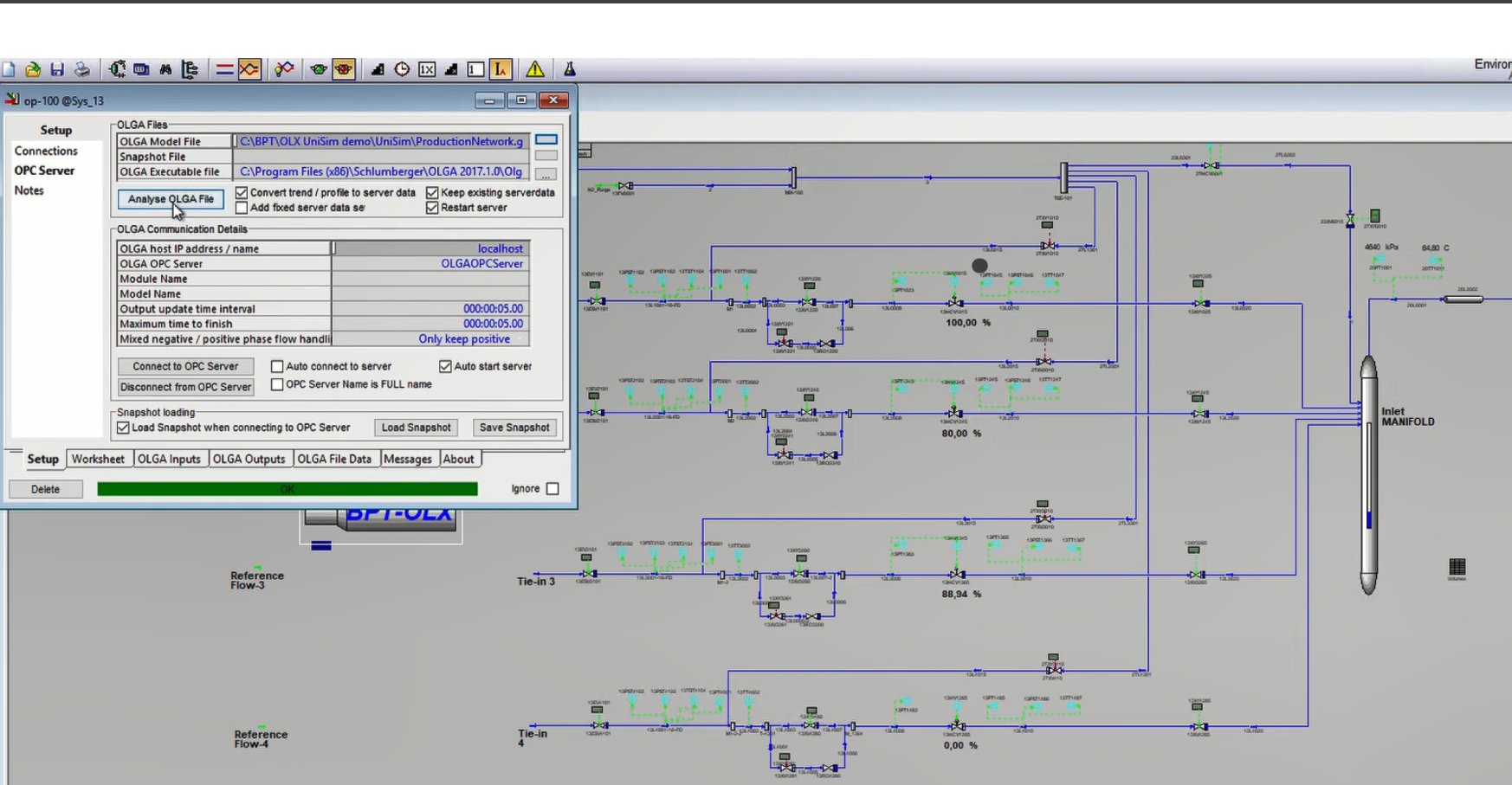
Maximizing asset utilization – Subsea Tie-backs

OLX[®] Configurations – One or multiple OLGA Servers



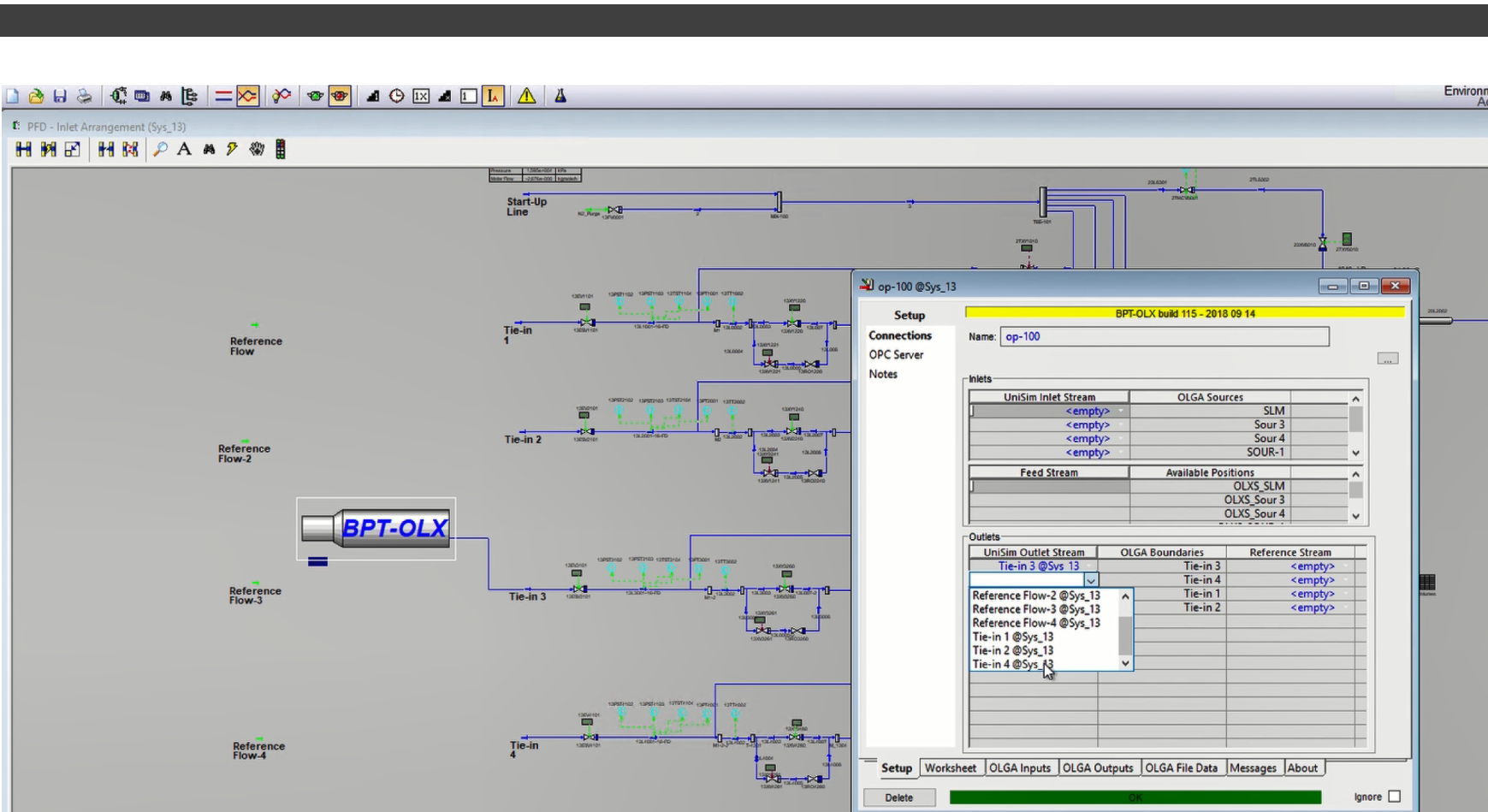
CONCEPT OF INTEGRATED SIMULATIONS

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

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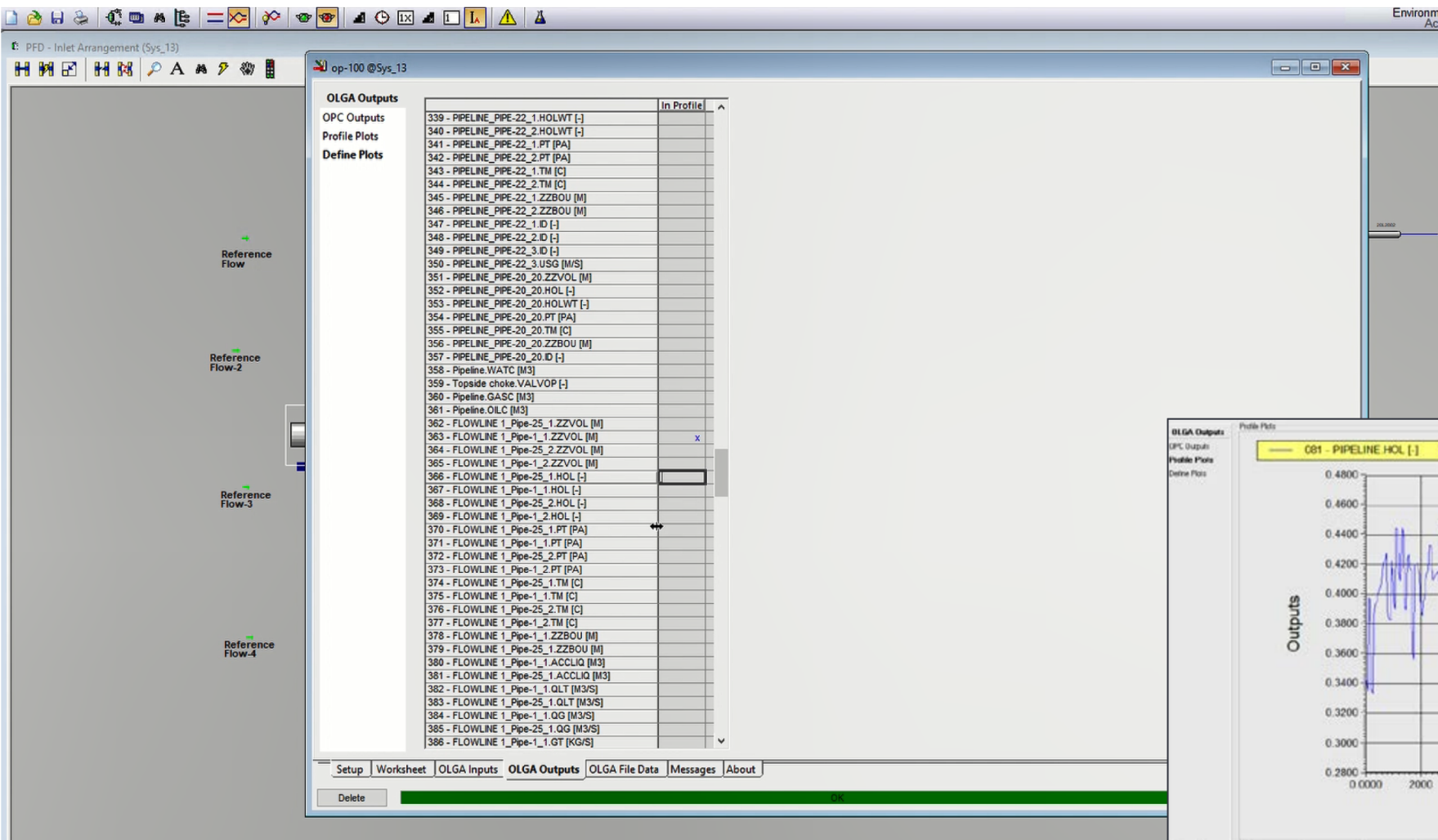
OLX[®] Linking made simple

The screenshot displays the OLX software interface. The main window shows a process flow diagram with a 'Tie-in 3' and a 'BPT-OLX' component. A 'Data to OLGA' dialog box is open, showing a table with columns A, B, C, D, and E. The table contains data for 'SOUR-1.PRESSURE [kPa]' and 'SOUR-1.GOR [Sm³/Sm³]'. The 'Current Cell' is set to 'C3' with the variable 'InputValue (InputValue_64)'. The 'Exported To' field is 'op-100 @Sys_13'. The 'Angles in' dropdown is set to 'Rad'. The 'Spreadsheet' tab is selected in the dialog box. The 'OLGA Inputs' table is visible in the background, listing various parameters and their values.

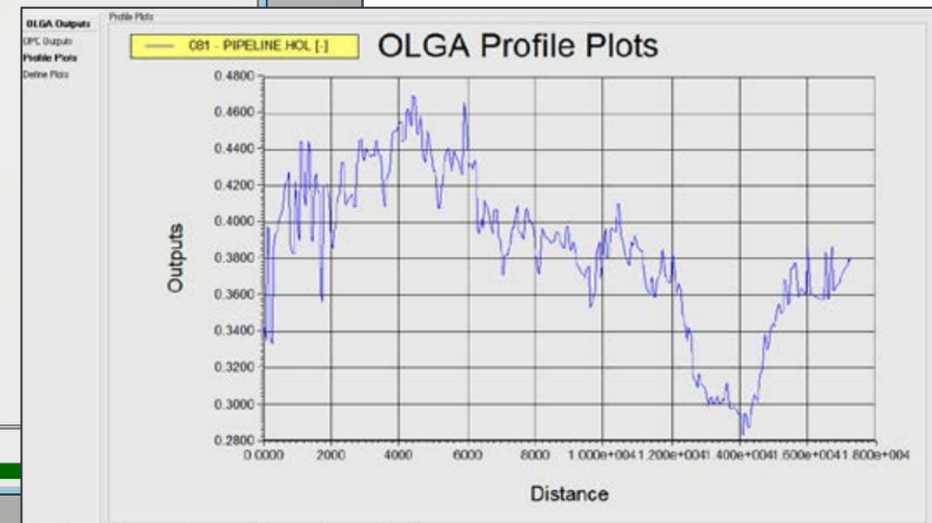
OLGA Inputs	Value
029 - SLM.WATERCUT [-]	0,3000
030 - SLM.PRESSURE [kPa]	2000
031 - Topsidechoke.STROKETIME	0,0000
032 - Topsidechoke.OPENING	0,0000
033 - Aprod.STROKETIME	0,0000
034 - Aprod.OPENING	1,000
035 - Sour.3.TEMPERATURE [C]	90,00
036 - Sour.3.DGGDP	0,0000
037 - Sour.3.DGLTHLDP	0,0000
038 - Sour.3.DGLTWTD	0,0000
039 - Sour.3.HTEXT	-1,000
040 - Sour.3.STDFLOWRATE [Sm³/d]	1000
041 - Sour.3.GOR [Sm³/Sm³]	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.DGLTWTD	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.DGLTWTD	0,0000
060 - SOUR-1.HTEXT	-1,000
061 - SOUR-1.STDFLOWRATE [Sm³/d]	500,0
062 - SOUR-1.GOR [Sm³/Sm³]	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.DGLTWTD	0,0000
071 - SOUR-2.HTEXT	-1,000
072 - SOUR-2.MASSFLOW [kg/h]	100,0
073 - SOUR-2.GOR [Sm³/Sm³]	-1,000
074 - SOUR-2.WATERCUT [-]	-1,000
075 - SOUR-2.PRESSURE [kPa]	2000
076 - Tie-in 3.DPDGG	0,0000

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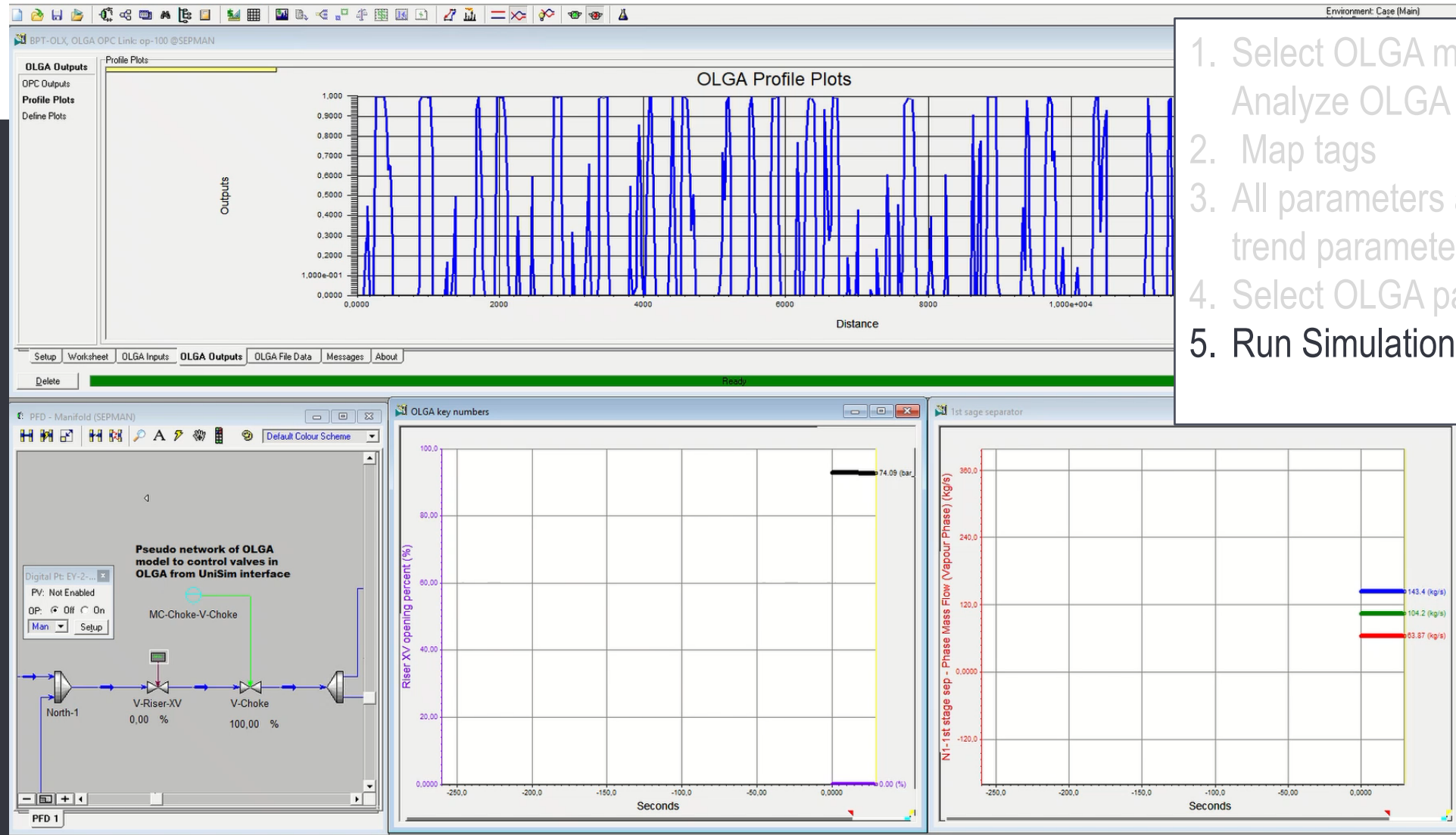
OLX[®] Linking made simple



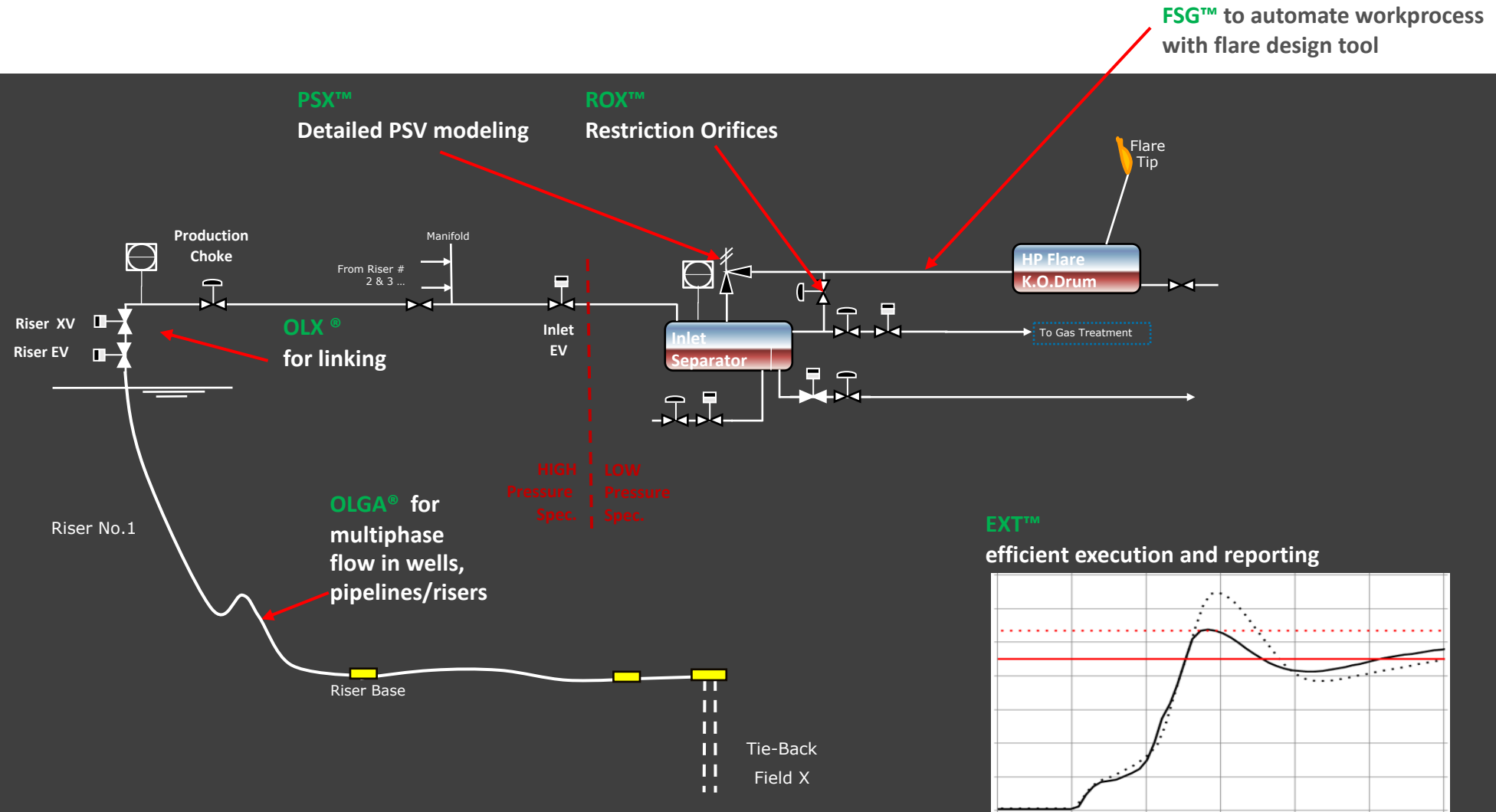
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Controlling OLGA through Process Simulator



Typical Subsea Tie-back configuration



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

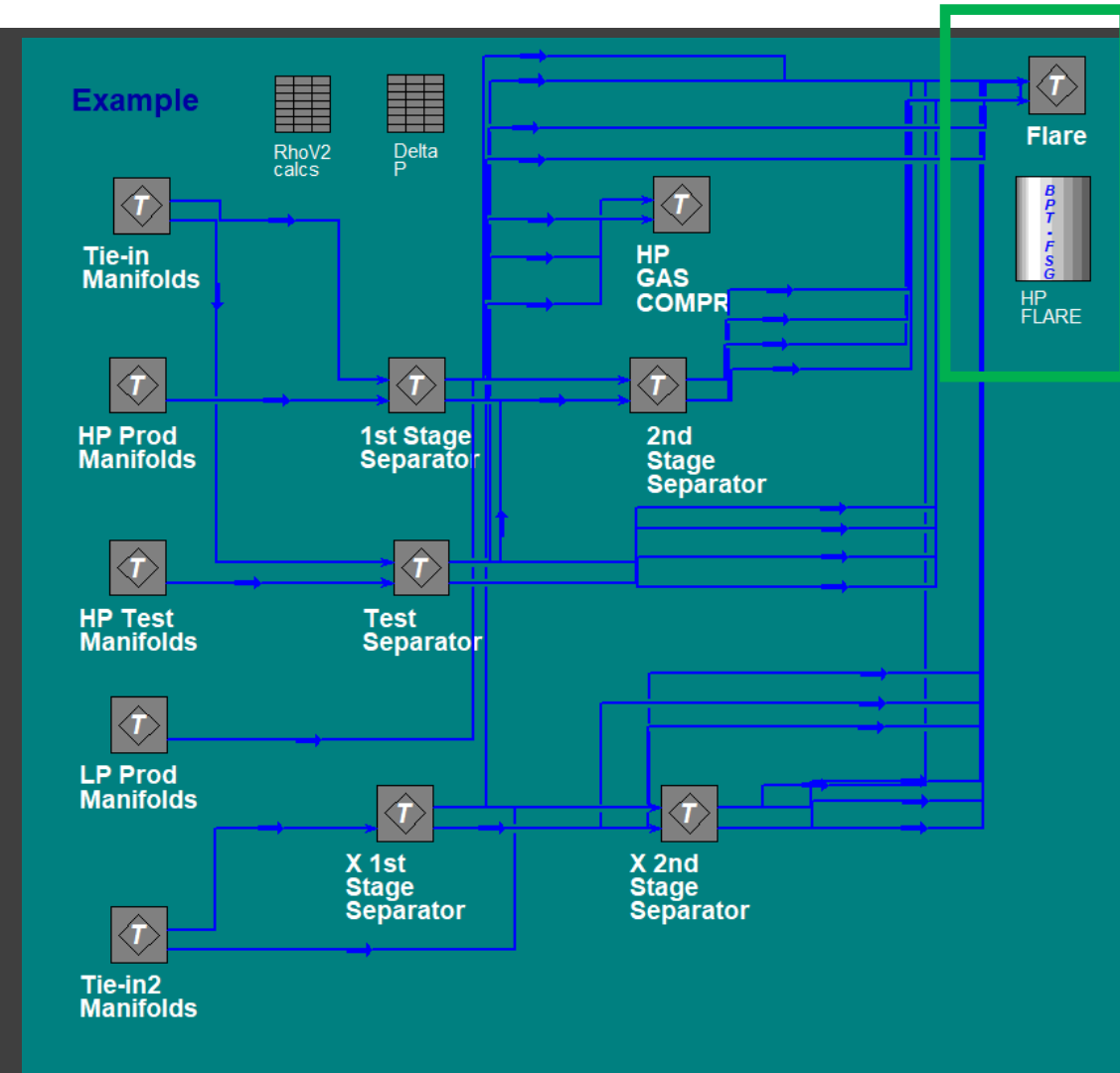
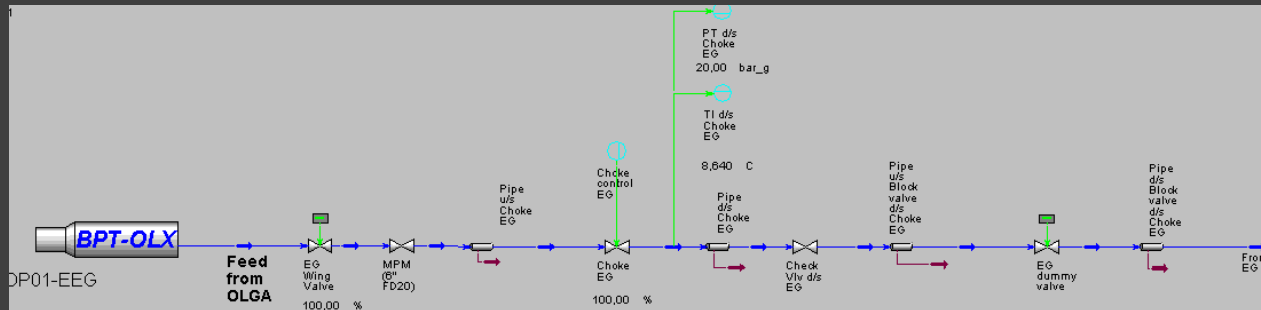
Detailed modeling of Inlet arrangement

PSV's & RO's individually modeled

PSV tail piping individually modeled

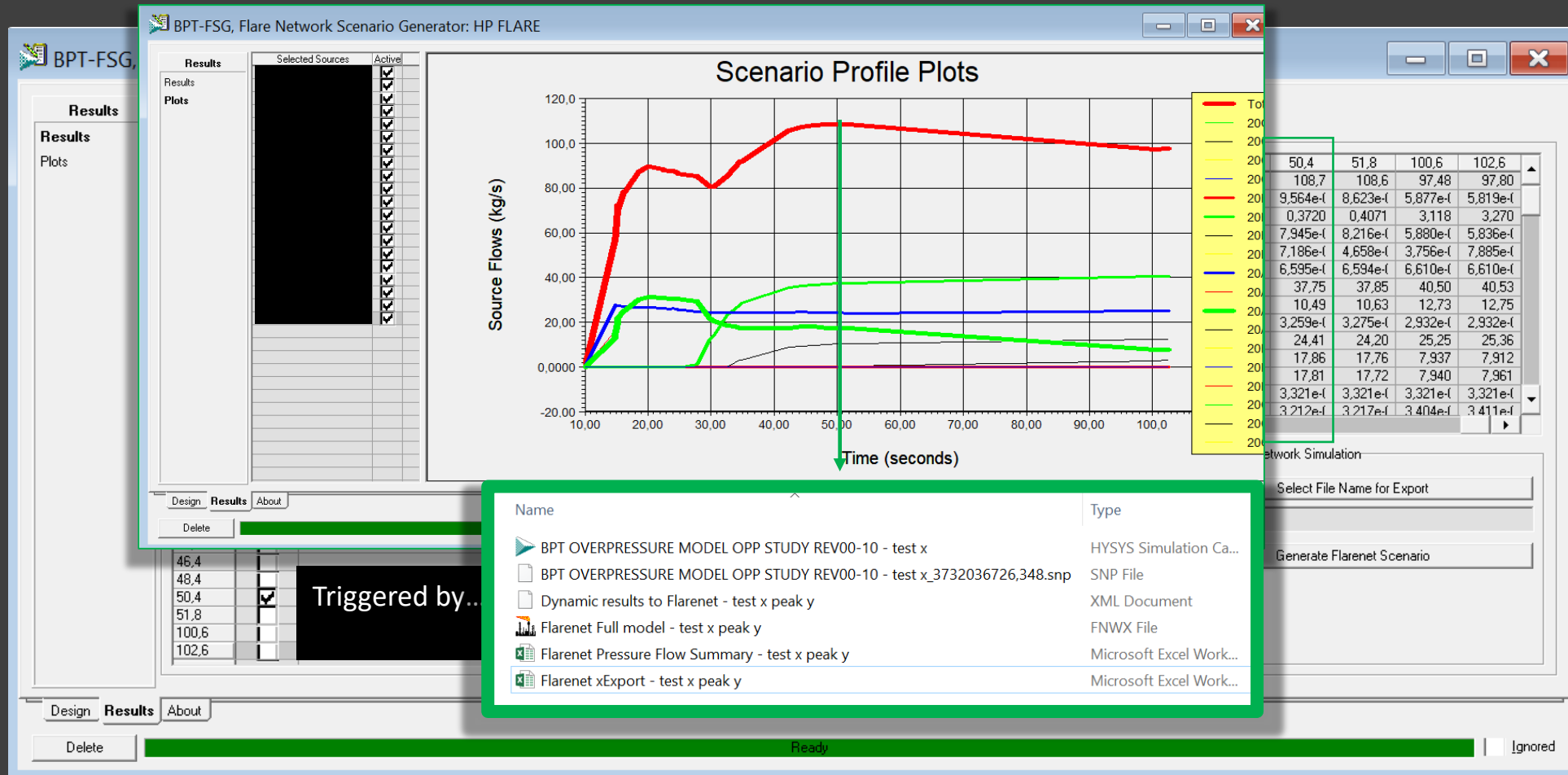
All relevant sources to Flare modeled

All relevant sources to Flare linked in BPT FSG™

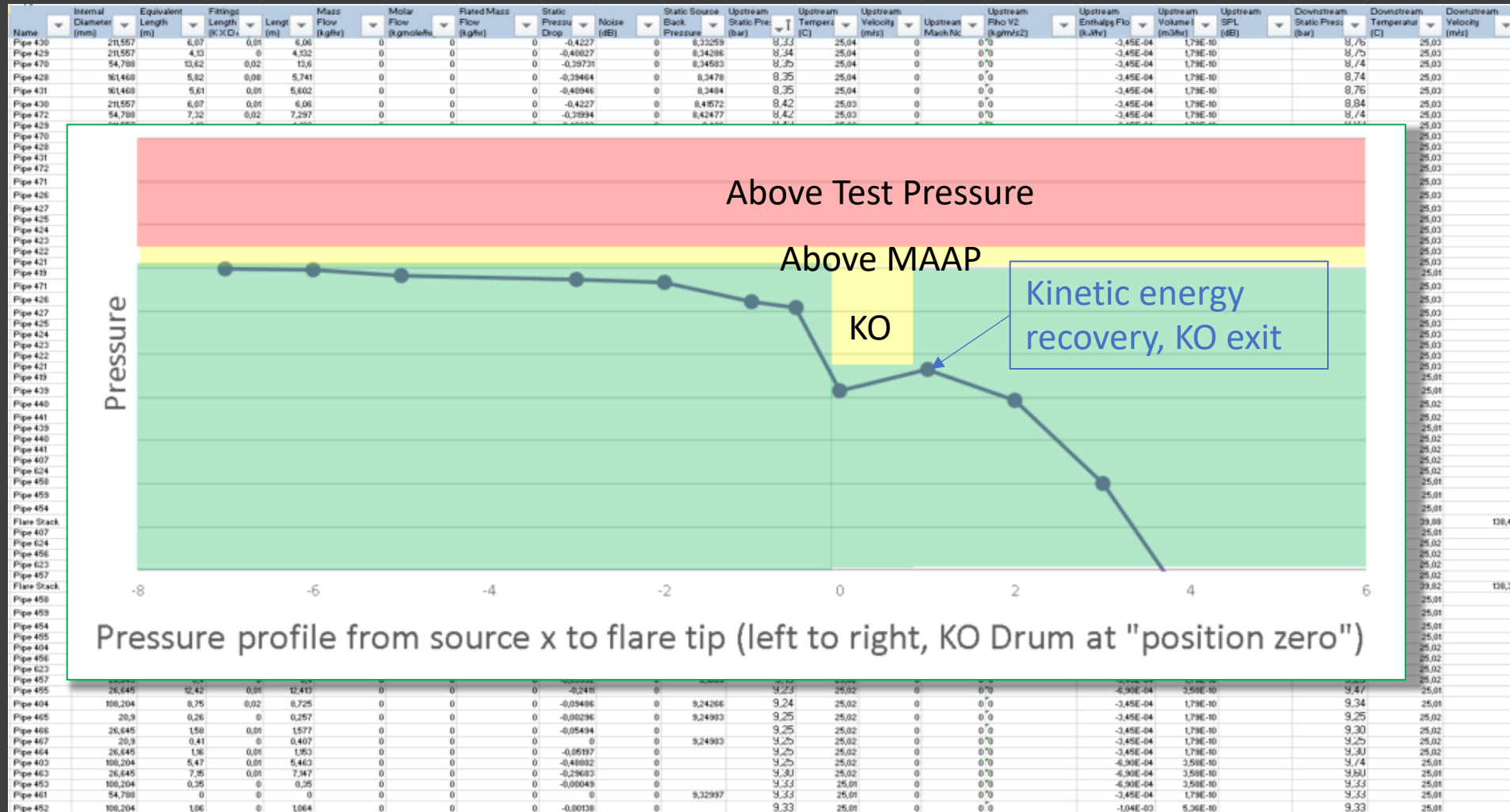


Automated workflow for flare design & verification

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

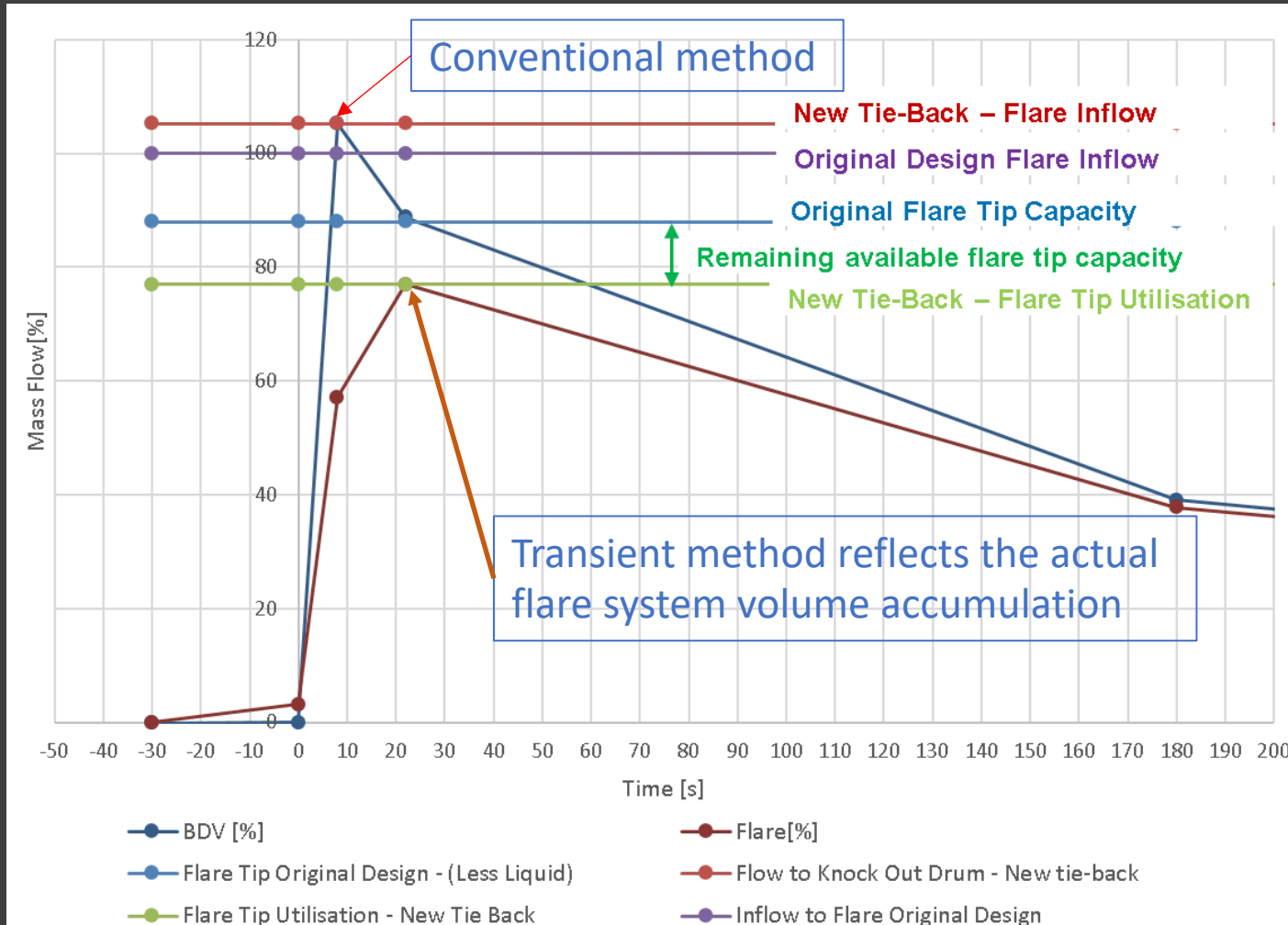


Flare design tool results for final verification



Emergency depressurisation

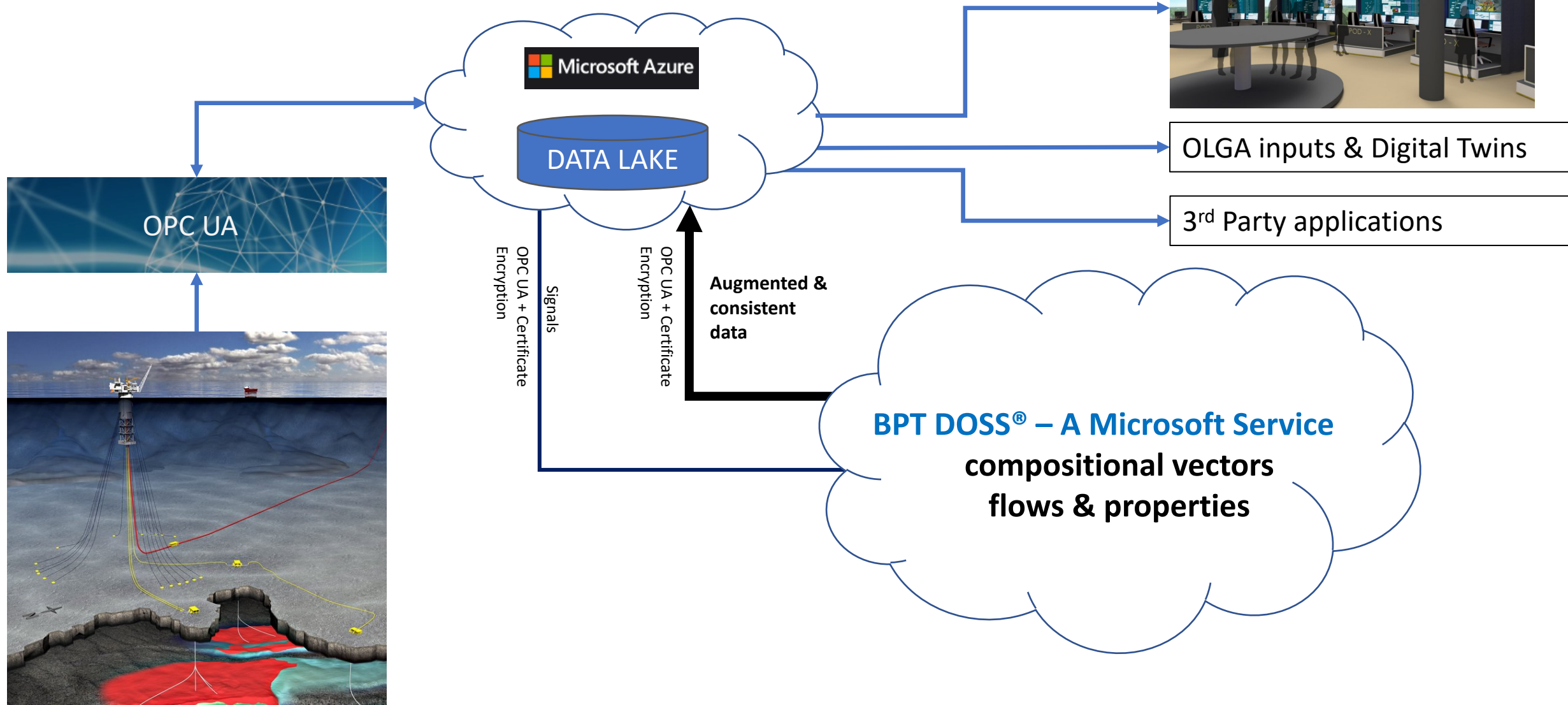
New tie-back to existing installation



Transient method identifies:

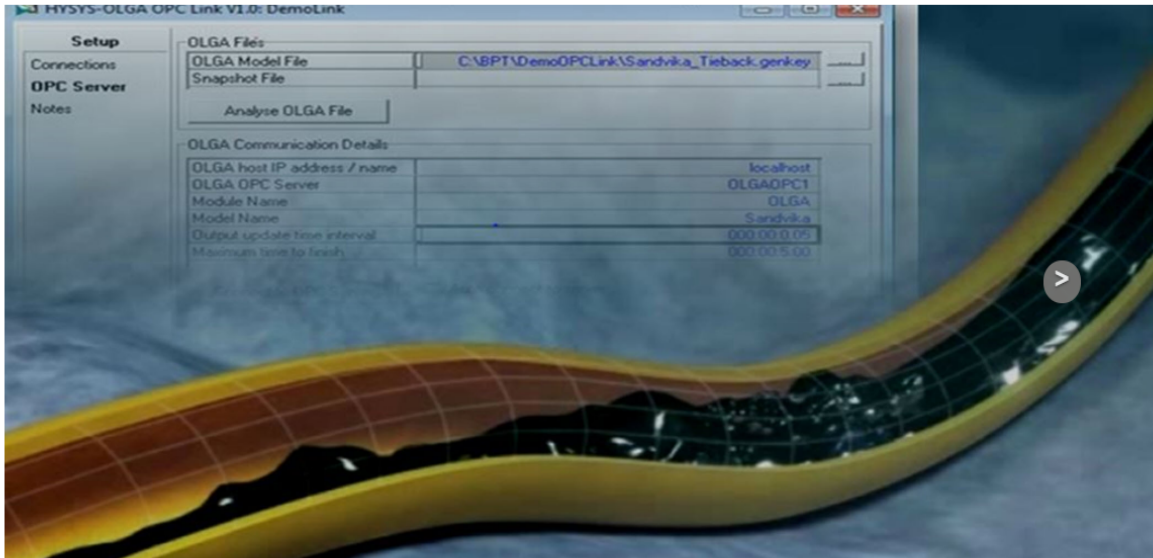
- 10 % remaining capacity in the original flare tip
- 20 % remaining capacity in the flare system
- Peak heat flare radiation and heat release duration the scenario significantly less than installed design

Interlinked Digital Twins using the Cloud



BPT OLX®

By Billington Process Technology AS



14Days - Evaluation ▾

Quantity:

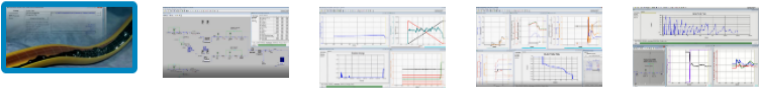
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OLX

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](#)

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

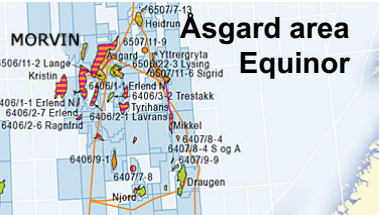
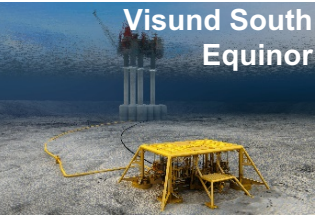
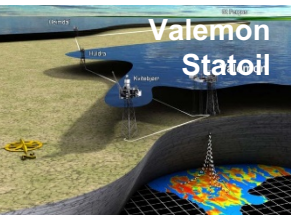
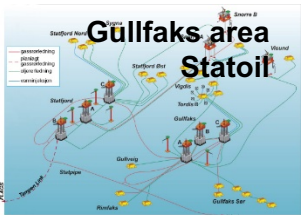
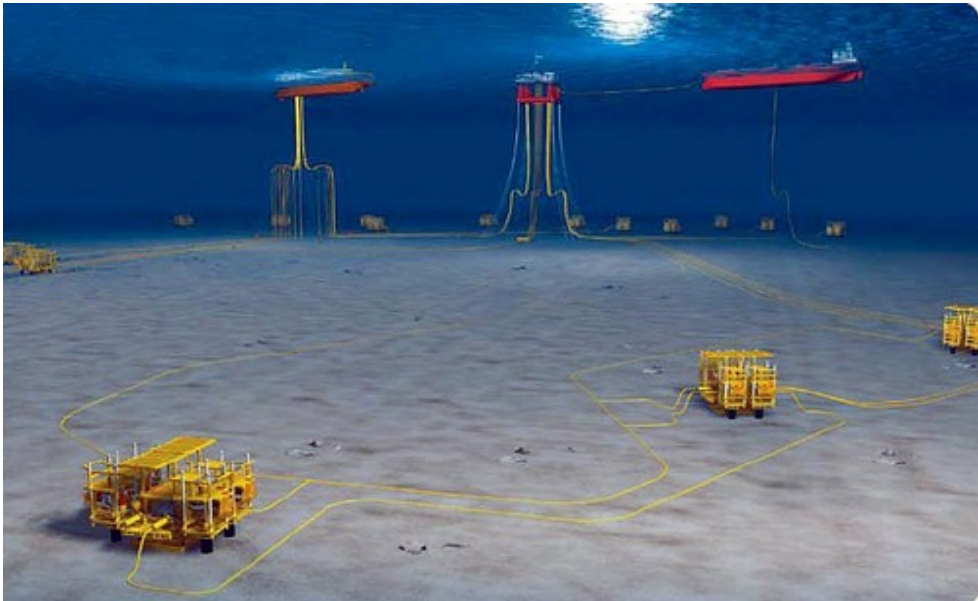
Linked transient simulation maximizes utilization of installed flare capacities

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!