Mehwish Manzoor
Senior Flow Assurance Consultant

Summary

Years of Experience

<5

Industries

- Oil and Gas
- Upstream
- Onshore
- Offshore
- Subsea

Types of Facilities

- Production Facilities
- Power Plants
- Refineries
- Water Treating and Injection

Areas of Expertise

- Conceptual Studies
- Front End Engineering
- Process Engineering
- Flow Assurance
- Dynamic Simulations

Qualifications

Education

MEng Chemical Engineering, Imperial College London, (2014)

Registrations / Certifications / Licenses

Associateship of the City and Guilds of London Institute (ACGI)

Institution of Chemical Engineers – Associate Member (AMIChemE)

Publications / Presentations

- Deciphering Converging / Diverging Large Networks Using OLGA, Presented in OLGA UGM, Abu Dhabi, Oct 2018
- Modelling Waxy Fluids in Multiflash, Presented in KBC UGM, London, June 2018
- Deciphering Converging / Diverging Large Networks Using OLGA, Presented in OLGA UGM, London, Nov 2016

Software / Skills

- Single and Multiphase Flow and Network Simulators:
  - *OLGA*
  - *PIPESIM*
  - *Flowmaster*
  - *PIPENET*
- Dynamic Process Simulators: *Aspen HYSYS, Honeywell UniSim*
- Aspen Flare System Analyzer
- AutoCAD
- Thermodynamic Fluid PVT Simulators:
  - *PVTsim*
  - *Multiflash*
  - *GUTS*
- Microsoft Office Tools

Languages

- English: Fluent; Urdu: Native; French & Arabic: Basic

Experience Summary

Ms. Manzoor provides technical support and design services in flow assurance and process engineering. Ms. Manzoor has experience in steady state and transient multiphase flow modelling, evaluating various flow assurance challenges for oil and gas systems, in particular thermal hydraulic requirements, wax deposition, hydrate formation and management, liquid surge and pressure surge analyses using a variety of simulation software.

Experience

Senior Flow Assurance Consultant
Wood Group Kenny Ltd, Abu Dhabi

Bechtel – FEED Services for Sulphur Pipeline in Hail & Ghasha Development, UAE

- Modelled the non-Newtonian liquid Sulphur fluid with its complex rheology.
- Performed hydraulic line sizing analysis to deduce minimum insulation requirements to maintain the temperature of molten Sulphur within the recommended operating range during normal operation.
- Analysed heating requirements for the Skin Effect Electrically Traced heating system during transient operations such as turndown and restart including requirements of re-melting Sulphur in the pipeline following upset conditions.

Dragon Oil – Offshore Pipeline Network Debottlenecking Study, Turkmenistan

- Performed flow assurance debottlenecking analysis to improve production of the waxy crude oil and gas from offshore fields through the pipeline network. The network model was matched to historical data and tuned to predict daily production as accurately as possible.
- Flow network optimization was performed and an advanced OLGA slug control architecture/logic was developed for the CPSF.

BP – Angola B-31 SE Concept Development, South Africa

- Performed flow assurance analysis to support the Company with an improved understanding of the optimal subsea configuration to arrive at a concept selection decision including line sizing hydraulic and thermal analysis for production / service flowlines, gas export and water injection systems.
- Transient analysis was completed in OLGA to assess cooldown times following shutdown including the requirement of dead oiling or hot oiling prior to restart in order to inform the hydrate management strategy.

Flow Assurance Consultant
Wood Group Kenny Ltd, London

SASOL – PSA Field Development Fluid Characterization, South Africa

- Defined reasonable fluid compositions, tuned to match fluid properties, based on the Reservoir Fluid PVT Reports, to be used in HYSYS simulations. Fluid were characterized in Multiflash using compositional analysis to lump into pseudo-components, in order to reduce computational simulation time in HYSYS.
- Tuned the characterized fluids in Multiflash using the Constant Composition Expansion, Differential Liberation, Viscosity and Separator Tests. The fluids were re-created and further tuned in HYSYS to match the PVT reports as well as the characterized fluids generated in Multiflash.

BP – AGT Wax Deposition, Azerbaijan

- Performed wax deposition analysis using the OLGA Wax module on an existing 26” pipeline system from platform topsides to the onshore terminal to assess the flow assurance risks associated with wax buildup in the pipeline.

- Developed a pigging philosophy by assessing the impact of pigging on wax removal from the pipeline.

BP – Angola B-31 PSVM Riser Gas Lift Flow Calculation, Africa

- Performed calculations to find the most appropriate valve sizing equation to calibrate the V-cone meters for gas rates above the max. calibrated rates of the V-cones for the PSVM Gas Injectors.

Tullow Kenya B.V. – Lokichar to Lamu Crude Oil Pipeline FEED, Kenya

- Completed verification of the Pre-FEED work and recommendations.
- Performed hydraulic and transient analysis including surge analysis for the onshore export pipeline and the load out facility in OLGA and PIPENET.
- Developed a wax deposition and management study.

MEDGAZ, S.A. – Pipeline Movement Investigation, Spain

- Provided flow assurance hydraulic and transient results input for assessment of the pipeline as-found condition to confirm pipeline mechanical integrity and to identify the cause of pipeline buckling.

EnQuest – Dunlin Bypass Wax Assessment, North Sea

- Performed benchmarking analysis for the existing pipeline by tuning to match historical operational data between consecutive pigging runs.
- Assessed the potential wax deposition risk of the new oil export route to be used for operation in the future.
- Identified a suitable wax management strategy including a pigging philosophy

BP – Shah Deniz Stage 2 FEED Commissioning, Azerbaijan

- Performed surge analysis on the 32” gas export line 2 pipework using PIPENET.

SASOL – PSA Field Development Project Phase I Surface Facilities, South Africa

- Performed transient flow assurance analyses on the new Liquids Processing Facility, including pigging, to investigate operational solutions targeting liquid surge volumes to remain within slug catcher size.

Burullus – West Delta Deep Marine Phase IXB Development FEED, Egypt

- Reviewed process documents from Pre-FEED studies to close out outstanding recommendations in process safety verification.
- Provided technical assurance and update process documents: cause & effect, schematics, P&IDs, philosophies following development of new wells.

Shell – Corrib Odorant Study, Ireland

- Performed an odorant package relief system study for assessment of required pressure relief devices due to fire.
- Assessed the suitability of carbon filters for odorant adsorption and investigated potential alternative technologies

Energean Oil & Gas – INGL, Multi-Field Gas Export System Study, Israel

- Performed a conceptual assessment and feasibility study to assess the proposed offshore field development solutions.

- Assessed the expected system hydraulic capacity and evaluated the impact of allowing expansion through tie-ins from future field developments through steady state and transient simulations
- The optimum pipeline size was evaluated following line packing transient simulations to accommodate the production swing expected in Israel and a cost estimate was provided to the client.

Tullow Oil, Jubilee Riser Swop-Over Analysis, Ghana

- Assessed the adequacy of a swop-over between the existing 'dead' and 'live' oil riser pair as an immediate remediation option to avoid failure of the 'live' oil riser.
- Performed a technical assessment of the dual flowline and riser pair system during steady state, system shut-in as well as hot oil displacement following system settle out for the duration of the 'no touch time'.
- Investigated flow assurance concerns including hydrate formation and wax deposition.
- Produced high level Operating Guidelines to recommend system shut-in, hot oil displacement and swop-over procedures ensuring operation outside of the hydrate formation region.

UIT Solutions, LNG Import Terminal Onshore Pipeline Flow Assurance & Corrosion Study, Bahrain

- Assessed the fluid composition to identify the possibility of water dropout in the pipeline.
- Performed steady state thermal-hydraulic analysis in PIPESIM to identify operating conditions for locations at risk of condensed water holdup to be used as input in corrosion calculations.

Tullow Oil, Teneboa Enyenra and Ntomme Fields Ad-Hoc Support, Ghana

- Performed a technical assessment of the Jubilee Gas Import to TEN to assess the impact of gas expansion on the gas arrival temperatures.

Tullow Oil, Jubilee Field P&ID Review, Ghana

- Performed a review and technical assessment of the Jubilee Subsea System P&IDs updated to reflect the as-built configuration of the field.
- Evaluated the impact of updates in the PFDs and P&IDs on the process, system design capacity and risk assessment to advise whether further studies need to be performed to confirm suitability.

GUPCO Egypt, Ras El-Ush Pipeline Replacement Assessment

- Performed a technical assessment and feasibility study to replace the existing pipeline that had suffered from severe integrity issues due to internal corrosion.
- Evaluated the optimum pipeline size through a hydraulic analysis and defined the operating envelope based on forecasted production.
- Different pipeline construction materials were compared to assess suitability and provide a cost estimate.

Glencore Chad, Mangara-Badila Fields, Flow Assurance and Production Chemistry Studies

- Performed system hydraulic analysis and wax deposition modelling in OLGA based on fluid characterization to recommend optimum system operating envelopes and pigging requirements.
- Assessed shear stress requirements for gel break upon restart.

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- Concept development for a long distance offshore pipeline to connect gas supplies to markets in certain countries. Possibilities for application of efficient and proven technology for transporting significant volumes of gas at low cost across the sea have been studied.
- Performed preliminary flow assurance analysis in OLGA to assess the potential capacity of the proposed pipeline.

- Designed BFD, PFDs, and P&IDs in AutoCAD to include the compression station at the production facilities as well as the gas reception terminals.
- Developed a model of the concept in HYSYS to size equipment such as the compressor stations at the production facilities and pressure control valves at the gas reception terminals.

Shell, Corrib Flare Network Analysis, Ireland

- Assessed the adequacy of the existing flare system to handle increased production.
- Aspen Flare System Analyzer was used to model the flare system with pressure relief from the discharge upstream of the compressor aftercoolers to assess the maximum relief rate for the blocked outlet scenario.

Dodsal / KOC, GC-31 Field Dynamic Simulation Study, Kuwait

- Process dynamic analysis in HYSYS for the new gathering center (GC-31) for the North Kuwait field.
- Process comprised of three-phase LP separators, degassing boots and tanks for primary separation of oil, gas and water followed by two-stage electrostatic dehydration/desalting to meet the product specifications with respect to vapour pressure, water and salt content.
- Evaluated the impact on the separation system and tank vapour system of various transient scenarios to optimize and verify the controller and safety system.

Ras Gas / MEHL, Flow Assurance Expansion Project – MEG Network, Qatar

- Steady state hydraulic analysis in PIPESIM of entire MEG network system comprising of existing single phase liquid pipelines and new design for the expansion project,
- Transient pressure surge analysis in OLGA for various operational scenarios such as staggered system start-ups, valve shutdown and pump trips.
- Pressure surge transient results estimated by OLGA were benchmarked against PIPENET.

SASOL, Liquid Export Pipeline Flow Assurance Study, Mozambique

- Performed a hydraulic line sizing analysis for the onshore and offshore gas export pipeline.
- Transient Pressure Surge Analysis.

Total, Laggan-Tormore Stress Re-visit, UK

- Flow assurance analysis for steady state operating conditions.

Graduate Flow Assurance Consultant
Wood Group Kenny Ltd, Malaysia

Premier Oil, Gajah Puteri and Lembu Developments, Indonesia

- Well modelling to determine optimum pipeline sizes based on a backpressure analysis.
- Assessed risks of hydrate formation, identified chemical inhibition requirements and performed dosage calculations.
- Performed a dewatering analysis including start-up after dewatering to assess hydrate inhibition injection rate.
- Transient start-up analysis with/without depressurization including a blowdown study.

PVGAS SE, Nam Con Son 2 Phase 1, Vietnam

- Flow assurance analysis for operational liquids management during steady state.
- Transient analysis including ramp up, shutdown, restart and pigging.

Graduate Flow Assurance Consultant
Wood group Kenny Ltd, London

BP, ACG Future Developments

- Flow Assurance Concept Selection Analysis.
- Assessed capacity of the water injection, produced water, liquid export and gas export/import lines.
- Confirmed the proposed sizing and identified show stoppers.
- Evaluated flow assurance challenges and operational risks (wax deposition, hydrate formation, bi-directional operation and liquid management).

Tullow, Lokichar South Phase 1 Development & UJV Additional Work, Kenya

- Flow assurance analysis for steady state operating conditions.
- Determined the optimum pipeline size required along with number and locations of pump stations.
- Identified heating requirements; configuration of heating techniques such as bulk heating, electrical trace heating or combined hybrid systems.

Intern Flow Assurance Consultant
Wood group Kenny Ltd, London

- Completed a short-term project for Phillips 66 – Tetney Sealine Replacement Water Hold-up Study.
- Steady State and transient analysis were conducted for this water hold-up study of a black oil system using OLGA version 5.
- Learned to use in-house software such GUTs, MSi Plot, Angle Class.
- Produced a report on the findings of water hold-up analysis.

Internal Project

Graduate Flow Assurance Consultant
Wood Group, London

Development of Emulsion Simulations

- Understanding emulsions, their various types and how they are formed.
- Relevance of emulsions to flow assurance and its significance in the industry.
- Possible methods of steady state emulsion modelling were explored using PIPESIM.
- Lab data from research papers was used to find the best suited simulation models that can be tuned to predict emulsion viscosities and the effect of watercut on this viscosity.

Software Testing

- Multiflash 7 Beta Testing
- OLGA 2017 Beta Testing
- PIPESIM 2017 Beta Testing
- OLGA 2016 Beta Testing
- OLGA-Cloud 2015 Beta Testing
- OLGA 2015 Beta Testing
- OLGA 2014 Beta Testing

Training

- Multiflash Software Training Course – Conducted by KBC Process Technology Ltd. (4th – 5th Dec 2017)

Professional History

- Wood Group, Abu Dhabi (August 2018 – Present)
- Wood Group, London (August 2015 – August 2018)
- Wood Group, Malaysia (May 2015 – August 2015)
- Wood Group, London (August 2014 – May 2015)
- Wood Group, London (July 2013 – September 2013)