# Summary

## Areas of Expertise

* Process Engineering
* Steady and Dynamic Simulations
* Flow Assurance
* Solid Management
* Design Review and HAZOP
* Erosion and Corrosion
* Asphaltenes and Scale
* PVT analysis

## Technical Skills

* HYSYS, Unisim, PRO II, ProMax, Flaresim, Phast
* PIPESIM, OLGA, PIPEPHASE, SPS, PVTSim, Multiflash
* Python, Java, C++, VBA, Matlab
* Proprietary Software Development

# Profile

A Professional Engineer with more than 15 years of experience in process engineering for conceptual studies, capital projects, and operational support. As a subject matter expert, provides system configuration, technical and simulation support. Proven track record of new technology development and deployment. Strong teamwork and communication skills. Has published and presented 10+ peer-reviewed papers.

# Professional Experience

## Senior Principal Engineer, Process

## Wood Group Plc, 2011 – Present

Lead process design from conceptual studies to detailed engineering. Perform process and flow assurance steady-state and dynamic simulations. Interface with other disciplines to optimize production and process systems. Develop and implement workflows, practices, and procedures. Mentor junior engineers. Facilitate design review and HAZOP. Estimate man-hours and prepare bid proposals. Deliver great presentations to management, clients, and peers.

#### Selected Projects:

#### Saudi Aramco, Jafurah Unconventional Development Projects, Saudi Arabia

Performed HYSYS simulations for gas separation plants. Sized equipment including separators, pumps, relief valves, and compressors. Conducted thermo-hydraulic analysis for the unconventional field development. Built a PID control system in OLGA to simulate Harmaliyah well dynamic startup scenarios. Developed an OLGA solution to study solar radiation impact on above-ground pipelines. Performed full field development and layout optimization using PIPESIM. Developed a Python tool to do batch simulations in PIPESIM.

#### Suncor, Syncrude Interconnection Pipeline, Alberta, Canada

Performed bitumen pipe pre-heating analysis using HYSYS Dynamics. Conducted hot bitumen cooldown, re-start analyses using SPS. Calculated unbalance forces during upset scenarios. Tuned fluid viscosity and density to match measurement data.

#### Zakum Development Company (ZADCO), Zirku Flare Study, UAE

Carried out blow down simulations in HYSYS and established relief loads. Conducted flare network simulations and radiation calculations. Played a key role in system layout optimization.

#### ConocoPhillips, Delaware Infield Gathering FEL-1 Study, west Texas and southern New Mexico

Performed HYSYS simulations for in-field separation plants. Conducted thermo-hydraulic analysis in PIPESIM for the full field development from MWF to the sale points. Optimized pressures, compression, and numbers of central facilities. Conducted gas lift compression location optimization analysis for shale gas wells. Performed OLGA analysis for hydrate risk assessment and slugcatcher sizing.

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#### Woodside, Pluto LNG EPC Project, offshore Western Australia

Performed HYSYS and PIPESIM simulations. Conducted pipeline cooling down and insulation simulations in OLGA. Calculated relief valve size. Developed solutions for sulfur deposition problems.

#### Saudi Aramco, Khurais Increment Project, Saudi Arabia

Conducted thermo-hydraulic analysis for satellite GOSP pipeline systems. Optimized loop line length and recommended the best solution. Developed a Python subroutine in SPS to simulate an energy recovery system. Performed surge analysis and checked the adequacy of the existing SRV systems. Tuned OLGA viscosity model and investigated into the impact of emulsion viscosity on wet crude pipeline hydraulics.

#### Centrica, Block 22 Floating LNG Conceptual Study, Trinidad and Tobago

Responsible for subsea pipeline network OLGA simulation for different operation scenarios. Performed hydrate simulation to assess the hydrate plugs and the required inhibitors to mitigate the hydrate risk. Investigated the effect of gas/condensate flow regime on the corrosion inhibitors efficiency.

#### MEDCO International Ventures Limited, Libya Area 47 Development Project, Libya

Performed upstream oil and gas separation HYSYS process simulations. Oversaw and mentored young engineers to do steady state pipeline simulations, three-phase separator, scrubber, pump and compressor sizing. Prepared process documents including the basis of design, simulation report, etc.

#### World Bank Group, Carbon Capture and Storage (CCS) CO2 Transportation Study, China

Investigated into different equations of state used for CO2 transportation simulation. Conducted CO2 pipeline thermos-hydraulic simulations in PIPESIM, and mentored junior engineers on pump sizing. Assessed different options and recommended the best option for CO2 transportation.

#### ZADCO, Zirku Facilities Enhancement Study, UAE

Responsible for oil and gas separation HYSYS steady state and dynamic simulations. Checked PFD and P&ID. Conducted pipeline ramp-up analysis in OLGA, identified flow regime and liquid holdup for an investigation of vessel vibration. Supervised a separator CFD analysis by a sub-contractor. Generated heat and mass balance report and utility summary for an oil and gas processing plant.

#### BANAGAS, LPG Feasibility Study, Bahrain

Responsible for gas refrigeration HYSYS simulation. Conducted pipeline simulation in PIPESIM and pump sizing. Performed project economic analysis and PFD modification.

# Previous Experience

## Process Engineer, Circor Energy, 2008-2011

Responsible for the provision of process knowledge to managers, project personnel, clients and third parties. Produced reports, detailed plans, and procedures. Developed and commercialized a pipeline on-line monitoring system which enables detection of blockages and leaks in live subsea pipelines. Conducted JIP projects with universities and industrial clients, and mentored young engineers working towards professional status.

## Earlier experience, 1999 to 2008

The University of Manchester, 2006 to 2008 –R&D Engineer

The University of Nottingham, 2002 to 2006 – Research Assistant

Beijing Oriental Jicheng Company, Ltd., 1999 to 2002 – Process Engineer

# Qualifications

## Education

Doctor of Philosophy (Ph.D.), Chemical and Environmental Engineering, University of Nottingham, UK

Bachelor of Engineering, Processing Engineering, University of Science and Technology, Beijing

## Certifications / Licenses

Licensed Professional Engineer, Texas (#118804)

Chartered Engineer, Engineering Council, UK