



Education

- **Polytechnique Montreal, Montreal, QC, Canada** (Dec.2018-Present)
Ph.D. Candidate, Department of Chemical Engineering
- **Faculty of Engineering – Cairo University** (Oct.2014 – Nov.2016)
M.Sc. Degree, Department of Chemical Engineering
Thesis: “Optimization of a Saturated Gas Plant: Meticulous Simulation-Based Optimization– A Case Study”
- **Faculty of Engineering – Cairo University** (Sept.2007 – Jul. 2012)
B.Sc. Degree, Department of Chemical Engineering
Thesis: “Maximization of Ethane Recovery from Western Desert Gas Plant in GASCO Plant”

Research Interests

- Process Design, Development and Optimization.
- Steady State and Dynamic Simulation.
- Chemical Reaction Engineering.
- Waste Water Treatment.
- Process Heat Integration.
- Safety Studies.
- Flow assurance.

Professional Experience

- **(ODE) OFFSHORE DESIGN ENGINEERING LIMITED / (DORIS GROUP COMPANY),** Process Design **June 2018–Dec. 2018**
Egypt Engineer
- **(ENPPI) ENGINEERING FOR THE PETROLEUM AND PROCESS INDUSTRIES,** Process Design **June 2017–Dec. 2018**
Egypt, KSA. Engineer
- **WORLEYPARSONS** Process Design **April 2013–April 2017**
Egypt, Bahrain Engineer

Research Background

Master Thesis: The purpose of this thesis is to develop a simulation-based design optimization framework for the sake of optimizing operating conditions for an entire saturated gas plant; as a case study that will be established in a certain oil refinery plant in Egypt, to produce LPG and stabilized naphtha. The computational black box is Aspen HYSYS, and the optimization process uses global optimization algorithms built-in MATLAB. The remarkable challenge in this thesis is how to handle a large number of continuous constraints and variables in a successful way without deviation on the feasible solution. Eventually, the proposed methodology reveals effectiveness and reliability through standing on

the optimum operating conditions to the plant. These sorts of research areas pertaining to decision-making tools that deal with the areas of optimization algorithms, automation processes, simulation, and modeling have a high demanded- research nowadays which can save the cost and time to make a decision.

Graduation Project: The project is considered as a revamp project at Alexandria city where GASCO had a maximization plant with ethane recovery 80%. Modifications are conducted to raise ethane recovery more than the ones in the original plant. Parameters of interest, such as: residue recycle, ethane recovery with cryogenic compressor, lean reflux process, overhead cooling and reflux splitting ratio are optimized through multiple configurations to determine the most reliable configuration in terms of maximum ethane recovery and minimum power consumption.

Professional Background

- Developing technical reports (i.e. process design basis, dynamic & steady state simulation report, feasibility study endorsement report, sweetening technologies selection study, dehydration technologies selection study, gap analysis studies and feasibility studies).
- Developing block flow diagram, process flow diagram couples with material & heat balance and P&IDs.
- Building steady state & dynamic HYSYS simulation models from scratch and assessing the existing process equipment based on the new operating envelopes.
- Participating in invitation to bid (ITB) packages, technical bid evaluation (TBE), package specifications / MRQ / MRP / vendor print as a package originator and philosophies (i.e. drain, isolation, shutdown and design pressure and temperature philosophies).
- Developing process data sheets and process calculations (i.e. hydraulic calculations, line sizing, separator & tank sizing, control valve & PSV sizing and pump sizing) using WorleyParsons calculation sheets and guidelines, standards and codes.
- Participating in hazard and operability (HAZOP) study and hazard and identification (HAZID) meetings as a scribe and facilitator.
- Developing fire water calculation demand report and fire water hydraulic calculation report, preparing firewater system P&IDs and datasheets for deluge valve and spray nozzles.
- Getting acquainted with several design codes such as (API 14E, API 521 RP, API 14 C, API 12J, NFPA, ISA, SAES, Shell Dep. etc.), in addition to all Worley Parsons guidelines.

Collaborations / Worley Parsons, ENPPI & ODE (DORIS GROUP COMPANY) Projects

- **PERENCO-** HYSYS Depressurization Debottlenecking Study for Finger Type Slug Catcher
- **SHELL / RASHPETCO-** Liquid Handling Project “Dynamic Simulation Study using HYSYS”
- **ARAMCO-** Yanpu Waste Water Treatment Plant
- **ARAMCO-** Sulfate Removal Facilities using NANOFILTRATION MEMBRANES- Detailed Phase
- **ASORC-** Naphtha Complex Refinery Plant and Offsite Facilities.
- **SUDAPET-** LPG Extraction Project- Appraise, Select, Define and Feed Phase.
- **RWE-** Disouq Trunk Line Development - Detailed Engineering.
- **LUKOIL-** YAMAMA Formation Development Feed West Qurna 2 Project.
- **PETROZNIEMA-** Oil Offshore Development- Engineering, Procurement & Construction (EPC) Phase.
- **ADES-** MOPU (Mobile Offshore Production Unit) Oil Processing Facilities Design Verification - Detailed Engineering.
- **Abu Qir Petroleum Co. –** Tie-in Study for Condensate Flash Drum and Condensate Re-boiler – Detailed Engineering
- **MIDOR / Technip–** Midor Refinery Expansions- Detailed Phase
- **PetroDara / TransGlobe Energy-** Water Injection Plant- Pre-Conceptual Study.
- **Abu Qir Petroleum Co. –** Flare & Blowdown for Meadia Onshore Gas Plant- Technical Study.
- **SOPC-** Coker Complex and Rehabilitation- AS-built Study.