

Selected refining projects include:

- Capacity Evaluations
- Unit Debottlenecking
- Fractionation Upgrade Design
- Unit Simulation and Modeling
- Energy Usage Improvements
- Flare Header Studies
- Relief Valve Sizing
- Process Design for New Technology Deployment
- Turn-Around Assistance and much more...

PROCESS has experience with a variety of refinery processes. Examples of some of these processes include:

- | | |
|---------------------------|-----------------------|
| Crude Units | Coking |
| Vacuum Distillation Units | Hydrocracking |
| Hydrotreating | Alkylation Units |
| Isomerization | Product Fractionation |
| Fluid Catalytic Cracking | Amine Treating |
| Reforming | Sulfur Recovery |
| | Flare/Relief Systems |
| | Sour Water Stripping |

PROCESS is available to perform work for clients in most parts of the world. We have over 40 chemical process engineers on staff and have completed projects for clients in North America, South America, Australia, Europe, the Middle East, India and China.

PROCESS is flexible and is set up to perform any type of process engineering work, from optimization studies to new equipment process specifications. All work completed provides the client with high quality, economical solutions regardless of project size.



PROCESS

ENGINEERING ASSOCIATES, LLC

Excellence in Applied Chemical Engineering

For more information about our qualifications, experience, and staff, visit our website at:

www.ProcessEngr.com

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Process Engineering for:
Refining
Petrochemicals
Specialty Chemicals
Commodity Chemicals

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Process Engineering

Process Engineering Associates, LLC (PROCESS) has experience in providing a wide range of process engineering services, including:

Process Design

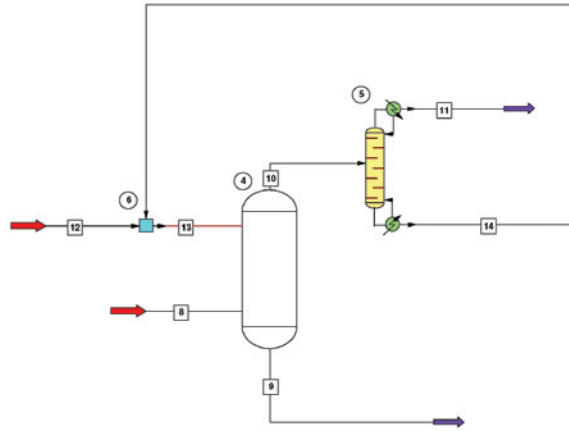
- Process design basis development
- Process simulation and modeling
- Mass and energy balances
- Process alternative evaluations
- Conceptual Process Design (Front End Engineering Design)
- Basic Engineering Packages
- Vendor proposal evaluations

Complete Process Design Package Preparation

- Design basis
- Alternatives evaluation/feasibility studies
- Mass and energy balance
- Process simulations
- Process flow diagrams
- Process control diagrams
- Capital cost estimates
- Operating cost estimates
- Equipment specifications
- Piping and instrument diagrams



Process Modeling and Simulation



PROCESS uses licensed commercial process simulation software and in-house simulation programs to perform:

- Detailed mass and energy balances
- Unit operation design/evaluation
- Piping system hydraulics calculations
- Relief and flare system design/evaluation

On-Site Services

- Commissioning and startup
- Process evaluation, troubleshooting and optimization
- Debottlenecking
- Operating procedures and process documentation development
- Operator training
- Statistical process control

Additional Capabilities

- Relief valve sizing
- Flare loading studies

Process Safety Services

PROCESS offers the full spectrum of process safety services including:

- Conducting Process Hazards Analyses (PHAs)
- Developing process safety programs
- Developing various process safety information including relief valve sizing, process documentation, etc.
- Conducting Process Safety Audits
- Safety Integrity Level (SIL) Analysis
- Layer of Protection Analysis (LOPA)
- Performing Hazard Assessments (HAZOPs)
- Process Safety Training Courses



Overall Process Oversight

PROCESS has the specialized knowledge to oversee your entire project from a process point of view. We work with detail engineering and fabrication companies that can provide a turn-key project to meet your needs. PROCESS provides oversight of projects from conception through startup to ensure that the process design is not jeopardized. With Process Engineering Associates' process design package and process project oversight, you will receive an operationally effective installation.