

Coker Revamp Studies provide the following for coking units:

- Coker Drum Replacement Analysis
- Drum Cycle Time Recommendation
- Current Capacity Evaluations
- Unit Simulation and Modeling
- Debottlenecking Opportunities
- Tiered Upgrade Options
- Cost Estimates
- Safety Reviews / PHA / Interlocks
- Project Execution Plan
- Long-term Process Oversight of Revamp Projects and/or Drum Replacement
- Troubleshooting Services

PROCESS and **APMI** have an excellent background for Coker Revamp Studies:

- Managed coker revamps, coke drum replacements, unheading system upgrades
- Independent analysis not motivated by vendors or detail engineering/construction
- Open art technology
- Chemical engineering staff averaging over 15 years experience
- Over 40 Chemical Engineers on staff
- In-house process safety experts

PROCESS and **APMI** are available to perform coker optimization work for clients in most parts of the world (past experience in North America, South America, Australia, Europe, the Middle East, India and China). Typical studies are completed within 6 months. Reports include all calculations, analysis, and supporting information needed to decide the best path forward in the near term and longer term.

PROCESS

ENGINEERING ASSOCIATES, LLC

Excellence in Applied Chemical Engineering

PROCESS ENGINEERING ASSOCIATES, LLC

700 South Illinois Avenue

Suite A-202

Oak Ridge, Tennessee 37830

United States of America

Phone: (865) 220 8722

Fax: (865) 220 8729

Email: info@processengr.com

APMI

ADAMS PROJECT MANAGERS, INC.

"Providers of Refinery Project Development, FEL and Revamp Expertise"

14162 W. 142nd Street

Olathe, Kansas, USA, 66062

Phone: (913) 390 9006

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

www.ProcessEngr.com/coker.html

or

www.CokerDNA.com

PROCESS

ENGINEERING ASSOCIATES, LLC

Excellence in Applied Chemical Engineering



Refinery & Coker Upgrade Services

Coker Modernization

Coker Optimization

Coke Drum Replacement Planning

Chemical (Process) Engineering

Project Management

APMI

ADAMS PROJECT MANAGERS, INC.

Our Coking Services Team

Process Engineering Associates (**PROCESS**) and Adams Project Managers, Inc. (**APMI**) are working together to provide Coker Unit Revamp Studies. Our analysis approach provides a systematic review of the refiner's coker unit and coke drum replacement options, including process simulations, FEL cost estimates, economics, and recommendations.

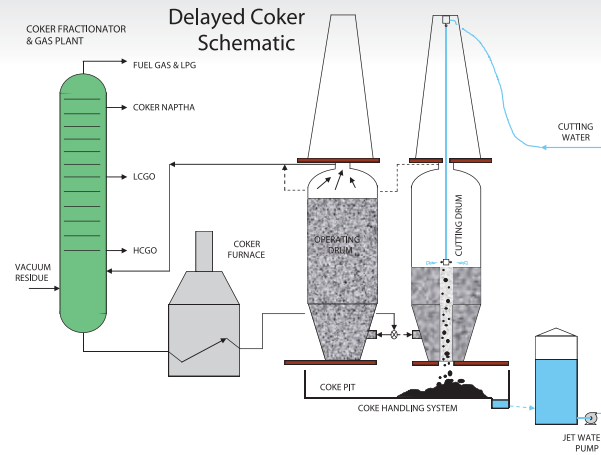
PROCESS and **APMI** provide expert process engineering capability and hands-on coker benchmarking, coke drum replacement, and coker revamp experience.

PROCESS has expertise providing a wide range of process engineering services, including:

- Process Design
- Process Modeling and Simulation
- Process Related Construction Oversight
- Commissioning and Startup Assistance
- Process Safety Services

APMI has expertise in project development and project management for coker and refining revamp and grassroots units. Services include:

- Coker Revamp and Modernization
- Coke Drum Replacement
- Capital Project Management
- Open Art Coker Analysis
- Technology Licensor Selection
- Refinery Unit Revamps
- Grassroots Refinery Planning and Permitting



Analysis of Existing Coker Operations

- Coke drum replacement options, cycle time, deheading device options
- Unit simulation, capacity study
- Heater design, on-line spalling
- Fractionator design
- Vacuum unit rundown
- Transfer line
- Jet water pump and coke cutting
- Coke handling and movement
- Compressor capability
- Piping size analysis



Coker Analysis and Study Report

After completing the on-site review of the existing coker operations, the coker system will be simulated using commercial simulation software. Improvements, changes, and other operating scenarios will be analyzed. Benchmarking will be done relative to best available current practices.

A report will be developed that will act as a road map to improve operations and maximize efficiencies. A typical report contains the following at a minimum:

- Refiner's objectives
- Existing coker review results
- Simulation outputs
- Operating scenario analysis
- Recommendations for improving economics
- Expected results for each recommended action
- A refinery specific timeline based on coke drum change outs and expected capital availability

Implementing Coker Improvements

APMI and **PROCESS** will continue to support your coker improvement efforts after the revamp plan has been developed. Independent oversight of coker modifications, project management during detailed engineering and implementation, upstream/downstream process design and optimization, and process safety services are just a few of the services that help to make your coker unit modernization/revamp successful.

Our goal is for your coker to operate safely and efficiently to maximize profitability.