

Process Capabilities

Consulting

Studies

Troubleshooting

Debottlenecking Assessments

Factored Cost Estimates

Utilities Systems & Energy Analysis

Control System Evaluation

Process Engineering

Process Design

Heat & Material Balances

Process Simulation & Modeling

- AspenPlus and ChemCAD

Process Flow Diagrams (PFDs)

Piping & Instrument Diagrams (P&IDs)

Hydraulic Systems Modeling

Equipment Sizing & Specifications

Other Services

Pressure Relief Device (PRD) Sizing & Analysis (including DIERS technology)

Environmental Emissions Calculations

Safety Assessments

Start-up Assistance

Chemical Processing Expertise

1. Batch Reactor Design & Modeling

- a. Rigorous unsteady state analysis incorporating reaction kinetics, mass transfer and heat transfer
- b. Jacket / Internal Coil heat transfer systems
- c. Conventional steel & glass-lined reactors
- d. Examples
 - Ethoxylation reactor modeling accompanied by high heat release and inter-phase mass transfer.
 - Organic synthesis glass-lined reactor modeling involving synthesis, stripping, and precipitation.

2. Chemical Separations & Recovery

- a. Batch & continuous distillation columns
- b. Absorber columns
- c. Stripping (vacuum assist, steam and nitrogen)
- d. Condensers (total and partial)
- e. Product recovery by precipitation, filtration and centrifugation
- f. Examples
 - MeCl₂ recovery from organic stream incorporating absorber and distillation columns.
 - Distillation columns dechoke involving revamp of two columns with new high capacity internals, pumps, piping and controls.

3. Other

- a. Batch & continuous polymerizations
- b. Heat exchanger sizing & modeling
- c. Solids processing (i.e. calcination, conveying, etc.)
- d. Pollution abatement technologies

Education/Professional Affiliations

B.S. Chemical Engineering, Michigan State University, 1985
Professional Engineer, South Carolina, License No. 16596
American Institute of Chemical Engineers (AIChE)
Design Institute for Emergency Relief Systems (DIERS)
Chemical Consultants Network (CCN)

Rankin Chemical Technologies, Inc.

11448 Highway 76 W, Gray Court, SC 29645

Phone: 864-414-8945 (mobile)

E-mail: greg@rankinchemicaltech.com

Web: www.rankinchemicaltech.com



**Expert chemical engineering,
consulting and process design**