



TCC AND HOUDRY UNIT ENGINEERING SERVICES

EXPERIENCE COUNTS: The pool of experienced talent to supply engineering services for your TCC or Houdry Unit is rapidly diminishing. Why rely on guesswork and adapted technology when you can use Carmagen Engineering's consultants who have trained on these types of units and can provide the technical service, design, and operating support that you require.

<p>SERVICES AVAILABLE:</p>	<ul style="list-style-type: none"> • Process Engineering and Design for Catalytic Section, Fractionator (Syn Tower), and Unsaturated Gas Plant • Unit Surveys, including: <ul style="list-style-type: none"> – Yield Study – Energy Study – Operations and Equipment Reliability Study • Start-up Assistance • Operator and Technical Training <div style="border: 1px solid black; padding: 5px; display: inline-block; margin-top: 10px;"> 30 + YEARS OF EXPERIENCE WITH MAJOR INTEGRATED REFINERS </div>
<p>PROJECT ARRANGEMENTS:</p>	<ul style="list-style-type: none"> • Staffing Options: <ul style="list-style-type: none"> – Carmagen Consultants only – Carmagen Consultants working with Client's Staff • Location: <ul style="list-style-type: none"> – On-site at Client's Facilities – At Carmagen Facilities • Project Deliverables depend on Client's needs and can vary from a simple memorandum to a "Schedule C" type package
<p>BENEFITS:</p>	<ul style="list-style-type: none"> • Unit Performance Enhancements (Depending on Project Objectives): <ul style="list-style-type: none"> – Increased yield selectivity – Less product downgrading – Reduced catalyst usage due to attrition, carry-over to Fractionator and/or deactivation – Reduced energy consumption – Improved reliability and on-stream factor • Optimized capital spending plans • Very high benefit to cost ratio

INTERESTED? Carmagen's staff of over 180 skilled specialists in all Process, Non-Process (Equipment), and Project Management disciplines is available to support client's implementation plans.

Contact Jerry Lacatena at Carmagen Engineering, Inc. to discuss your needs.

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 Telephone: 973-627-4455 • Fax: 973-627-3133

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Plant Operations Support

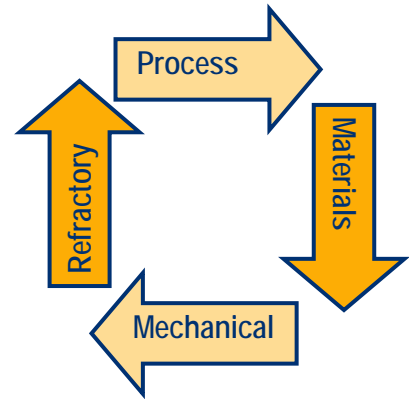
Process - FCC/TCC



FLUIDIZED-SOLIDS UNIT TEAM

Our Fluidized-Solids Unit Team has the range of skills needed to address all issues in this complex technology.

Meet the principal members of our Fluidized-Solids Unit Team:



Don Shaw is our lead mechanical engineer specializing in fluidized-solids units. He has more than 35 years experience, with special expertise in the design, startup, maintenance, troubleshooting, and repair of fixed equipment (including vessel internals) and piping systems in fluidized-solids units.

Bruce Artuso is our FCCU process expert. He has over 47 years experience in the process design, startup, operations, operator training, and troubleshooting of FCCUs. Bruce's skill and experience enable him to develop operating methods that increase unit throughput and run length and that avoid unscheduled shutdowns.

Rich Walter has over 35 years of FCCU process engineering experience. His areas of expertise include unit design, startup, operations, troubleshooting, and unit optimization. Rich has participated in process improvement evaluation studies involving unit equipment constraints, alternative equipment or operating procedures required to meet objectives, and development of incentives for project justification.

Frank Buyan has over 35 years of FCCU process engineering experience. Primary areas of his expertise are the process design, startup, operations, troubleshooting, and licensing of FCCUs. He has conducted training seminars for refinery technical and operating staff, and has also helped bring new FCCU technology to market.

Profit Improvement

Bring our Fluidized-Solids Unit Team onboard for your next project or troubleshooting assignment to get:

- Improved unit design details and maintenance procedures
- Improved operation leading to extended run length and increased throughput
- Directed engineering quality control on new construction for Owners and Contractors



You'll get the coordinated efforts of top-of-the-line process design, heat transfer, materials, and safety specialists.

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Profit Improvement