FLUID QUIP TECHNOLOGIES

ENGINEERING SOLUTIONS

The Fluid Quip Technologies (FQT) team of over 25 chemical and mechanical engineers bring decades of experience in ethanol plant design and operations to our customers. The team's unique skill sets allow them to provide insights and guidance on process improvements, optimization, and best-practices based on real-world experience. The FQT engineering and design teams can provide process optimizations, integrate technologies, lower CI, and design state-of-the-art greenfield biofuel and biochemical facilities.

FQT's engineers have extensive experience in all major base ethanol technology platforms bringing knowledge and integration know-how to every project performed. FQT looks to maximize base plant operations and offers full turn-key project solutions to meet customer goals. FQT's robust engineering process helps customers to evaluate options and provide true ROI for management to implement successful strategies.

PROCESS STUDIES

- Process Optimization
- Mass and Energy Balances
- Distillation Optimization
- Boiler Debottlenecking
- Dryer Optimizations

LOW CARBON ENERGY SOLUTIONS

- Low Energy Distillation (LED)
- CHP
- Anaerobic Digestion Systems
- Greenfield Ethanol Plants

PLANT EXPANSIONS

- Boilers
- Fermentation
- Distillation
- Dehydration
- Evaporation
- Scrubbers
- Dryers

ENGINEERING/FEASIBILITY STUDIES

- Synthetic Biochem
- Biomaterials
- Synthetic Biology
- Synthetic Protein
- Anaerobic and Aerobic Fermentation
- Facilities Design, *scale up solutions*

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Contact FQT engineers today!

PROCESS OPTIMIZATION STUDY SUMMARY

Fluid Quip Technologies' engineers deliver detailed reports with robust data when performing an optimization study. The teams use chem CAD modeling in the optimization study to provide functional information plants can continue to use year in and year out. The living model can be continually updated as improvements are being made within the plant.

PROJECT DETAILS

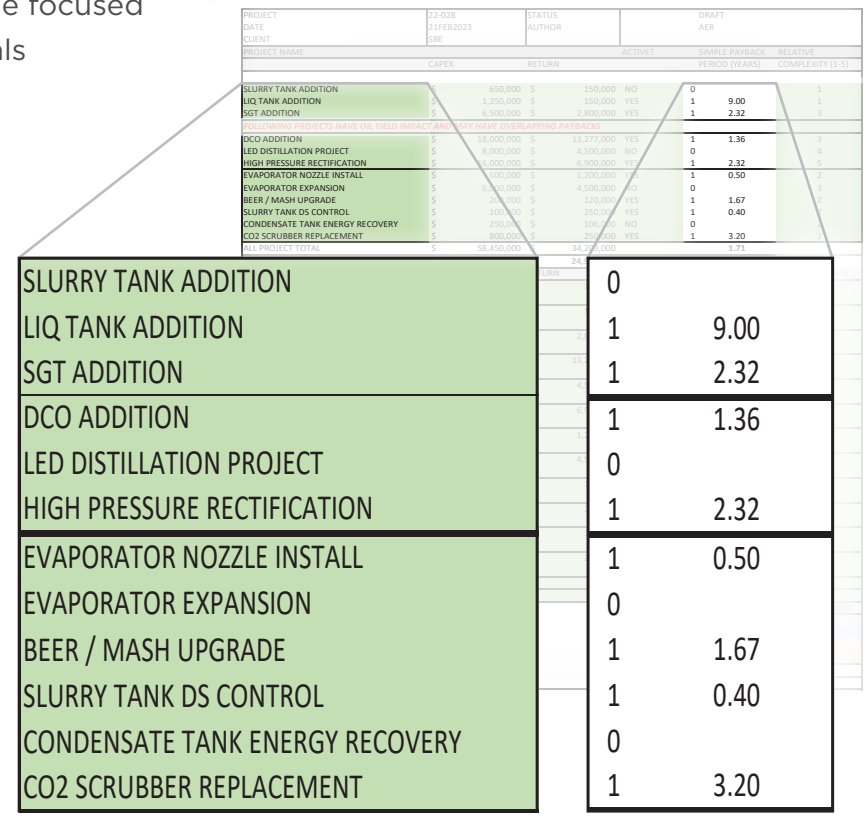
- Studies can be tailored to focus on energy optimization and incremental grind improvements
- Overall site mass balances are completed to check for equipment bottlenecks throughout the plant
- Operating metrics such as temperatures and flows are collected for use in energy/ optimization reviews
- FQT studies involve regular client check-ins to ensure the team is crafting the focused solution based on customer goals

CAPEX VS. OPEX

- FQT provides analysis to compare CAPEX vs. OPEX solutions
- All studies are custom to plant size and run rates, providing true ROI

FULL PLANT BENEFITS

Customers can utilize studies to make incremental grind increases, decreasing unit energy usage. FQT can assist with options for future expansions and a 5-year plant strategy.



Project List	ROI
SLURRY TANK ADDITION	0
LIQ TANK ADDITION	1 9.00
SGT ADDITION	1 2.32
DCO ADDITION	1 1.36
LED DISTILLATION PROJECT	0
HIGH PRESSURE RECTIFICATION	1 2.32
EVAPORATOR NOZZLE INSTALL	1 0.50
EVAPORATOR EXPANSION	0
BEER / MASH UPGRADE	1 1.67
SLURRY TANK DS CONTROL	1 0.40
CONDENSATE TANK ENERGY RECOVERY	0
CO2 SCRUBBER REPLACEMENT	1 3.20

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