

# Reducing the Desalter Environmental Impact

PERF Project 2004-06

COQG Houston  
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# PERF

- Petroleum Environmental Research Forum
- Formed by USA oil companies in 1986 to promote co-operative research in EH&S areas
- PERF acts as a information source for projects
- Projects are stand-alone, financed, owned and operated by the participants
- Projects can be \$100k to \$3M+
- Usually 5 – 10 projects active
- Project info available at [www.perf.org](http://www.perf.org)



# PERF 91-14

- “Reducing the Desalter Environmental Impact”
- Completed in 1993
- Participants included Amoco, Arco, BP, Chevron, Exxon, Mobil, Petro-Canada, Phillips, Shell and Texaco
- 3 phases:
  1. Desalter survey of issues
  2. Review of technologies to address issues
  3. Field testing of selected technologies



# PERF 91-14 (Continued)

- Main issue addressed was emulsion breaking
- Technologies reviewed were Hydrocyclone, V-sep, and Unipure combination
- Technology field tested was Unipure
- Test technically a success but Unipure failed as a commercial venture
- Project led to spin-off projects studying emulsion fundamentals



# PERF 2004-06

- Update of 91-14
- Tighter environmental regs, heavier crudes, higher thruputs
- 12 more years of experience
- Look at updated technology both hardware, software and chemical solutions to handle emulsions and solids
- Include desalter in context
  - Crude quality and management issues
  - Desalter operation
  - Desalted crude issues
- Use Heavy Canadian crude as surrogate heavy crude
- Results generic for heavy crudes

# Notes

- Desalter generated issues can have a significant impact throughout the refinery – both crude and wastewater
- Desalter issues can limit crude thruput and/or crude slate optimization
- Many different operating philosophies and results – even with the same crudes and similar equipment
- Best practice review can optimize current asset base
- Lessons learned can avoid spending capex on low value projects
- Industry group can test new technology collectively at reduced cost and risk
- Larger talent pool available to vet testing protocol

# More notes

- Refinery visits provide the opportunity for a much fuller understanding of operating issues, Lessons Learned and Best Practices than a mailed-in paper or telephone survey
- Refineries being surveyed on-site would cover out of pocket expenses for the surveyor, but the project would cover professional service time
- Results will be shared but blinded
- Some non-refiner participants may wish to make in-kind contributions especially in the testing phase



# Project Scope

- Proceed with two phases
- First phase is combination of refinery survey of issues and update of potential solutions including:
  - New hardware
  - New chemistries
  - Improved operating practices
- Second phase will be field testing of the selected option(s)



# Project Timing

- Phase 1 – Complete by Q3 2006
- Phase 2 – Complete by Q1 2007



# Project Costs

- Project costs will be determined by the project scope and the number of participants.
- Normally costs are shared equally, but may include in-kind contributions
- Phase 1 estimate - \$50K per participant
  - Assuming 6 participants
- Phase 2 estimate TBD – need scope and location



# Deliverables

- Ideally – technology options to desalt heavy crudes so that the desalter operation does not have a negative impact on the refinery either through high salts in crude, emulsion and solids management or desalter brine constraints
- This would include hardware, chemical and best practice options as well as lessons learned
- Refineries will not have identical desalting solutions, but should be able to select from a common set of options



# Questions/Discussion



# Contact

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