Engineering Consulting & Training Services

CARMAGEN Engineering, Inc.

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Top Ways a Refinery Can Use to Help Weather Current Market Conditions

What are the top ways a refinery can use to help weather current market conditions is a question we posed to our 160+ engineers. This is the next article in the series which includes responses from several different authors.

Scott Massenzio

- Improve energy efficiency and integration, fix steam leaks, repair bad insulation, etc.
- Enhance synergies/feedstock transfers between refining and chemical plants where there are integrated refining and chemical plants at one site.
- Extend turnarounds as much as practical.
- Optimize unit operations/operating conditions to strive for maximum yields/qualities of most valuable product(s).
- Exchange intermediate products among sites for better product upgrade if this is possible with a refiner with multiple sites.
- Avoid upsets and feed cutbacks/outages by enhanced in-house training.
- Purchase lowest priced crudes available that can be run at your site without additional/ excessive operating costs.

Robert Petrie

- Practice “opportunistic” crude buying, e.g., lower quality crudes, assuming that the refinery is designed or is judged to be able, to handle same, or “discounted” crudes, discounted for whatever reason.
- Revisit and critically review maintenance schedules, extending maintenance work where justified by past experience.
- Review of past shutdown causes, chronic or acute, and focus on their elimination.
- Run a “productivity improvement” contest among workers – giving the winner (based on proven improvements) an extra week vacation or cash or whatever. (Be sure that workers do not fabricate problems – and then solve them!)

Upcoming Training Courses

- *API 510 Pressure Vessel Inspection*
  September 12-14, 2017
  Fort Erie, Ontario, Canada
- *API 936 Refractory Inspection & Code*
  October 24-26, 2017
  Fort Erie, Ontario, Canada

For more information, see our website at www.carmagen.com.

Work Highlights

Flexicoking

- *Provided a foreign refiner with technical assistance as a third-party technical advisory and part of a team addressing client’s issues/ claims. Participated in ongoing confidential activities with outside organizations, reviewed internal technical documents, and composed technical reports.*

Process Development

- *Provided process development and design support for a paraffinic froth treatment pilot plant, plus some process operations monitoring.*

Project Management

- *Provided a project management specialist to lead and coordinate the work of the Owner’s team in converting an EPC’s Reimbursable Cost contract for a major Canadian project to Lump Sum. This was a full time effort that involved recommending optimal conversion time, identifying/developing missing rates from the existing contract, finalizing activities to be included in the Lump Sum contract, recommending appropriate allowances and contingency to be used in the Lump Sum price, and negotiating the terms of the Lump Sum contract.*

Walt Lambertin

It's tempting in difficult times to cut maintenance costs, but before you establish arbitrary cuts establish:

- Risk based work justification process to insure high priority maintenance work is addressed.
- Run length extension studies may allow deferral of scheduled turnarounds.
- Systematic analysis of bad actors could minimize repetitive maintenance issues.
- Focus on online inspection activities to forecast future maintenance needs.
- Have your technical organization identify energy conservation procedures which do not require maintenance expenses or capital expenditures.
- Ensure that your process, maintenance, and technical personnel are committed to achieving cost reduction target while preserving safety and reliability objectives.

Preston Bemis

- Pay attention to safety. Ensure programs in place to cultivate and maintain a safety mentality from top to bottom of the company chain. Accidents are expensive.
- Dust off those low cost efficiency and cost reduction projects and programs which may have been put aside when operations were at capacity, or were integrated with planned major projects which are now delayed.
- Look at refinery processes to develop plans/procedures to improve yields of most valuable products. This would include catalysts and crude mix quality changes to better capture seasonality in markets or to avoid overproduction of one product (naphtha is a problem in parts of Europe as diesel is in high demand).
- Develop opportunities with competitors to improve product slate through trading or utilization of spare process capacity to improve each party's product mix.

About the Authors

Scott Massenzio has over 37 years of process engineering experience with ExxonMobil Research & Engineering (EMRE) Company in various core petroleum refining technologies, such as hydrotreating, hydrocracking, gas treating, sulfur recovery, catalytic cracking, and residuum conversion.

Robert Petrie has a wide range of experience ranging across crude oil processing, gas/LPG processing, refinery engineering, project design management in all three areas, environmental engineering, incident investigation and analysis, and loss prevention and corrosion/metallurgy/welding.

Walter Lambertin has over 40 years experience in refinery technical support positions in the maintenance, mechanical, and materials engineering areas. He has extensive experience in refinery technical organization, mechanical and technical procedures, reliability and maintenance programs, and cost effective work practices.

Preston Bemis has over 40 years of international experience in all aspects of refining activities, including refinery management (process, technical, operations), project management, energy management, oil-loss, reliability and maintenance, and turnaround coordination.

Please contact Vince Carucci (vcarucci@carmagen.com) if you'd like more information on Carmagen's expertise in these areas.