

Refinery Economics: A Time of Uncertainty

As the economic spiral that began toward the end of 2008 continues into 2009, demand for refined products is on a decline. Refinery and technology companies are dealing with these events in a variety of ways and trying to look on the bright side.

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Although crude prices are far lower than 2008 figures, they are slowly rising with press-time statistics hovering around US\$36/bbl. Gasoline prices are on the rise with the U.S. national average of \$1.966 for regular unleaded grade vs. \$1.816 a month ago, according to Feb. 15, 2009, statistics from American Automobile Association's Fuel Gauge Report, a media site for retail gasoline prices with data provided by Oil Price Information Service in cooperation with Wright Express. This figure is way down compared with \$2.996 a year ago, according to the site.



The national average price of diesel fuel continues to fall with Feb. 11 statistics from the Energy Information Administration price recording 221.9 cents per gal. This figure is 106.1 cents below a year ago and 254.5 cents below the all-time high from July 14, 2008.

There is a variance in reasoning about how this is affecting refiners. Along with the price drop comes a demand drop, but whether a refiner can take advantage of the increased margin depends on which products the company is equipped to process.

"Looking at market conditions for the coming year, the sluggish economy is clearly a headwind against demand growth for refined products," Valero's Chief Executive Officer Bill Klesse said in the company's fourth quarter earning's release. "To help stabilize margins, refiners must continue to use discipline in matching production with demand. At Valero, we are managing our run rates according to market demand."

Valero declined to provide more recent information.

Analysts and economists joined top-level company representatives during the Cambridge Energy Research Associates (CERA) weeklong meeting known as CERAWEEK in Houston, Texas, in early February.

While some speakers presented the economy in not so gloomy a light as they discussed ways in which their operations are becoming more cost-effective and efficient, the overall message was one of caution.

According to a press release IHS issued after the event, a deepening economic crisis could occur if the banking system is not fixed.



Former chief economist at the International Monetary Fund, Kenneth Rogoff, who currently is professor of economics and public health at Harvard University, in the press release described the current recession as “a once in a 50-year event,” noting that basically this year is a write off but that “I’m ‘constructive’ about 2010 in that we’ll have tepid growth in the world economy. It’s unusual for a recession to last more than two years. However, it will be very slow coming out of it. The big growth will be in some of the emerging markets. It’s the developed countries where the biggest hurt is occurring.”

Even though the \$790 billion stimulus bill had just been agreed to, it is a temporary fix, Rogoff said in the release.

“It’s like giving a blood transfusion while the patient is still bleeding,” he said. “If we’re not going to fix the banking system at the same time, then it’s just a temporary boost in the economy. We have simply not taken the proper decisive action with the banks.”

Supply, Demand

In fourth quarter 2008, demand and price for diesel dropped more slowly than that of gasoline. As a result, European refiners, in general terms, tended to perform better.

A year ago, refiners were cutting runs because of high crude prices and refinery margins were not economical. While margins are better now, refiners are cutting runs because of reduced demand for refined products.

In the United States this has become especially true as crude has become so oversupplied the West Texas Intermediate (WTI) crude price has disconnected from other international benchmarks.

“Sharply lower oil demand, rising Canadian crude oil flows into the region and swelling crude inventories at storage tanks in Cushing [Oklahoma] have collectively exerted enormous downward pressure on prompt month WTI prices and turned upside down tradition pricing relationships with domestic and foreign crudes,” according to the International Energy Agency’s Oil Market Report in mid-February.

“Volatile WTI is sending mixed and misleading price signals not only to the market, but to economic forecasters, government officials and policymakers ...

“The WTI-Brent price spread, typically positive to the tune of between \$1.50/bbl and \$2.50 overturned in early December,” according to the report.

Refineries tend to cut back part of their operations during the first couple of months of the year before gasoline usage increases and while attention has been moved from heating oil. Peak seasons tend to be the spring and summer months, as gasoline use generally increases with anticipated travels.

According to the U.S. Department of Energy, the nation’s gasoline stockpiles fell by 2.66 million bbl in mid-February from early February as refineries cut production nearly two percentage points. In early February, gasoline inventories were 217.6 million bbl, 5% below year-earlier levels, according to the organization, and refinery use fell to nearly 82% of capacity in early February from 85% a year earlier.

Diagnostics

“Refineries are using this low-demand period to perform overdue maintenance,” Addison Armstrong, director of market research at Tradition Energy in Stamford, Connecticut, was quoted as saying in a recent article on Bloomberg.com.

SmartSignal, an information technology company with systems in eight refineries, more than 300 power plants and 2,000 in-flight jet engines, provides real-time insight into critical equipment operations to help prevent unplanned downtime. Since crude prices have dropped, company representatives have observed some business challenges.

“The current economic situation is causing people to look for ways to defer capital costs and maintenance expenses,” said Steve Tonissen, vice president of marketing for SmartSignal. “This is an opportunity and a distraction.”

One of the distractions, he noted, is having to do more with less with reliability tools, which creates short-term thinking that winds up costing more in the long run.

Technology providers are adjusting their sales relative to the refinery industry in a number of ways, but SmartSignal, which is cognizant of the environment, is ready.

The company “is sensitive to the economic needs of the industries that it serves,” Tonnisen said. “We’ve instituted a pay-per-deployed-asset model that can be used on a subscription basis. It allows refineries to start with their most critical equipment at a reasonable monthly cost.”

And in times where massive layoffs, cutbacks and other budgetary restraints have been put in place, SmartSignal representatives say their technology is ideal.

The “equipment and process performance intelligence detects, diagnoses and prioritizes developing problems,” Tonnisen said. “This means lean staffs can focus on high-priority work vs. looking for needles in a haystack. Therefore, they are more productive and morale is high. The result is that equipment that needs to be fixed gets fixed before failure occurs, processes needing adjustments are adjusted, and equipment that works properly is not fixed unnecessarily.”

When asked what technology solution advice the company has for refiners, Tonnisen had this to say: “Every solution is a combination of people, process and technology ... In today’s tough times, the tendency is to hunker down and do what’s been done, but only harder. This process/people or culture needs to be faced and addressed. In the immortal words of [the Chicago Bears football] coach, Mike Ditka, ‘What got you here isn’t going to keep you here.’ In these tough times, people have to go beyond the current approaches and technologies that have run out of gas.”

Broader thinking

Going beyond current approaches and helping provide members identify solutions to everyday business challenges is part of the role the National Petrochemical & Refiners Association (NPRA) plays. The association also plays a critical role in assuring energy and economic initiatives in Washington properly recognize the role and challenges facing the refining and petrochemical industries.

“Given the challenging economic and political realities we’re facing today, NPRA provides more value than ever to its members, who need a strong voice representing them before the new administration and [U.S.] Congress,” said NPRA President Charlie Drevna. “On the wide range of topics and issues likely to be debated this year, from climate change to labor policy to taxes, it’s imperative that policymakers fully comprehend the impact their decisions will have on American businesses and, ultimately, consumers. They must recognize the vital role our domestic refining and petrochemical businesses play in growing and maintaining a strong, vibrant economy, NPRA’s Annual Meeting will focus on these issues and challenges as part of its comprehensive program, which is tailored every year to best help our member businesses continue to succeed in today’s global marketplace.”

Michael Dolan, senior vice president of Exxon Mobil Corp., said during a CERA presentation that his company is working on on-board hydrogen generation by converting carbon-based fuels to hydrogen, which are more efficient and emit 45% less CO₂ than current vehicles.

He also noted that he supports a carbon tax, which will help investments, as there are too many variables with cap-and-trade.

Representatives from BP and Shell noted they favor cap and trade more from the standpoint of unification across the globe. All the majors agreed that it is time to do something about global warming.

The fundamental question for policymakers, according to some presenters, is what the carbon fee will be to cover investments for required achievements.

There were also a number of questions posed to audience members: where does the downturn come from? "We operate long term, we want to continue. Demand will grow; there's room for all," Dolan said.

He noted 1.7% energy efficiency improvement is expected globally.

Nobuo Tanaka, executive director for the International Energy Agency noted the need to keep the focus on medium- to long-term outlooks, saying that the energy business is more optimistic than investment business.

"Investment needed for reduction in crude oil production in existing fields and is also needed for carbon dioxide reduction," he said. "The price of carbon needs to be US\$180 to be able to meet new requirements. We need an energy revolution."

Terry Higgins, executive director for refining and special studies at Hart Energy Consulting noted that the refining industry still has tough times to overcome.

"The combination of the economic downturn, emerging energy policies and scheduled expansion of global capacity will continue to place economic pressure on refining through much the next decade," Higgins said. "The outlook for refined product, particularly in the U.S. and Europe, is not as optimistic as it was in the not-too-distant past. Meanwhile, major refining expansion projects, initiated years in advance, will come on line in the near term.

He agreed that in the longer term demand will grow. Efficiency and optimization will get refiners through lean markets today while employment of the right tools and technology to meet longer term market demand and quality will be key when markets rebound.



More than 20 refineries and technology companies were contacted for inclusion in this article – more than 20 declined comment, or did not return emails and phone calls.

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