

IN CONFERENCE

What Drives the Asian Fuel Oil Market: The View from Sumitomo

This issue's "In Conference" is based on a presentation by Pearlene Tham, a trading manager at Sumitomo Corporation, at World Fuel Oil Summit VI in Malta May 9-11, 2013. The World Fuel Oil Summit VI was hosted by Enemalta Corporation and organized by Axelrod Energy Projects.

This "In Conference" examines developments in the Asian fuel oil market. After assessing Asian fuel oil supply and demand, Singapore fuel oil arbitrage and fuel oil storage are considered.

Fuel Oil Supply in Asia

Since 2008, Asia's refining capacity has grown steadily. Asia's estimated aggregate refining capacity will reach almost 40 million b/d in 2013, up from 32 million b/d as recently as 2008 (see the accompanying chart). The most notable rises in 2013 refining capacity will be seen in China (up nearly 500 kb/d) and Saudi Arabia (up 400 kb/d). By contrast, Japan's refining capacity can be expected to contract in 2013 by over 100 kb/d (see the accompanying chart).

Notwithstanding the increases in refining capacity, fuel oil supply will not necessarily increase since Asian refineries are becoming more complex. Refiners are adding more secondary units, like catalytic crackers and cokers to convert fuel oil into more valuable light products. Refiners see the potential for higher margins by turning fuel oil into light products, especially when gasoil versus fuel oil spreads are close to \$30/bbl. As a result, the Asian coker to CDU ratio has increased from 5 percent in 2008 to an estimated 7 percent in 2013. See the accompanying chart.

A coker typically converts fuel oil into naphtha, gasoil and petroleum coke, while a catalytic cracker typically converts fuel oil to gasoline. In Q1 2013, Sinopec Maoming and Mangalore Refinery and Petrochemicals installed cokers (totaling 60 kbd). In Q4 2014, Sinochem Quanzhou, Sinopec Shijiazhuang, and Saudi Aramco and Total refining and Petrochemical Co. plan to install cokers (totaling 130 kbd).

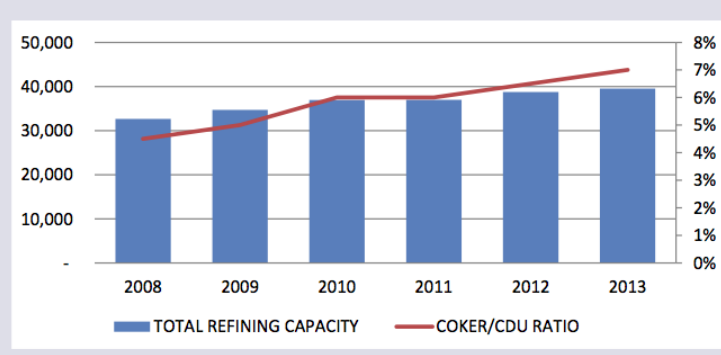
Fuel Oil Demand in Asia

With regard to Asian fuel oil demand, Japan experienced a big increase in fuel oil demand for power generation after the Fukushima nuclear disaster. Japan has compensated for the lost nuclear energy by additional use of natural gas, low sulfur crude oil, and low sulfur fuel oil. Prior to Fukushima, Japan typically exported around 250 kt to 500 kt of fuel oil per month. Post-Fukushima, Japan became a net importer of fuel oil in 2012, with net imports running 135 kt per month.

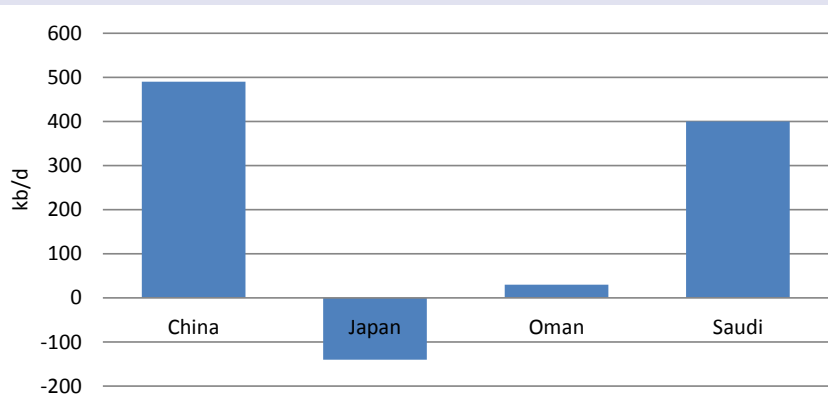
In Asia, Chinese teapots are the main source of demand for fuel oil as feedstock. In China, only state-owned oil companies can import crude oil. As such, independent refineries, also known as teapots, turn to imported straight run fuel oil as feedstock for their refineries. Teapots usually import when they see the potential for good margins, and this swing in demand affects the balance of the Asian fuel oil market. In China, net fuel oil import figures moved in a narrow band for the last 5 years, running about 13 million mt.

The biggest sector of fuel oil demand in Singapore is for bunkers. In contrast to other world markets, bunker sales in Singapore have remained relatively robust. In the first quarter 2013, Singapore bunker sales averaged 3.4 million mt per month. Singapore sales of RMK-500 have

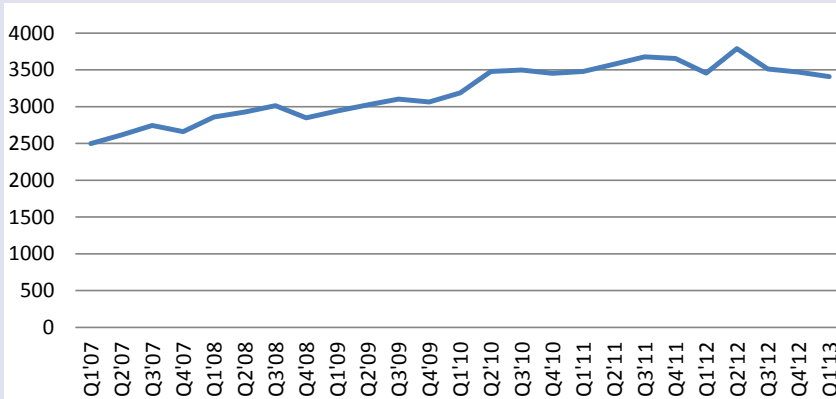
ASIA REFINING CAPACITY (KB/D AND PERCENT)



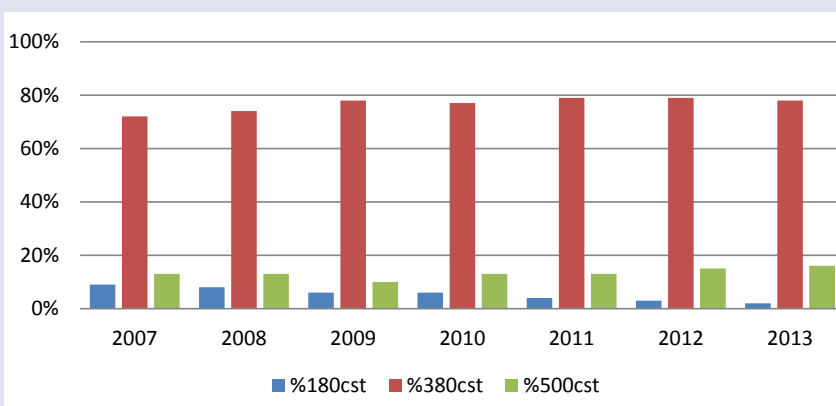
CHANGES IN REFINING CAPACITY, 2013



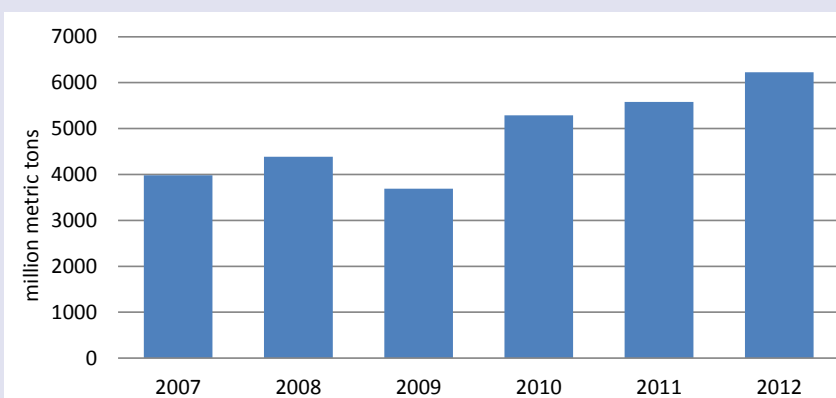
BUNKER SALES IN SINGAPORE, BY GRADE (THOUSAND METRIC TONS)



SINGAPORE BUNKER SALES, QUARTERLY AVERAGE (PERCENT)



SINGAPORE RMK-500 BUNKER SALES, ANNUAL



steadily increasing at the expense of IFO-180. On a percentage basis, sales of high viscosity bunker fuel have grown from 13 percent in 2007 to 16 percent in 2013 as revamped and newly built ships are better equipped to handle high viscosity fuel grades. In 2012, sales of RMK-500 in Singapore topped 6 million mt. See the accompanying charts.

Fuel Oil Arbitrage

To make up for the shortfall in local fuel oil supply, there has been an increase in arbitrage arrivals to Singapore. The monthly average of fuel oil arbitrage to Singapore was 4.4 million mt on average for the year 2012 compared to 3.4 million mt on average for year 2012. See the accompanying chart.

In terms of origin, the majority of fuel oil arbitrage cargoes come from the US Gulf Coast, the Caribbean, Rotterdam, and Latin America. For 2012, the breakdown of arbitrage by region was 27 percent Rotterdam, 25 percent USGC/Caribbean, 24 percent Latin America, 14 percent Black Sea, and 10 percent Baltic. In terms of quality, the typical fuel oil imported from the USGC/Caribbean (and some from Latin America) is characterized by high viscosity and high density.

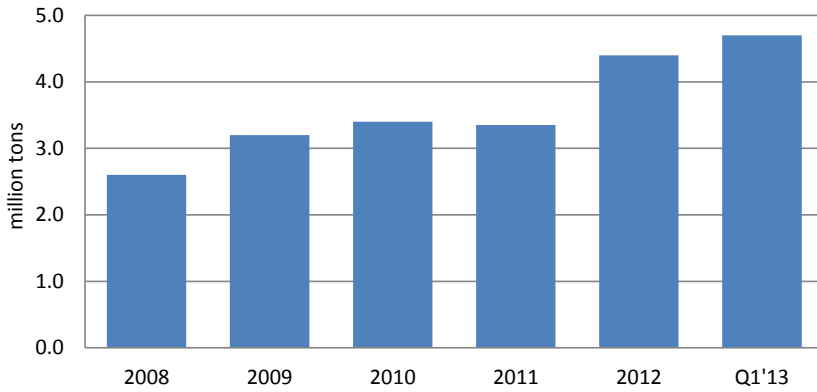
Fuel Oil Storage

The increase in fuel oil arbitrage cargoes could not have occurred without an increase in commercially available storage—onshore and offshore. There was a dramatic increase in onshore fuel oil storage capacity in 2008, followed by moderate increases in more recent years. Onshore fuel oil storage in the Singapore vicinity in 2013 is estimated to be over 6 million cbm. At 1.5 million cbm, Universal Terminal is the leading provider of fuel oil storage in Singapore. Oiltanking, which purchased the Helios terminal from Chemoil in September 2012, has 503 kcbm of fuel oil capacity. For its part, floating storage capacity, which is generally cheaper than onshore storage, increased from 1.5 million cbm in 2009 to 2.4 cbm in 2013.

Conclusion

Deficits caused by declining fuel oil production across Asia, coupled with ongoing

MONTHLY AVERAGE OF FUEL OIL ARBITRAGE TO SINGAPORE



demand, has led to heavy western inflows of fuel oil. However, high density and high viscosity arbitrage barrels create a supply mismatch once they land in Singapore. Arbitrage flows from regions which produce lower density fuel oil (e.g. Russia, Iran, and India) are useful for blending to make marketable material. Given the variable availability of blending components, however, the Singapore fuel oil market is likely to remain prone to prompt price spikes. ■