



Bunkering in 2003: *New patterns, new challenges*

Marine fuel has long been viewed as a marginal by-product of the refining process. However, in recent years, changes in refinery output have brought a gradual but distinct shift towards deliberate manufacture for the shipping industry. Growing global demand has created complex international supply chains across numerous intermediaries that expand the gap between supply and demand, introducing unprecedented price volatility and increasing concerns around quality. Bill McGrath and Graham Wylie of Shell Marine Products explore the dynamic of this new market and how ship owners can respond to the greater risks it brings.

The asset imperative

Like a ship owner, the primary focus of private refiners is to maximise the economic return on investment from their asset base. A balance of supply to demand ensures that the asset is kept running at an optimal level; too much supply or too little demand and the balance is lost, creating both economic uncertainty and a powerful force for change.

Successful refineries are therefore attuned to the needs of their market and run to generate a profitable return on investment. Over many years the industry has grown to serve a great many markets in all parts of the world but changes in demand over the last 10-15 years have had a profound impact on the production of marine fuel.

Historically, Fuel Oil has been the only product of the basic distillation process with a lower economic value than Crude. Growth in so called white or clean products, such as Gasoline, Jet fuel and Gasoil that command a greater margin than Fuel Oil, has prompted an investment in upgrading refining capacity to increase the white product cut of the barrel. This upgrading increases the complexity of the refinery and raises the asset value, compounding the move away from Fuel Oil production and towards higher margin white products to achieve an acceptable Return on Investment.

Changing global refining patterns

An analysis of the development of refining systems around the world shows that this move up the value chain in refining is a global phenomena and that it is moving gradually West to East.



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From 1995 to 2005, the Western market shows an increase in call on refining of 15% or 6 mbb/d. However, refinery rationalisation continues with as many as 21 refineries being closed in Europe and North America in the same period. This apparent dichotomy of increasing demand and reducing supply is sustainable because the remaining refineries operate at utilisation rates of 95% and each has a significantly improved yield. That is to say that the remaining refineries stay profitable by focusing on production of higher margin white products while fuel oil and other oil products can be imported more cost effectively than local production.

The extent of this focus on the 'white products' and the challenge it poses for the global refining system is illustrated in the fact that 70% of complex conversion capacity resides in the West, a region that accounts for only a 50% share of global refining capacity. The North American refining system alone boasts one-fifth of global capacity and one-third of global conversion with refinery complexity so great that straight run Fuel Oil production has been virtually eliminated.

Moving East, 20% of global refining capacity is found in the Middle East oil-producing region. Operating on a different imperative to the private refiners of the West and with a primary focus on the export market, refining capacity is less complex. The region is the primary exporter of Fuel Oil, with annual production greater than 60 mtpa, with a significant amount of straight run product. Placing this in context, production is equivalent to 50% of global annual bunker demand. Middle East fuel oil is therefore widely available in the world's largest bunkering ports.

In Asia Pacific, the goal of self-sufficiency drove refining capacity up by 5 mb/d over the five-year period from 1995 to 2000. However, the Asian Crisis of 1997 meant that predicted demand has failed to materialize and the net growth in call on refining over the period has been only 3.1 mb/d. Consequently, average refinery utilisation has fallen and despite product exports, remains at lows of around 85%. The result has been a dramatic deterioration of refining margins in the Asia Pacific region and a scaling back of unprofitable Primary refining operations. Secondary refining for 'white products' remains profitable, but without the input from Primary streams the refineries are using imported fuel oil as feedstock. The shipping industry is therefore caught between a net reduction of available local product and an increasing competitive demand for Fuel Oil. The inevitable tightening in the market results in rising prices and greater volatility as imported product becomes the dominant force in the market.



The Impact on bunker supply chains

Global bunker demand continues to demonstrate low but persistent growth of 1% per annum, equivalent to 1.5mtpa. This reflects the complex interplay between trade route development and economic supply, with growth being unevenly distributed.

With Fuel Oil constantly declining as a percentage of refinery output worldwide, import and blending will increasingly become the means to balance supply to demand. In Singapore two-thirds of bunker demand is now being met through the import of Fuel Oil, and in ARA it is currently at 60%. The so-called marginal barrel, or variable supply in each market, is now predominantly an imported one.

This elongation of the supply chain increases price volatility, as the lag time between demand fluctuations and the ability to supply exacerbates natural price movements. Importantly, this extended supply chain also has implications for quality assurance and control as the pedigree of components is less certain and the blending process itself is more vulnerable than straight-run refining.

In 2002, bunkering had considerable bad press with the image and reputation of the industry taking a heavy battering. Ship operators have been quoted as saying '*the only predictable thing about marine fuel is the uncertainty of its quality*', which many believe has generally declined over the past few years. This general suspicion is given strength by the lack of accountability in new supply chains. Who ultimately is responsible for product quality that is the result of blending components from around the world when the vessels that carry it, the tanks that store it, the barge that delivers it and the people who verify it are all unrelated to the person who sold it? The answer should be obvious, but too many in the industry seek to cloud the issue. It is unsurprising when supply chain relationships are as fluid as they are, that quality is thought to be declining.

Quality and Risk

In 2003, this notion of quality will become ever more significant. In an industry that is under legislative pressure to raise Health, Safety and Environmental standards and is at the same time seeking to recover from turbulent financial performance, the notion of quality will for many operators become about mitigation of risk.

Because today's product is only as reliable as the supply chain it represents, the changes in the global refining system and the increase in global product movement has created a market that puts the ship owner at higher risk in terms of Product performance; Operational standards and Price volatility



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With fuel oil moving from a marginal refinery by-product to become a business in its own right, companies have invested substantial resources to raise standards.

For example, in 1997 Shell brought worldwide responsibility for fuels and lubricants for the shipping industry into a dedicated global business, Shell Marine Products. With an integrated responsibility for the complete supply chain, the company has worked hard to ensure that consistent standards are met in every port, including all third-party operations, thereby guaranteeing accountability for performance across the risk spectrum. Shell Marine Products is not alone in its focus, but it is perhaps unique in its integrated approach to fuels and lubricants and its position in the global trade. A number of other companies have become more focused on the industry in recent years and there has been a recognised move to raise standards across the board. However, like the shipping industry itself, the market is developing a dual structure between the professional managed operations and the opportunist.

In an industry that has become used to treating fuel as a basic commodity, there has developed an assumption that product that is within spec is equal in all terms except price. For an industry whose own prices relate directly to the broad quality of their operation this is staggeringly short-sighted. You only have to look at the post-Prestige debate to clearly understand that new ships in the hands of the most professional operators can justify a premium to the market. Here the definition of quality is not just about the steel in the hull, but about the crew, the management, the scheduling and a general level of professionalism. It is about operating ethically and with clear business principles and giving a duty of care to the environment.

There is a developing trend in some of the industry's foremost operators to re-evaluate their approach to fuels and look again at the role of suppliers in helping the mitigation of risk. By examining the complete supply chain from refinery to consumption they are able to squeeze out costs and develop advantages that cannot be established on price alone. A new focus on optimising vessel performance widens the discussion to include:

- Product quality assurance through clear accountability
- Maintenance efficiency through intelligent use of fuels, lubricants and related services
- Managing pricing risk and overall cost reduction
- Understanding and preparing for legislative change
- Maintaining HS&E standards



As the Singapore incidents proved, it is no longer enough to trust to ISO specification and the lowest price, but essential to develop a rigorous view of the complete supply chain. There are reliable and quality suppliers in the bunker industry, but for so long as the shipping industry is focused only on the cost per tonne; the burden of risk will remain on their shoulders.

A changing environment

As we move into 2003, it may not seem like the best time to change practices that have lasted well for more than 20 years. However, despite the uncertainty of conflict and economic weakness, the year brings continued pressure for change that will require definite action by the industry. Changing standards and expectations around the safe carriage and delivery of fuel oil, security of supply and environmental emissions will co-exist with financial demands for robust profitability in the Shipping Industry. With fuel accounting for so much of the variable cost and operational performance, the singular focus on procurement at lowest price will become less effective than it ever has been. As always in times of change it is those who react best who will reap most of the rewards. A deeper interpretation of quality and risk is one way to achieve this.

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