

## IN PERSPECTIVE

### Enemalta, Malta, and World Fuel Oil Summit VI

World Fuel Oil Summit VI, held in Malta, on May 9-11, 2013, examined trends and developments in the world fuel oil market. Topics ranged from LSFO markets in the Western Hemisphere and Northwest Europe to the fuel oil markets in Singapore and China. Speakers addressed US refining and storage as well Russian fuel oil exports. One speaker gave a shipowner's perspective on bunker fuel while another discussed ticks for compulsory security stocks in the European Union.

WFOS VI was hosted by Enemalta, the state-owned power company of Malta. Kicking off the summit was a tour of Enemalta's key Delimara power plant. The tour was led by Jesmond Drago, manager of the Delimara plant. Malta's Minister for Energy and the Conservation of Water, the Honorable Konrad Mizzi, delivered the WFOS VI welcome address. In his address, the minister outlined key components of Malta's energy policy.

### Enemalta and its Delimara Plant

The Delimara plant, located on Marsaxlokk Bay, has aggregate capacity of 454 MW. The older part of Delimara power station, which burns fuel oil and gasoil, has generation capacity of 304 MW (consisting of two 37 MW gas turbine units, a 110 MW CCGT, and two 60 MW steam units). In December 2012, Enemalta commissioned a new 150 MW plant (known as the Delimara extension) at the same site. Consisting of 8 Wartsila 18V46, four-stroke medium-speed diesel engines, operating in combined cycle mode, with eight heat recovery boilers, one steam turbine and emissions abatement. The plant can burn either gasoil or fuel oil (and can be converted to natural gas).

### ENEMALTA, FUEL OIL SPECIFICATIONS

Property	Marsa	Delimara	Test Method
Density @15 °C	0.995 max	0.995 max	ISO 3675 ISO 12185
Sulfur Content	0.7% max	0.7% max	ISO 8754 ISO 14596
Flash Point	65 °C min	65 °C min	ISO 2719
Pour Point	30 °C max	30 °C max	ISO 3016
Ash Content (m/m)	0.1% max	0.05% max	ISO 6245
Water by Distillation (v/v)	1.0 max	0.5% max	ISO 3733
Sediments by Extraction (m/m)	0.15 max	0.1 max	ISO 10307-2
Total Sediments Potential %(m/m)	–	0.1 max	ISO 10307-2 IP 375/390
Viscosity @ 50 °C	400 cSt max	400 cSt max	ISO 3104
Conradson Carbon (m/m)	12% max	12% max	ISO 10370
Stability	2 max	2 max	ASTM D4740
Asphaltenes (m/m)	7% max	7% max	ISO 3279
HFT (insolubles)	0.1 max	0.1 max	IP 375
Vanadium ppm	100 max	100 max	ISO 14597 IP 501 IP 470
Nickel (ppm)	report	20 max	EN 13131
Aluminum + Silicon (ppm)	report	< 30	ISO 14597/ ISO 10478 IP 501 IP 470
Sodium (ppm)	40 max	40 max	ISO 10478
Nitrogen (m/m)	report	40% max	ASTM D3228
Chromium (ppm)	report	report	IP 501
Arsenic (ppm)	report	170 max	report AAS (atomic absorption)
Carbon Content % (m/m)	report	report	ASTM D5291
Hydrogen Content % (m/m)	report	report	ASTM D5291
Oxygen content % (m/m)	–	report	ASTM D 5291
Net Heating Value (Kcal/kg min)	9,500	9,500	ASTM D5291/ ASIMD-4868-00
CCAI Number	–	850 max	ISO 8217 Annex B
Calcium % (m/m)	–	30 max	
Zinc % (m/m)	–	15 max	IP 501
Phosphorus % (m/m)	–	15 max	

### ENEMALTA, FUEL OIL AND GASOIL CONSUMPTION

(Metric Tons)

	Fuel Oil	Gasoil
2007	610,741	43,157
2008	557,271	82,162
2009	523,486	77,488
2010	516,068	83,026
2011	540,998	73,001
2012	577,341	73,356
2013E	480,000	70,000

E=Estimated.

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The Delimara extension, which operates with 46.7 percent thermal efficiency, consumes 0.180kg of HFO for every kWh generated. The diesel engines can be easily shut down and restarted as needed to follow the load while maintaining high efficiency. Fuel oil passes through centrifuges to remove water and metals, and the plant is equipped with emissions abatement equipment, making emission limits of SOx at 400 mg/m<sup>3</sup> and NOx at 300 mg/m<sup>3</sup> (at 5% O<sub>2</sub>) possible.

The waste heat from the engine cooling water system is used to produce distilled water from sea water. The plant's 8 engines produce up to 1,000 cbm of distilled water a day. Each engine is enclosed in sound-proofing material. The Wartsila engines have 18 cylinders that run at 500 rpm, generating at 50 Hz frequency.

Storage at Delimara consists of two fuel oil tanks of 25 kt each and four gasoil tanks. Fuel and gasoil are delivered to the Delimara dock by tanker. Both the Delimara and the Marsa plants burn 0.7%S fuel oil and 0.1% gas oil (see the accompanying table for Enemalta's fuel oil specifications). Enemalta consumed about 577 kt of fuel oil and 73 kt of gasoil in 2012. The company will consume an estimated 480 kt of fuel oil and 70 kt of gasoil in 2013 (see the accompanying table).

### Malta's Energy Policy

To cope with its dependence on oil imports, Enemalta Corporation has developed a hedging strategy. During 2012 Enemalta hedged 41 percent of its fuel costs using a swap structure,

locking its price at an average level of \$96.96 a barrel. The swap mechanism adopted in the past few years has proven to provide greater control over Enemalta's inherent variable fuel costs and achieves protection from any increase in crude oil prices.

Last year, in June 2012, the markets experienced a significant fall in oil prices with Brent crude settling below \$90/bbl. Enemalta took the opportunity to increase substantially its hedging position for the balance of 2012 and even 2013. The corporation fixed 43 percent of its fuel price exposure at a weighted average price of \$97.07/bbl for 2013.

Another window of hedging opportunity for Enemalta came in April 2013 when front month Brent fell to \$96.75/bbl. Enemalta took the opportunity to further hedge its oil requirements for the balance of 2013 together with a percentage for 2014. In fact, Enemalta altogether hedged 48 percent for the balance of 2013 at an average price of \$97/bbl and 20 percent for 2014 at an average level of \$98/bbl.

In 2013, Enemalta has so far recorded a net amount of around \$6.5 million in oil hedging settlement gains. Enemalta will continue to look for hedging opportunities for the balance of 2013 and 2014.

A key aim of Malta's energy policy is to end dependence on fuel oil for the bulk of the country's power generation. In line with the desired diversification of energy sources, Enemalta aims to commission a 200 MW underwater cable connection from Malta to Sicily (and hence access to the European grid) in the second quarter of 2014. Sourcing electricity

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through this high voltage alternating current subsea interconnector is seen leading to higher flexibility and greater security of supply owing to the overload capacity of the cable, thereby providing Malta with valuable spinning reserve capacity.

The major focus of the new Maltese government, which came to power in March 2013, is the introduction of natural gas used for energy generation. Malta's Ministry for Energy and the Conservation of Water is pursuing a policy dedicated to cleaner, lower-cost electricity. The government and Enemalta recently commenced a competition for a power purchase agreement and gas supply agreement which will govern the supply of approximately 200 MW of electricity from a gas-fired plant and corresponding LNG facilities at Delimara.

In response to this competition, Enemalta received submissions of expression of interest and capabilities from a number of companies on May 11, 2013. The companies, joint ventures, and consortia that have submitted expressions of interest in the Maltese natural gas project are:

- Abener Energia SA
- Bumi Armada
- CPECC China Power Engineering Consulting Group Corporation
- Daewoo Shipbuilding and Marine Engineering Co.
- Devco International LLC
- Edison Spa
- Electro Gas Malta Consortium
- Endeavour Energy Holdings LLC

- Energy World International Limited
- Exodus Crossing LLC
- Gazprom Marketing and Trading Limited
- GMR Energy Limited
- Independent Power Corporation plc
- Mag Air Energy LLC
- Med-Gas AS
- Shell Gas and Power Developments BV
- Soffimat-Gestamp
- Vitol SA
- Yildirim Energy Investments Inc

Upon evaluating the submissions, Enemalta plans to invite selected candidates on June 10, 2013 to submit their proposals through an RFP process. Proposals will be due by July 31, 2013. Enemalta's aim is to award a natural gas contract by October 2013 and have the new gas and electricity supplies operational by March 2015.

Once the new generating plant is online, Enemalta will be able to decommission the older oil-fired Delimara steam turbine generators. In due course, the 150 MW Delimara extension will be converted to run on natural gas. Serving to fulfil Malta's obligations to the European Union, these projects underline the government's aim to bring cleaner, less expensive energy to the Maltese Islands.

## Conclusion

The next World Fuel Oil Summit will provide another opportunity to address aspects of the complex and evolving world fuel oil market. World Fuel Oil Summit VII will be held in May 2014. Stay tuned for details. ■