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PERP Report 2017S7: Technologies to Meet new Bunker Fuel Specifications

“Technologies to Meet New Bunker Fuel Specifications” is one in a series of reports published as part of the 2017 Process Evaluation/Research Planning (PERP) Program.

Report Overview

The bunker residual fuel oil market is facing significant changes due to new regulations adopted by the International Maritime Organization (IMO) to reduce emissions of sulfur oxides (SOx) from the combustion of bunker fuels.

The global sulfur specification reduction from 3.5 to 0.5 percent sulfur in 2020 represents a significant reduction and will create a wave of activity across the refining and shipping industries. The impact will be far reaching, directly affecting refiners, shippers, crude oil producers and bunker fuel suppliers.

This PERP Report examines the impact of the upcoming low sulfur bunker fuel regulations on the refining and marine industries. Different technology options available for refiners and compliance strategies for ship owners are discussed. The following issues are addressed in the report:

- What is the IMO regulation and potential issues with compliance and enforcement by 2020?
- What are the technology options available to refiners to either produce compliant bunker fuels or reduce HSFO production?
- What are the available options for ship owners to comply by 2020?
- Who are the main technology licensors for the technology options for both refiners and ship owners?
- How do the economics for the various refining technologies discussed compare in the USGC, SEA and WE regions?
- How do the economics for the various ship owner options discussed compare in the SEA and WE regions?
- What is the estimated global distribution of bunker fuels when the regulation takes effect? When will the bunker fuels market return to equilibrium?

Technology Analysis

As 2020 is fast approaching, ship owners must make decisions to ensure compliance when 2020 comes. Refiners must evaluate their next course of action relative to the coming regulation as it may provide opportunities or difficulties. This PERP Report offers a review of all available technologies to cope with the coming regulation for refiners and ship owners that decide to invest.

Refiner Options:

- Continue current HSFO production
- Blend to produce LSFO without any technology investment
- Install residue desulfurizing technology to produce LSFO
- Install residue upgrading technology to reduce HSFO production

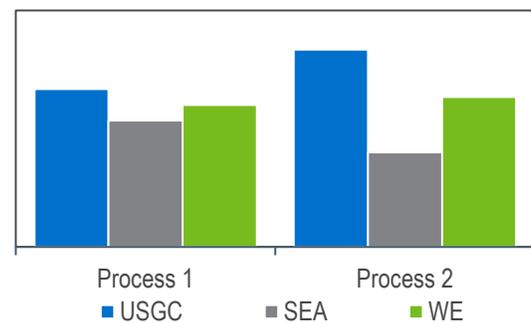
Ship Owner Options:

- Utilize more expensive low sulfur fuels
- Install exhaust gas scrubbing equipment
- Switch to an alternative fuel that is inherently low in sulfur

Process Economics

Detailed margin analysis estimates of desulfurization, slurry and ebullated residue upgrading and delayed coking units are evaluated. Shipping costs associated with installing a scrubber, using compliant conventional fuels or LNG are evaluated.

VACUUM RESIDUE HYDROCRACKING PROFITABILITY



Commercial Market Review

The bunker fuels market has historically had limited quality restrictions, creating a useful “sulfur-sink” for the refining industry. However, a big change will occur in 2020. This PERP Report provides Nexant’s forecast of global bunker fuels demand reflecting the impact of the regulations.

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