

Case Study on a Container Shipping Company

Get what you pay for, and pay for what you get!

BACKGROUND

For most maritime industry players, fuel costs can account up to 70% of their total operating expenditure. Ship operators therefore often prefer to purchase bunker fuel from ports providing the lowest cost. In recent years however, there had been increasing pressure from port authorities and maritime organizations for greener shipping practices. This has forced many operators to adopt cleaner but pricier fuel grades leading to increased operating costs.

To control these escalating costs, shipping companies began placing greater emphasis on efficiency initiatives to maximize their fuel investments and improve operating margins. Nevertheless, the most basic approach to cost reduction is the accuracy and transparency of fuel purchase.



CURRENT STATE

Fuel is ordered in mass (tons) yet deliveries are measured in volume. Many of times, these deliveries are based on simple measurement technologies such as the use of sounding tapes or at best, positive displacement (PD) meters.

Common issues that arise from using sounding tapes includes damaged tapes and tapes that are not calibrated or certified. While the more widely used PD meters provide a more accurate measurement due to its minimal leakage and high measuring precision, it only works best with clean, non-corrosive and erosive liquids and gas. The accuracy of the meter can still be affected if they are out of calibration or calibrated with a different fluid. These inaccuracies are further multiplied when tank strapping tables are not accurate or misread.

PROBLEM

In the presence of these inaccuracies and the lack of intelligent information, the decision of fuel purchase could therefore be based only on price. Moreover, incorrect or non-uniformed densities and temperature can further compound the probability of incorrect conversions of volume to mass totals.

This has resulted in fuel pilferage which has been an ongoing practice for decades. During instances where there is a discrepancy between the buyer's and supplier's calculations, the above factors could lead to disputes which are difficult for the owner to prevail due to the lack of verifiable information.

CLIENT ILLUSTRATION

Rhino Shipping* is one of the largest container shipping company in Asia with a global reach. Operating a fleet of over 160 vessels, the company provides container liner services and diversified logistics related activities to over 100 countries worldwide.

Rhino has 47 vessels equipped with Ascenz' Shipulse fuel monitoring system. From which, the crew noted that although their receiving bunker mass flow meter was in good working condition, the amount of bunker reflected varied from the manual soundings and bunker barge BDN readings.

Date	Mass Flow Meter (MT)	Supply Barge BDN (MT)	Manual Sounding (MT)
11/12	1885.306	1898.227	1872.500
19/11	2284.355	2346.355	2344.788
12/10	385.739	399.235	386.283
14/09	1995.948	2000.135	1976.509

The issue was brought to Ascenz' attention, and an investigation was conducted.

The findings revealed that bunker received from supply barges without mass flow meters installed tend to have a higher deviation in readings as compared to those who have them installed.

Date	Mass Flow Meter (MT)	Supply Barge BDN (MT)	Deviation from MFM Figures	Supply Barge Using MFM?
11/12	1885.306	1898.227	- 0.69%	Yes
19/11	2284.355	2346.355	- 2.71%	No
12/10	385.739	399.235	- 3.50%	No
14/09	1995.948	2000.135	- 0.21%	Yes

Assuming that the cost of fuel was priced at USD 600/MT, the deviation was a huge spending variance for Rhino:

Date	Deviation in MT (MFM vs BDN)	Cost Deviation (USD)	Supply Barge Using MFM?
11/12	- 12.921	(7,725.60)	Yes
19/11	- 62.000	(37,200.00)	No
12/10	- 13.496	(8,097.60)	No
14/09	- 4.187	(2,512.20)	Yes

*Client's name has been changed to maintain privacy.

SOLUTION

To reduce the deviation rate, Ascenz recommends for Rhino to purchase bunker fuel from supply barges with mass flow meters installed. For improved data transparency and accuracy, mass flow meters should always be used wherever possible.

Accuracy of its readings are typically listed as $\pm 0.1\%$ to 0.2% of the measured flow rate which are much more accurate as compared to mechanical meters' listing of $\pm 0.5\%$. With a direct measure of mass, its flow measurements are independent of factors such as temperature changes, pressure, and density change. Volumetric flow measurements tend to be less reliable due to the need for pressure and temperature compensation, increasing the overall flow error to as much as $\pm 3\%$.

Although higher in installation costs, mass flow meters have lower operational issues. Routine maintenance is not required as well due to its lack in moving parts for mechanical wear and tear. As opposed to regular meters that requires to be recalibrated based on various viscosities, mass flow meters need not be calibrated as it is unaffected by the changes in viscosity.

The use of mass flow meters is expected to enhance productivity and transparency between bunker buyers and suppliers. With the removal of human intervention involved in traditional measurement methods, accuracy is expected to be improved translating to better cost savings and efficiency.



ACCURACY EQUALS DOLLARS EARNED

On board the vessel, transparency equates to increased crew efficiency. The transfer process is monitored with visible flow rates in real time and totalizers show how much fuel is being received and its process status at any moment. The process graphics provides an easily recognizable system layout with performance parameters and live data allowing remote monitoring. This enhances the operational efficiency as vessels will know exactly how much fuel was delivered at the end of each transfer.

Upon completion of the bunkering process, the complete transaction overview would have already been presented with the temperature, density, and other variations clearly stated. This enables the chief engineer to immediately point out any discrepancies that the BDN may contain.

With this proof of delivery, he can no longer be coerced into signing the notes, but choose to accept or dispute the deal. Should he choose to raise a dispute, a copy of the bunker report can be submitted to the supplier's office as evidence. More often than not, the supplier would be inclined to negotiate a resolution.

Technologies for bringing transparency to the bunkering process is now readily available. Many ship owners and operators have already started utilizing these technologies in their quest to control fuel costs. It is up to the bunker industry to accept and embrace these changes to meet the challenges of our collective industry as quite likely, this will ultimately be forced upon them by owners and buyers.