Report on the launching ceremony of the “BUNKER SERVICE 14” boat in Hamburg on 25.09.2015

Precision and Safety

***Bopp & Reuther Messtechnik GmbH* has for many decades been supplying the shipbuilding industry with high-quality flow measurement technology for numerous applications. This includes oval wheel meters for bunker boats, fuel consumption measurement, bunker systems for custody transfer of fuels and lubricants, as well as heavy fuel measurement systems with automatic viscosity settings.**

The fuel measurement system can also determine the fuel mass

Bopp & Reuther Messtechnik GmbH supplied the entire loading solution for fuel and lubricating oil measurements, in accordance with European directive MID 2004/22/EC, for the ‘BUNKER SERVICE 14’ boat.

The design of the lubricating oil measurement system ensures it is possible to measure various lubricants up to a flow rate of 180 l/min using an OI 50 oval wheel meter. This oval wheel meter has a double pulse output whose pulses are registered by the UR06 flow computer from *Bopp & Reuther Messtechnik GmbH*. This flow computer has been approved by the German State Office of Weights and Measures in accordance with MID. The loading process is carried out using a full hose system. When swapping products, the entire measurement system is drained using compressed air, thus minimizing the risk of product mixing. The system is subsequently filled with the new product during a short venting process.

For each of the two fuel measurements (marine diesel / gas oil), *Bopp & Reuther Messtechnik GmbH* supplied an OV1000 oval wheel meter with a max. flow rate of 3000 l/min and an integrated PT100 temperature sensor, as well as a 480 l gas separator and a high accuracy DIMF 1.3 density meter with integrated PT100 temperature sensor. Using the density meters, it is possible to calculate both the mass and the temperature-corrected volume, which is obviously a major benefit for *NWB Nord- und Westdeutsche Bunker GmbH*.

At the heart of the measurement system is the control unit provided by *Bopp & Reuther Messtechnik GmbH*. The control unit consists of two UR06 flow computers, which are approved by the Office of Weights and Measures for custody transfer, a PLC, and intrinsic safety barriers. The flow computers use the volume pulses, liquid temperature, and the measured density to calculate the volume and mass corrected to 15°C.

The lubrication oil measurement system measures up to 180 l/min

The original documents of each loading process are stored in the flow computer UR06. The PLC retrieves the actual volume, the temperature, and the density value from the flow computer via Modbus TCP/IP. These data are then used to control the loading process. By separating the measurement technology from the control unit, subsequent software modifications at the measurement system can be achieved without having to recalibrate it. This is a massive advantage of the system.

The loading system is operated via a 10" touch screen on the bridge of the bunker boat. To prevent unauthorized access, the system is password protected with different access levels. The control unit incorporates a database that enables the storage of numerous customer ships. The respective data can be loaded quickly and do not have to be entered manually. A separate touch panel is available for each of the three measuring sections, enabling the loading of several products at the same time. It is possible to toggle between the touch panel of each measuring section at any time. A status column allows monitoring of all three sections and provides information about eventual measurement values or problems. The control unit has analog outputs that facilitate manual adjustment of the frequency converter of the loading pumps to the specific conditions of the ship being loaded. Once the preselected quantity has been reached, the pumps stop automatically. When the loading process has been concluded, a list of all volumes and values is displayed. These measured values are then printed out together with the customer specific data. The printout is used for documenting and billing purposes. The data of each loading process, relevant for custody transfer, are stored in a secure memory of the flow computer.

Thanks to the installed measurement technology from *Bopp & Reuther Messtechnik GmbH*, the entire loading procedure - from entering the loading quantity to printing out the delivery note - is quick and simple. The three measurement systems have been placed on the market in accordance with European directive MID 2004/22/EC.

The control unit is the heart of the system and regulates the three measuring sections

The user interface provides a concise and clear overview of the operating statuses

Bopp & Reuther Messtechnik GmbH,
Rainer Hohenhaus, Sales Manager Germany, October 16, 2015

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