



FUEL BUNKERING



Marine Industry

"Flexim's excellent measuring technology allows us to provide a very attractive turnkey solution for fuel bunkering control."



*Claudio Parodi,
Technical Manager, Pcontrol snc.*



Measuring Task

Flow measurement for balancing the loading and unloading of bunker boats.

Pcontrol specializes in marine and industrial automation and has an excellent reputation in providing turnkey solutions. A very common naval application is the supply of ships with fuel by bunker boats, so-called "Bettolinas". The fuel supply operation is usually carried out at port and consists of the following steps: First, the "Bettolina" bunker boat is loaded with marine fuel at the appointed storage facilities. Customs issues a document which certifies the load. Then, the "Bettolina" navigates to the respective ship to be supplied with fuel. After having pumped the loaded fuel into the recipient ship's bunker, the "Bettolina" returns to its pier. For customs, bunker boat operators must provide proof that the bunker boat has been completely discharged.

Up until now, most bunker boats have not been equipped with a flowmeter. Italian law now prescribes that every "Bettolina" which does not have a flowmeter must be retrofitted with an appropriate measuring device. Since it is a fiscal measurement, the demand for accuracy is very high.

The common instrument for this kind of measuring task is a Coriolis meter. Given the pipe dimensions of typically 4" to 6", these wetted instruments

are quite costly. Furthermore, they require enough space for installation. Therefore, Pcontrol's instrumentation experts were looking for an easier way to fit "Bettolinas" with the required measuring device.



Solution

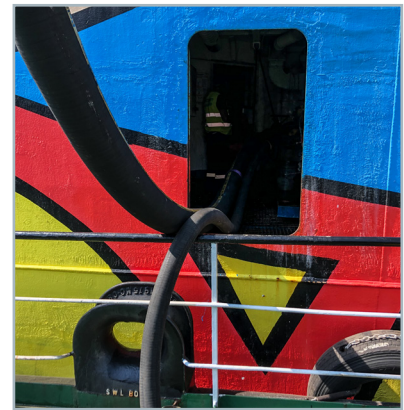
In cooperation with Flexim's Italian sales partner, ICM Ital Control Meters, Pcontrol developed a clamp-on ultrasonic solution for this demanding measuring task. It consists of a pair of CDM2N52 transducers (shear wave), installed in two paths reflex configuration in Variofix L mounting rails, and a stationary FLUXUS® F721 measuring transmitter. Extensive tests have been conducted under the supervision of customs to verify that the non-intrusive measuring solution meets the required accuracy of 1%. A particular challenge lies in the beginning and end of the loading and, respectively, unloading process, when the pumped fuel is mixed up with air bubbles.

The tests were successful: Pcontrol was able to prove that its bunker fuel control system performs correctly and according to custom's requirements. As a result, Pcontrol now offers an attractive turnkey solution to retrofit "Bettolinas" with the prescribed flowmeter. Besides its obvious advantages – very easy commissioning without any opening of the pipe, minimal space requirement – the non-intrusive measuring solution also offers additional benefits in the long term: As the measuring device does not come into direct contact with the flowing medium, it is not subjected to wear and tear and operates drift and maintenance-free in the long-term.

Flexim's FLUXUS® clamp-on ultrasonic flowmeters are certified by DNV GL, the world's leading ship classification society. This not only proves the excellent suitability of FLUXUS® for naval applications, but furthermore makes Flexim the supplier of choice for marine instrumentation societies such as Pcontrol when it comes to flow instrumentation.



A "Bettolina" approaching a ferry to be supplied with fuel.



Fuel bunkering



Measuring point with clamp-on ultrasonic transducers installed in Variofix L mounting system.



A stationary FLUXUS® F721 in stainless steel housing is used as measuring transmitter.

Measuring Points and Instrumentation

Pipeline typically steel, 4" - 6"

Medium marine fuel

Stationary clamp-on ultrasonic FLUXUS® F721 flowmeters
Clamp-on ultrasonic CDM2N52 transducers, mounted in Variofix L

Advantages

- Accurate, bidirectional flow measurement without wear and tear and, therefore, maintenance-free
- Lower costs in comparison with common wetted measuring technology
- Very easy to retrofit
- Marine certification by DNV GL

Customer:

Pcontrol snc, Genoa, Italy

Pcontrol offers industrial automation solutions, especially for marine applications. Its scope of activities includes the supply of systems and services from maintenance, design and execution of constructive schemes, development of software applications up to the integration of systems to provide turnkey solutions.

For many years, the company has been successful in the field of automation systems for security, monitoring, alarms and supervision, remote controls and instrumentation on board cargo and passenger ships.



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