

# HABB

**H**igh **A**ccuracy **B**unker **B**lending



ISO 9001  
Management System Certification

BUREAU VERITAS  
Certification Denmark A/S



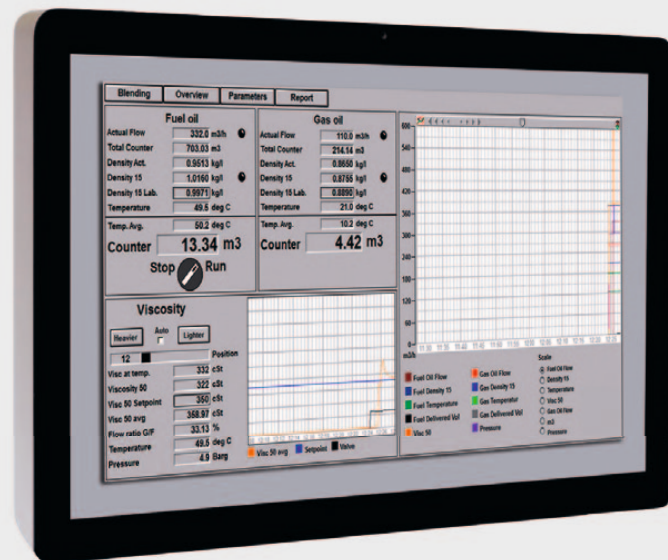
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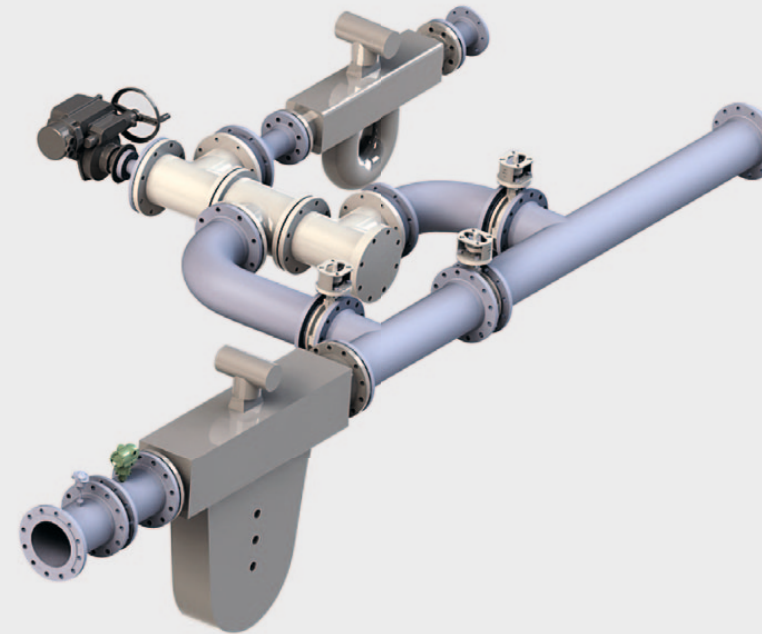
# Bunker Blending



### Blender unit in a container



### Operator display



Typical blender unit layout



*Blender unit for arctic conditions (insulated container)*

## Bunker blending

When delivering bunkers, it is important both to deliver the correct quality as well as a well defined quantity.

Bunker fuel is priced per tons and many factors can influence the readings of traditional volumetric flow meters, such as density, temperature, viscosity etc.

The density of heavy fuels can vary up to  $150 \text{ kg/m}^3$ .

**Deliver the correct quantity:**

The Insatech Marine Bunker Blending solution uses flow meters based on the Coriolis principle which give a direct measurement of mass and density.

**Deliver the correct quality:**

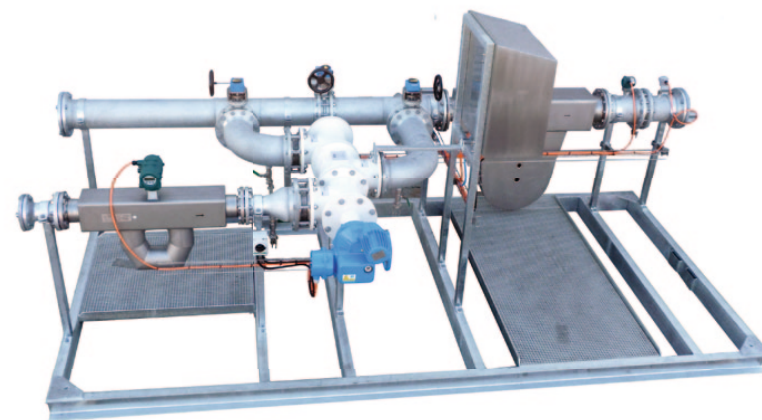
The Insatech Marine Bunker Blending solution ensures delivery of any viscosity using the minimum but correct amount of gas oil. Always meeting the ISO 8217 requirements.

**Documentation:**

Both quantity and quality of the delivered product is documented in an automatic bunker report.

**Certification:**

The system can be supplied according to MID Annex MI-005 and OIML R117-1 certified (Custody transfer).



## Features

- Direct measurement in metric tons (vacuum)
- Direct actual density measurement
- Direct temperature measurement
- Online calculation of Density<sub>15</sub> (actual and average)
- Online calculation of Viscosity<sub>50</sub>
- Average temperature calculation
- Air in oil detection and alarming
- Totaliser per delivery
- Total counter, not resettable
- Full data log of every parameter available in the system
- Full Bunker Delivery Receipt

The Bunker Control solution has a built in anti-pilferage function. Entrained air will be detected immediately, and an alarm will be given. This ensures that surprises due to the cappuccino effect are eliminated. Further the reverse flow totalizer guarantees that only net flow is measured.

### Optional features

- Data integration via internet
- MID certification
- Sulphur measurement
- Water in oil measurement
- Automatic sampler control

### Sulphur blending

To comply with Marpol annex VI, new rules on limitation of sulphur content in HFO apply.

These requirements can be met by blending to a pre-defined sulphur content optimising the use of the more expensive components.

The requirement is to be able to blend oil in different qualities based on sulphur values.

- Blending ratio from 0,1 to 3,5% sulphur
- In-line measurement
- Blending while delivering
- Full documentation of delivered quality + quantity

### MID Approval (Custody transfer)

The Measuring Instruments Directive (MID) is a European directive (2004/22/EC) that covers a number of different measuring instrument types.

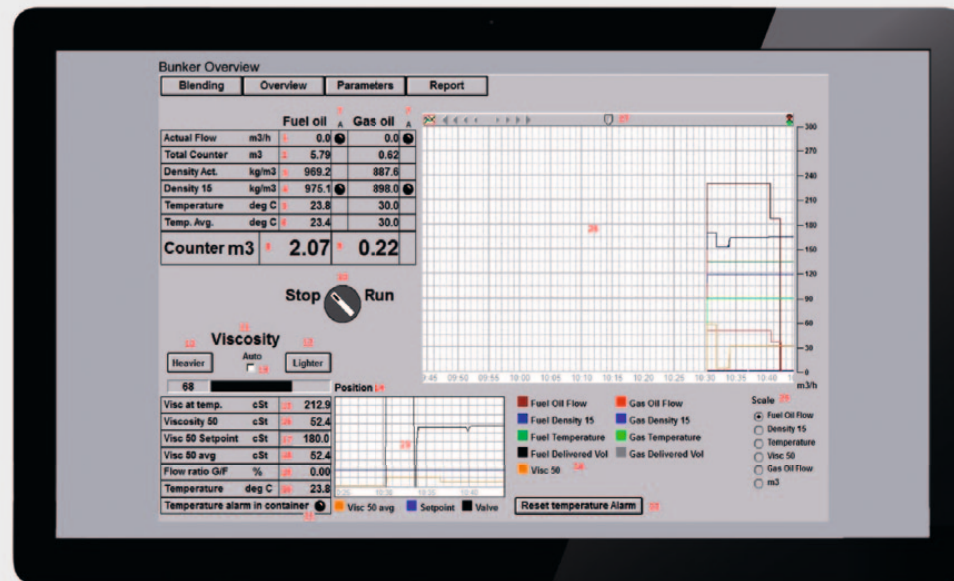
The MID enables a 'European type approval certificate' to be issued. MID includes codes of practice as to approval procedures, market control as well as type and marking of the instruments.

With the constantly rising fuel prices there is an increasing demand for accurate measurement of the delivered quantity when bunkering.

With MID approval you get:

- Certified accurate measurement
- No more discussions of delivered quantity
- Possibility of manipulating measurement results drastically reduced

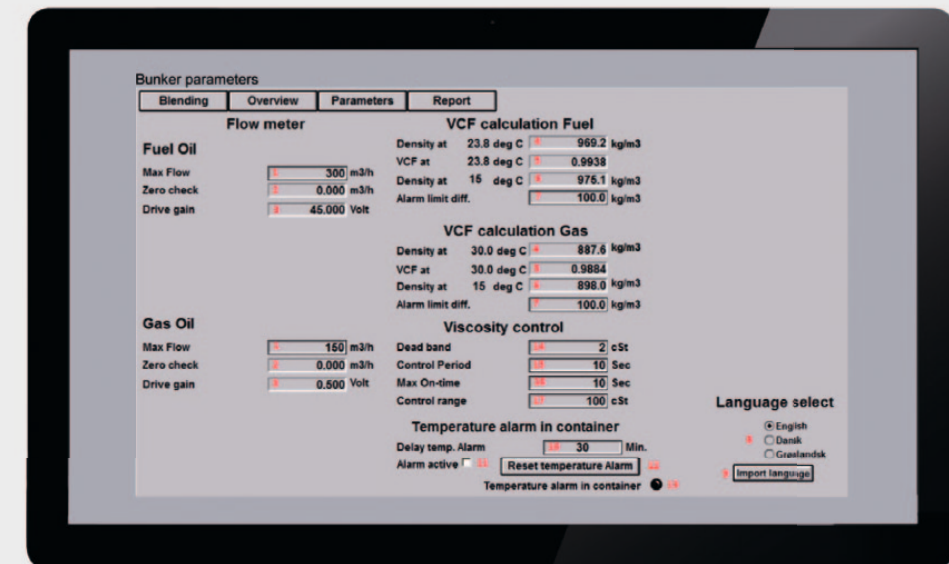
# Bunker Blending



Operator display with trend curves.

1. Actual flow indicated in m<sup>3</sup>/h.
2. Total flow – not resettable.
3. Actual density measured by flow meter.
4. Density calculated to 15 ° C.
5. Actual temperature.
6. Average temperature.
7. Alarm indicators.
8. HFO Flow counter (resettable).
9. MGO Flow counter (resettable).
10. Starts and stops counters and average calculations.
11. Viscosity control system.
12. Manual adjustment of blend viscosity.
13. Automatic control of preset viscosity.
14. Blend valve position shown in % and as bar graph.
15. Viscosity at actual temperature.
16. Viscosity calculated to 50 ° C.
17. Viscosity (blend) set point.
18. Average viscosity at 50 ° C.
19. Flow ratio between HFO and MGO.
20. Average fuel temperature.
21. Alarm for low temperature in container (If applicable).
22. Reset of acoustic temperature alarm.
23. Trends for avg. viscosity, set point and valve position.
24. Trend curve labels.
25. Trend curve scale.
26. One hour trend curve for actual values.
27. Control bar.

# Bunker Blending



Operator display - parameters.

1. Maximum flow, alarm is indicated if this value is exceeded.
2. Zero check of flow meter.
3. Flowmeter Drive gain.
4. Density at actual temperature.
5. Volume correction factor at actual temperature.
6. Density calculated to 15 ° C.
7. Alarm limit for difference between stated and actual density.
8. Language select.
9. Import language, used to import further interface languages.
10. Delay for temperature alarm - optional.
11. Alarms on/off (off when not in use) - optional.
12. Reset of temperature alarm - optional.
13. Indicator for temperature alarm - optional.



# Bunker Blending

Blending	Summary	Parameters	Report
Counter receipt / BON No.: 00011			
Delivery date		Start time	Stop time
		2012-07-29 09:24	2012-07-29 10:10
Ship:			
Name of ship		Oratank	
MO no.		9336713	
Harbour		At sea	
Product:			
Delivered product	Viscosity 50 average	IFO 30	30,8
Density kg/m³		FO 968.5	GO 842.1
Sulphur content [%m/m]		Max 1.79	
Vessel retained sample: MARPOL ANNEX VI		1358673	
Vessel retained sample:		3571380	
Supplier retained sample:		3578629	8023123
Requested volume [m3]		80.000	
Delivered volume [m3]		77.070	
Temperature deg. [C]		51.2	
Density 15 deg. C kg/m3		989.8	
Delivered volume 15°C [m3]		75.15	
Delivered Mass [Ton]		74.38	
Ole Molin		Bjarne	
Signature tankfarm		Signature ship	

Example of a Bunker Delivery Report.

### Bunker BDR:

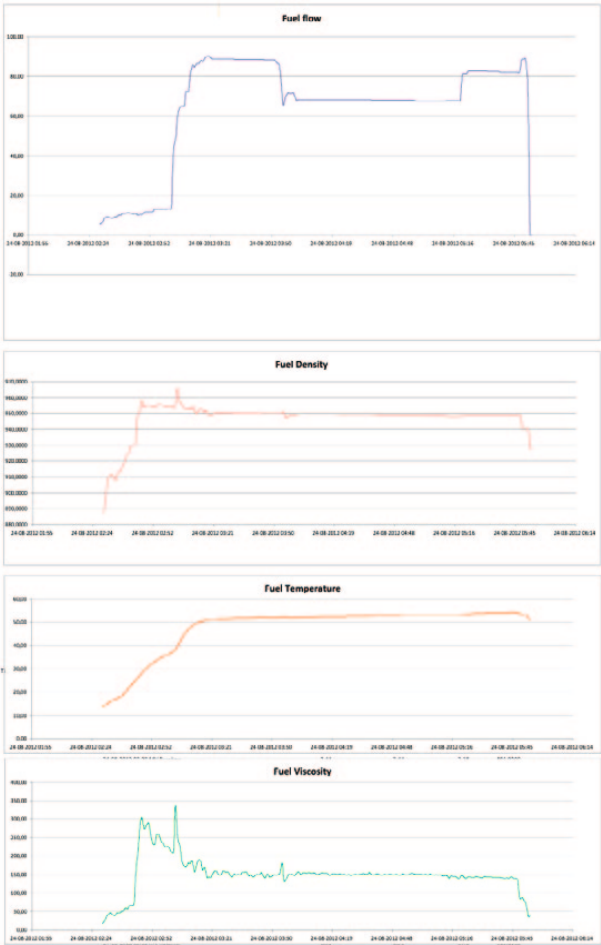
The Bunker Delivery Report is automatically generated after bunker completion and contains all necessary information to document the delivery.

The content of the Bunker Delivery Receipt can be modified to fulfill your specific needs.

### Data log:

The data log contains all real time data collected during the complete bunker operation.

- Fuel oil and gas oil flow.
- Fuel oil and gas oil density.
- Fuel oil and gas oil temperatures.
- Flow ratio fuel oil/gas oil.
- Volume of delivered product.
- Viscosity of delivered product.
- Density of delivered product.
- Temperature of delivered product.



# Bunker Blending

Insatech  
Algade 133  
4760 Vordingborg  
Denmark



BDN Nummer		00000	
Delivery certificate		Counter receipt / BDN No. :	
Start		Stop	
24. august 2012 2:29		0. januar 1900 0:00	
Supplier:			
Name:	Insatech Marine		
Adress:	Algade 133		
Post. No.+ City:	4760 Vordingborg		
Telephone no.	+45 55372095		
Ship:			
Ship's name:	MV Receiver		
IMO no.	9181012		
Harbour:	Vordingborg roads		
Product:			
Delivered product:	0		
Delivered volume [m3]:	0,000		
Temperature deg. [C]	0,0		
Density 15 deg. C kg/m3	0,0		
Delivered volume [m3] @ 15 deg C:	#DIVISION/0!		
Delivered mass [ton]	#DIVISION/0!		
Sulphur content [%m/m]:	0		
Vessel retained sample no: MARPOL ANNEX VI	0123456		
Vessel retained sample no.:	7891011		
Supplier retained sample no.:	1110987	6543210	
Statement from supplier confirms that this delivery is in accordance with MARPOL 14(1) or (4)(a) and Regulation 18(1) of Annex VI.			
12. januar 2012		0	
Date:		Signature - ship	
Signature - tankfarm			

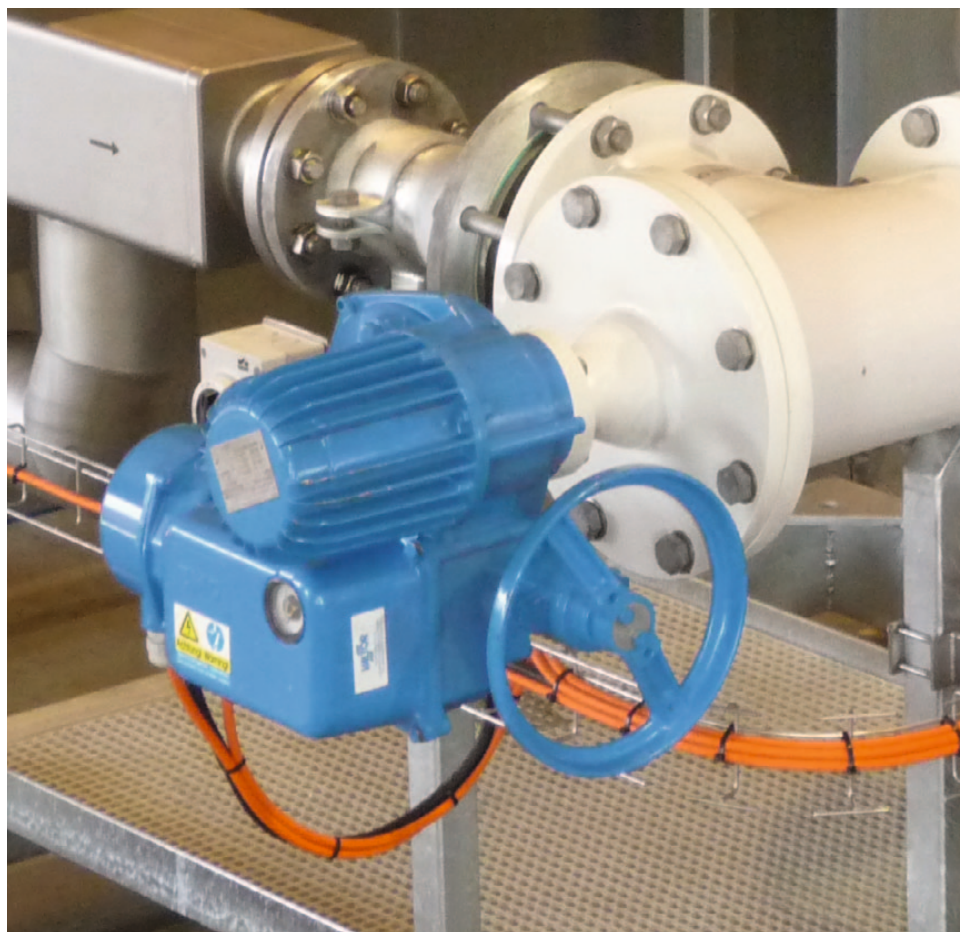
MV Receiver 0100yyyy-0

Layout for typical printed Bunker Delivery Report

Blending Valve

# HABB

## High Accuracy Bunker Blending



### About us

Insatech A/S was established in 1989, and has, over the years, had a positive business development; today we are more than 50 employees, and are considered one of the market leaders. We are based in Vordingborg in the south of Zealand, in an old historic building. Since December 2005 we are part of the Addtech Group of companies – Addtech AB, Stockholm.

As a result of our longstanding partnership with some of the world's leading manufacturers within instrumentation and automation, we are able to provide a global service.

We supply quality products, solutions and services in the fields of measurement, control and calibration to nearly all industrial segments, as well as utilities, and we work as a professional partner for our suppliers and for our customers – we believe in long term relationships.

Our main markets are in the Pharmaceutical, Food, Energy, Marine/Oil & Gas Industry, which means we have a strong knowledge of the special applications, as well as the requirements for documentation in these areas.

### Our main business areas:

- Process instrumentation and calibration equipment
- Automation, control and data acquisition
- System design, engineering and validation (DCS and Safety Systems)
- Service/maintenance and calibration (ISO 17025 accreditation)
- Site surveys and evaluation of process optimization based on better control practices
- Marine- and ship solutions, Cargo Management Systems
- Project Management
- Flow rigs / calibration rigs
- Special fittings
- Product enhancements
- Wireless solutions for monitoring and control
- Complete solutions including panels and commissioning
- Seminars and training

**INSATECH** *People - Ideas - Solutions*  
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 Temperature calibration  
 Electrical calibration