



Operators Panel – User Manual

Version 1.2 rev. 2

Table of Contents

1. General	5
1.1. Three layers of detail	5
1.1.1. The Menu	5
1.1.2. The Overviews	5
1.1.3. The Detail Views	5
2. The Menu	6
2.1. Performance Data	7
2.2. Navigation Data	7
2.3. Vessel Movement	7
2.4. Other Data	7
2.5. Report	7
2.6. Counters	7
2.7. Settings and Service	7
2.8. Alarms	7
3. Performance Data	8
3.1. Performance Data → Fuel Consumption	8
3.1.1. Consumers	8
3.1.2. Current Consumption (kg/h)	8
3.1.3. Total Consumption (MT)	8
3.1.4. Total of All Consumers	9
3.1.5. Trend	9
3.2. Performance Data → Fuel Consumption → Detailed View	9
3.2.1. Current consumption	9
3.2.2. Total Consumption	9
3.2.3. Running Hours	9
3.2.4. Load	9
3.2.5. Production	9
3.2.6. SFOC	9
3.2.7. MCR	9
3.2.8. Start/hour	10
3.2.9. Min/start	10
3.2.10. Examples	10
3.3. Performance Data Fuel → Consumption → Consumer → Flow Meters	13
3.4. Performance Data → Propulsion – Overview	14
3.4.1. Power (kW)	14
3.4.2. Energy (kWh)	14
3.4.3. Speed (RPM)	14
3.4.4. Revolutions (Revs.)	14

3.4.5. Torque (kNm).....	14
3.4.6. Thrust (kN).....	15
3.4.7. Trend	15
3.5. Performance Data → Power Production	16
3.5.1. Producers	16
3.5.2. Power (kW).....	16
3.5.3. Energy (kWh).....	16
3.5.4. Trend	16
3.6. Power Production → Generator → Detail View.....	17
3.6.1. Power.....	17
3.6.2. Energy	17
3.6.3. Power Factor	17
3.6.4. Running Hours.....	17
3.7. Performance Data → Power Consumption – Overview	18
3.7.1. Consumers	18
3.7.2. Power (kW).....	18
3.7.3. Energy (kWh).....	18
3.7.4. Trend	18
3.8. Power Consumption → Power Consumer – Detail View.....	19
3.8.1. Power.....	19
3.8.2. Energy	19
3.8.3. Power Factor	19
3.8.4. Running Hours.....	19
3.9. Performance Data – Trend Settings.....	20
3.9.1. Scalable settings.....	20
3.9.2. Visibility.....	20
4. Navigation Data	21
4.1. Navigation Data – Weather – Detail Overview	21
5. Alarms	22
5.1. Alarm – Overview.....	22
6. Setting and Service	23
6.1. Setting and Service → Project Info	24
6.1.1. Setting and Service → Project Info → Contact Information	24
6.1.2. Setting and Service → Project Info → Manual.....	25
6.1.3. Setting and Service → Project Info → Time Settings.....	25
6.2. Setting and Service → Scaling Settings → Consumers.....	26
6.2.1. Setting and Service → Scaling Settings → Flow Meters.....	27
6.2.2. Setting and Service → Scaling Settings → Power Meter.....	28
6.2.3. Setting and Service → Scaling Settings → Shaft Power Meters.....	29

6.3. Setting and Service → Clean Display.....	30
7. Troubleshooting	31
7.1. List of alarms	31
7.1.1. Flow Meter Alarms	31
7.1.2. Power Meters	32
7.1.3. Shaft Power Meters.....	32

1. General

The Operators Panel has been designed as a Conning Display and provides easy access to real time data on the operational status of the vessel and its machinery as well as the effect of external factors, such as for example wind and waves.

Wherever applicable, every available unit of measurement for a given parameter, has been made available for selection via drop down menus, so that you may select your preferred unit.

Every part of the interface is focused alerting you to conditions that are not within the expected range and providing you with decision support on how to bring the condition back into range.

Any element of the interface that has been grayed out is not currently active. This may be due to the lack of an instrument to measure this parameter or that the instrument has not been connected to the system.

Note: Any communication regarding the use, troubleshooting or modification of the Operators Panel interface must be sent to marinesupport@insatech.com.

1.1. Three layers of detail

The interface consists of three layers of information, the Menu with its nine categories, one or more Overview tabs for each of the nine categories and finally a Detail view for each individual element on each of the Overview tabs.

1.1.1. The Menu

The Menu provides access to the Overview tabs of each of the nine categories.

1.1.2. The Overviews

The Overviews allows you to navigate back to the Menu and to select between the Overviews available for the selected category.

1.1.3. The Detail Views

The Detail Views are large pop-ups that give you in depth information about a piece of machinery or a measurement instrument. They may be accessed by pressing the piece of machinery or the measurement instrument that is shown on an Overview.

Some Detail Views allow you to access other Detail Views from the same Overview tab, that naturally belong together.

2. The Menu

The Menu gives you access to each of the nine categories of Overviews. A piece of data may be available in multiple categories, but it will be presented differently depending on the category, in order to provide value in its specific context.



2.1. Performance Data

This page shows information about:

- Fuel Consumption
- Propulsion
- Power Production
- Power Consumption

2.2. Navigation Data

This page shows information about.

- Weather

2.3. Vessel Movement

- This feature is not yet released.

2.4. Other Data

- This feature is not yet released.

2.5. Report

- This feature is not yet released.

2.6. Counters

- This feature is not yet released.

2.7. Settings and Service

This page shows information about:

- Project information
- Scaling settings
- Clean display function

2.8. Alarms

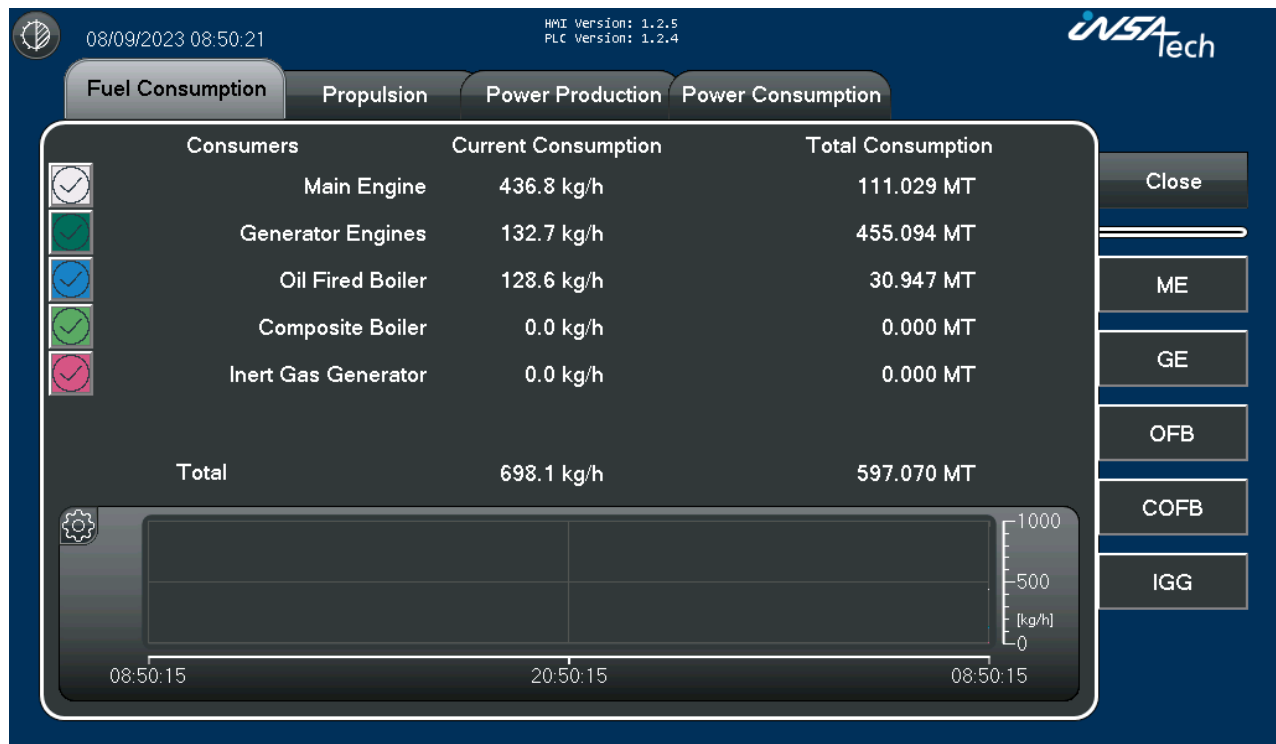
The complete list of all alarms.

3. Performance Data

3.1. Performance Data → Fuel Consumption

On the fuel consumption page, you find the information of all the consumers with flow meters integrated into the system.

With flow meters installed, the accuracy and reliability of the fuel consumption data are enhanced, ensuring that the vessel's operations can be optimized based on trustworthy metrics.



3.1.1. Consumers

This list represents the various consumers on the vessel with installed flow meters to accurately measure their fuel consumption. The presence of flow meters ensures precise monitoring and accountability of fuel use for these consumers.

3.1.2. Current Consumption (kg/h)

For each consumer, fuel consumption rate in kilograms per hour (kg/h) is measured based on the consumer's specific fuel system setup.

Different setups, such as a 3-way system, inlet and outlet measurement, or a feed supply measurement, can influence the consumption figures.

Incorporating these specifics ensures a more nuanced understanding of the fuel consumption patterns for each system. This metric is crucial for monitoring and adjusting operations to ensure optimal fuel efficiency.

3.1.3. Total Consumption (MT)

Next to the Current Consumption, the Total Consumption in metric tons (MT) gives an accumulated measure of how much fuel each consumer has used.

This figure, like the Current Consumption, is calculated based on the particular fuel system setup of each consumer, ensuring a detailed and accurate understanding of long-term fuel usage patterns.

3.1.4. Total of All Consumers

At the bottom of the list, a cumulative total indicates the overall fuel consumption by all consumers combined.

3.1.5. Trend

This trend displays the current consumption rate over time, providing insights into patterns of fuel use. This trend can assist in:

- Identifying periods of high or low fuel consumption.
- Making predictions about future fuel needs.
- Spotting any anomalies or sudden spikes in fuel usage, which might indicate a problem.

For more information see section [Performance Data – Trend Settings](#)

3.2. Performance Data → Fuel Consumption → Detailed View

The detailed Fuel Consumptions pages focuses on the individual consumers. Data is presented differently depending on consumer type, installed hardware and flow meter setup.

3.2.1. Current consumption

Fuel consumption rate in kilograms per hour (kg/h) is measured based on the consumer's specific fuel system setup.

Different setups, such as a 3-way system, inlet and outlet measurement, or a feed supply measurement, can influence the consumption figures.

3.2.2. Total Consumption

Total Consumption in metric tons (MT) gives an accumulated measure of how much fuel each consumer has used.

This figure, like the Current Consumption, is calculated based on the particular fuel system setup of each consumer, ensuring a detailed and accurate understanding of long-term fuel usage patterns.

3.2.3. Running Hours

Counts the total number of hours the consumer has been operational.

3.2.4. Load

Load indicates the current operational state of the main engine relative to its maximum capacity.¹

3.2.5. Production

Production indicates the current energy being produced by the generators.²

3.2.6. SFOC

SFOC: Represents the unadjusted or raw measurement of the fuel consumption rate of the engine relative to its power output. Typically measured in grams per kilowatt-hour (g/kWh), this metric offers insights into the engine's efficiency.

LCV Corrected SFOC: This represents the SFOC value adjusted for the Lower Calorific Value (LCV) of the fuel. LCV correction accounts for the energy content of the fuel, providing a more accurate measure of engine efficiency.³

3.2.7. MCR

This visual representation indicates the engine's current performance as a percentage of its rated maximum power.

The bar graph, ranging from 0% to 100%, offers a quick visual cue to assess whether the engine operates within its optimal range or near its limits.

¹ Only available on Main Engine page if Shaft Power Meter is installed.

² Only available on Generator Engines page if Power Meters are installed.

³ Only available on Main Engine and Generator Engines pages if Shaft Power Meter / Power Meters are installed.

3.2.8. Start/hour

This gauge indicates the number of times the oil-fired boiler is started within an hour.⁴

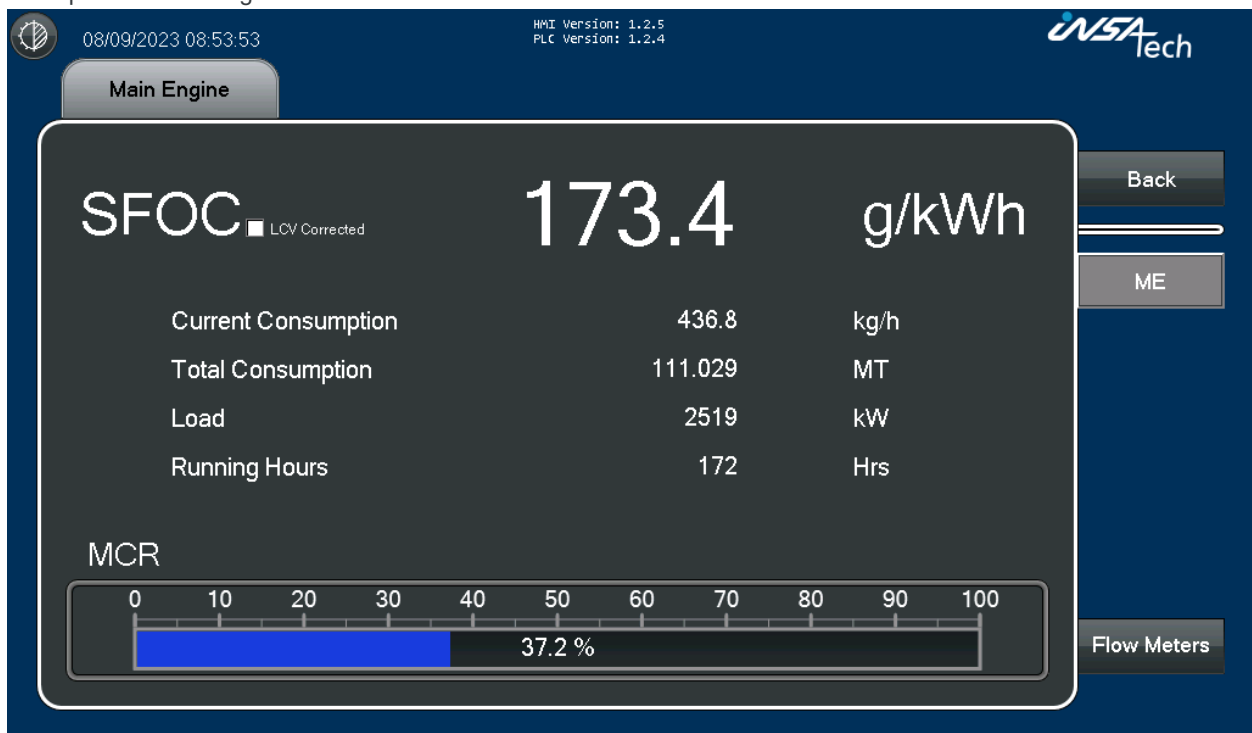
3.2.9. Min/start

Represents the average duration the boiler operates each time it's started.⁵

3.2.10. Examples

Depending on the consumers integrated into system different views appears when pressing the consumers button on the right side of Fuel Consumption page.

Example of a Main engine where Shaft Power Peter is installed:

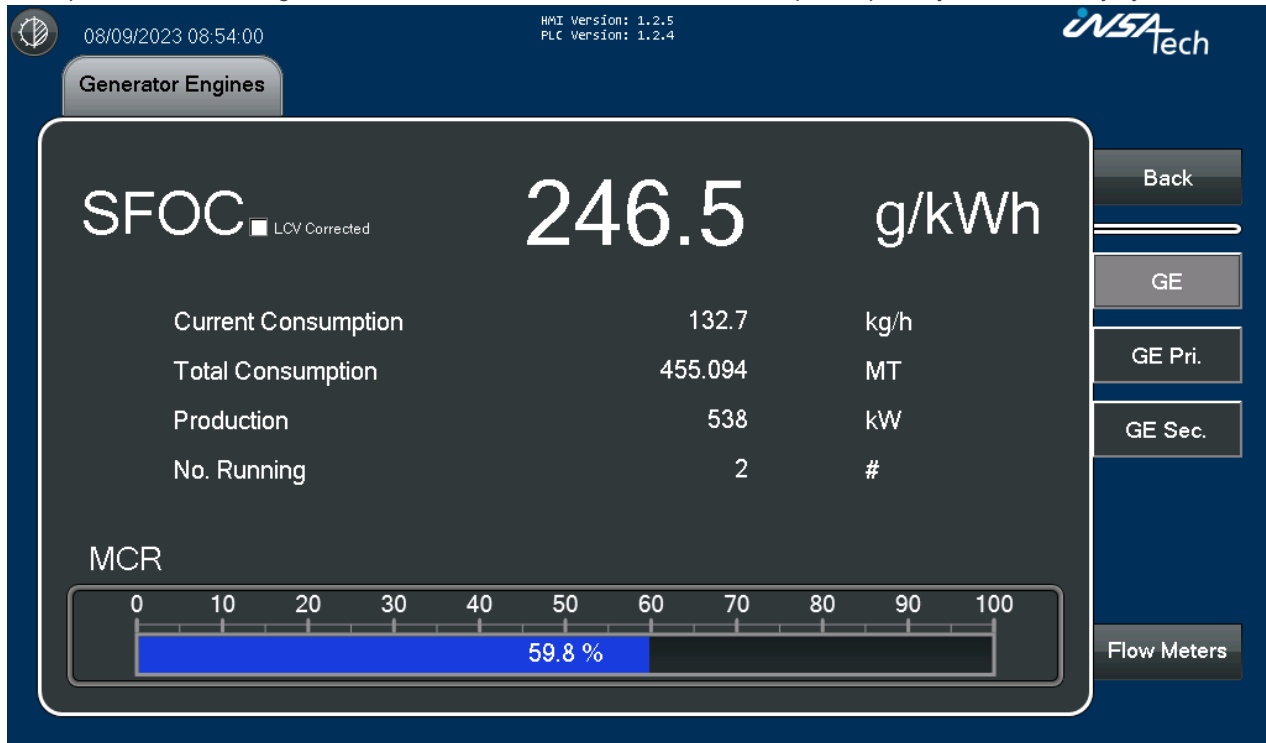


⁴ Only available on Oil Fired Boiler and Composite Boiler pages.

⁵ Only available on Oil Fired Boiler and Composite Boiler pages.

Generator Engines can have fuel supply from multiple systems, primary and secondary. In cases like that there is a combined consumer for both systems, showing the combined values of both systems.

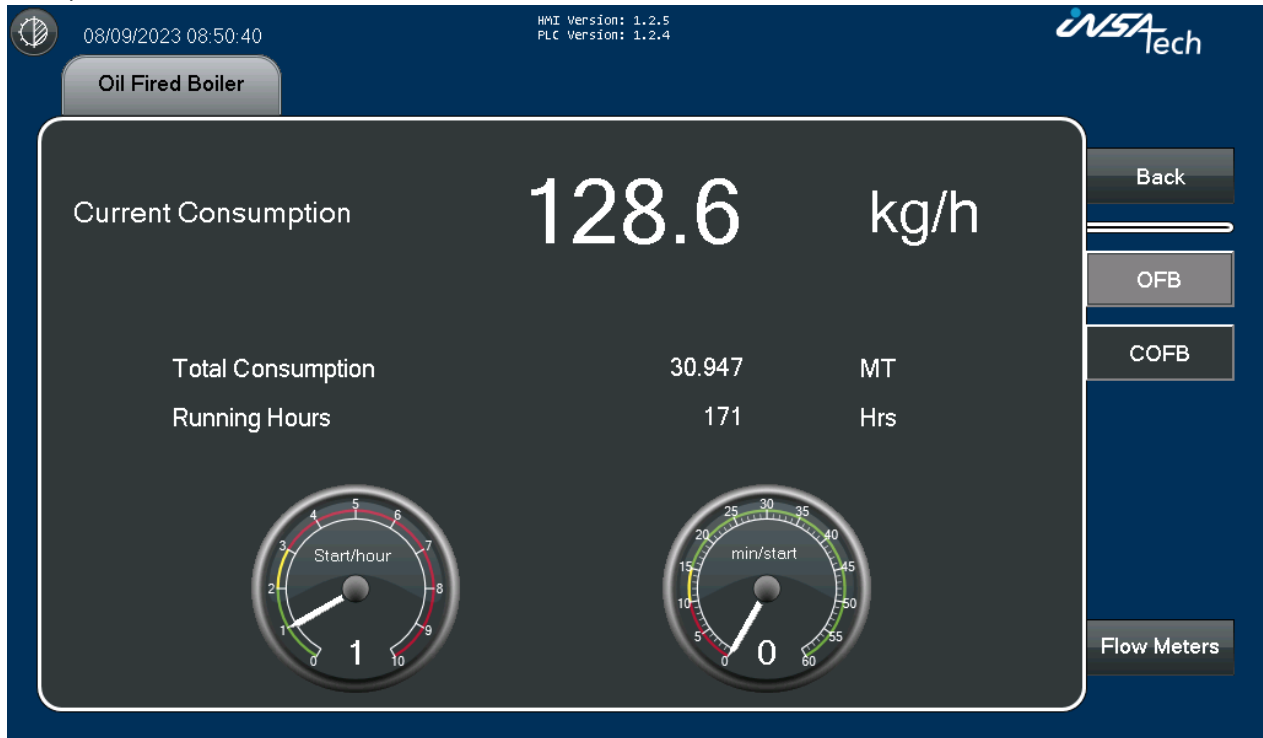
Example of Generator Engines where Power Meters are installed in a setup both primary and secondary system:



Example of Generator Engines primary system:



Example of Oil Fired Boiler:



Example of a consumer, in this case Inert Gas Generator, where only Fuel Consumption is measured.



3.3. Performance Data Fuel → Consumption → Consumer → Flow Meters

When pressing the Flow meter button, you will gain access to this HMI display that shows all the data for each flowmeter.

Coriolis meters utilizes a measurement technology which can calculate the Density at 15°C.

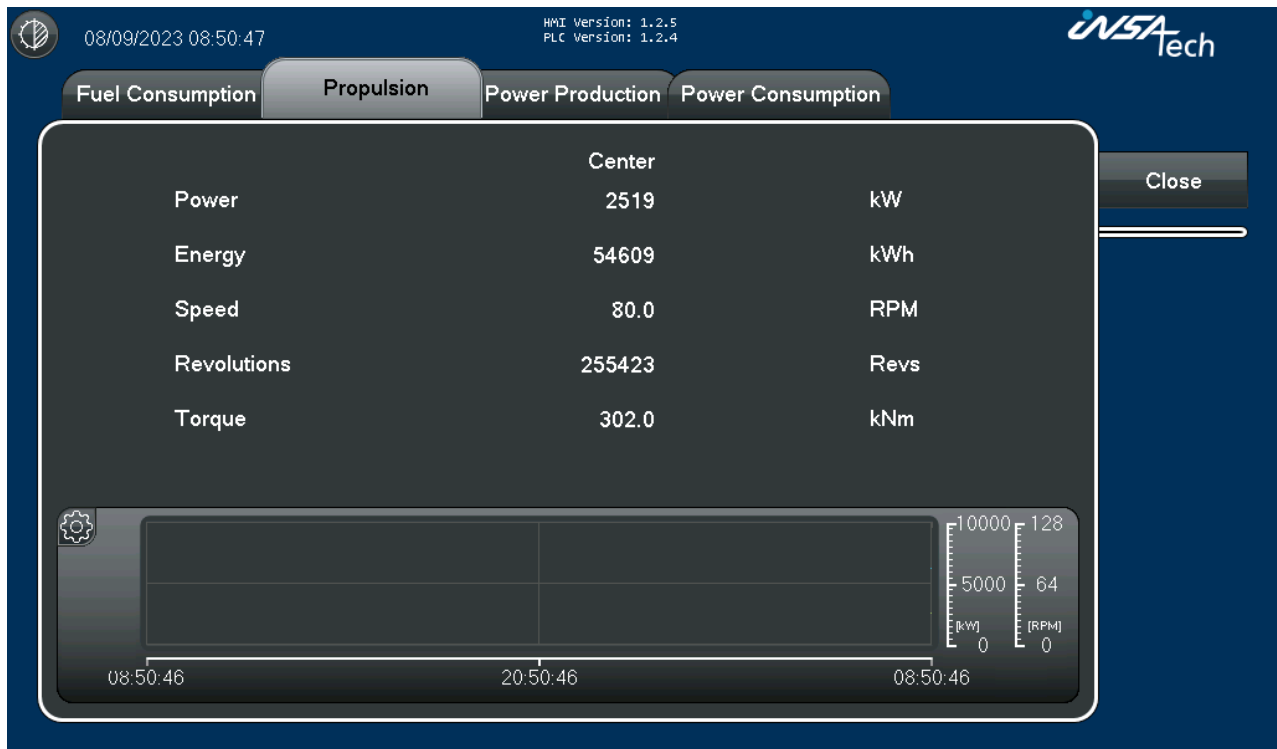
On flowmeters like mechanical, Density at 15°C need to be manually entered in the setting menu, see section [Setting and Service → Scaling Settings → Flow Meters](#).

The Detail View can be closed using the “Close” button on the top right-hand side. Pressing this button will bring you back to the Consumer from which the Detail View was accessed.

FM Name	Flow Mass	Total Mass	Flow Volume	Total Volume	Fuel Temp.	Actual Density	Density @ 15 °C	Autozero Value
Main Engine Supply	436.8 kg/h	111.029 MT	484.3 l/h	129.038 m³	22.0 °C	902.0 kg/ m³	906.9 kg/ m³	2.20 kg/h
GE Primary Supply	132.7 kg/h	402.520 MT	147.0 l/h	279.604 m³	23.3 °C	903.0 kg/ m³	908.8 kg/ m³	3.30 kg/h
GE Secondary Supp	0.0 kg/h	52.574 MT	0.0 l/h	254.347 m³	24.4 °C	904.0 kg/ m³	910.6 kg/ m³	4.40 kg/h
OFB Supply	128.6 kg/h	30.947 MT	142.1 l/h	19.294 m³	25.5 °C	905.0 kg/ m³	912.4 kg/ m³	5.50 kg/h
COFB Supply	0.0 kg/h	57.500 MT	0.0 l/h	0.000 m³	40.0 °C	832.2 kg/ m³	850.0 kg/ m³	0.00 kg/h
IGG Supply	0.0 kg/h	0.000 MT	0.0 l/h	0.000 m³	0.0 °C	0.0 kg/ m³	0.0 kg/ m³	0.00 kg/h

3.4. Performance Data → Propulsion – Overview

The propulsion data is sourced from installed shaft power meters on the vessel. These meters provide crucial insights into the vessel's propulsion system performance.



3.4.1. Power (kW)

This metric indicates the real-time power output of the propulsion system, measured in kilowatts (kW). Monitoring power helps in ensuring optimal performance and efficiency.

3.4.2. Energy (kWh)

Energy, measured in kilowatt-hours (kWh), signifies the accumulated power consumption. It gives insights into the total energy expenditure of the propulsion system.

3.4.3. Speed (RPM)

Revolutions Per Minute (RPM) indicates the speed at which the shaft rotates. A consistent RPM ensures smooth operation, while sudden changes might signal potential issues.

3.4.4. Revolutions (Revs.)

This metric counts the total number of shaft rotations. Monitoring revolutions can assist in maintenance planning and detecting wear and tear.

3.4.5. Torque (kNm)

Torque, measured in kilonewton-meters (kNm), represents the force applied to turn the shaft. It's an essential metric in understanding the propulsion system's load and efficiency.

3.4.6. Thrust (kN)

Thrust, measured in kilonewtons (kN), provides insights into the force propelling the vessel forward. However, this data is available only if the vessel has a specialized thrust shaft power meter installed. Thrust measurements can be crucial for vessels requiring precise maneuvering or performance assessments.⁶

3.4.7. Trend

This trend displays the Power of the propulsion and Speed of the shaft over time.

Interpreting the trends:

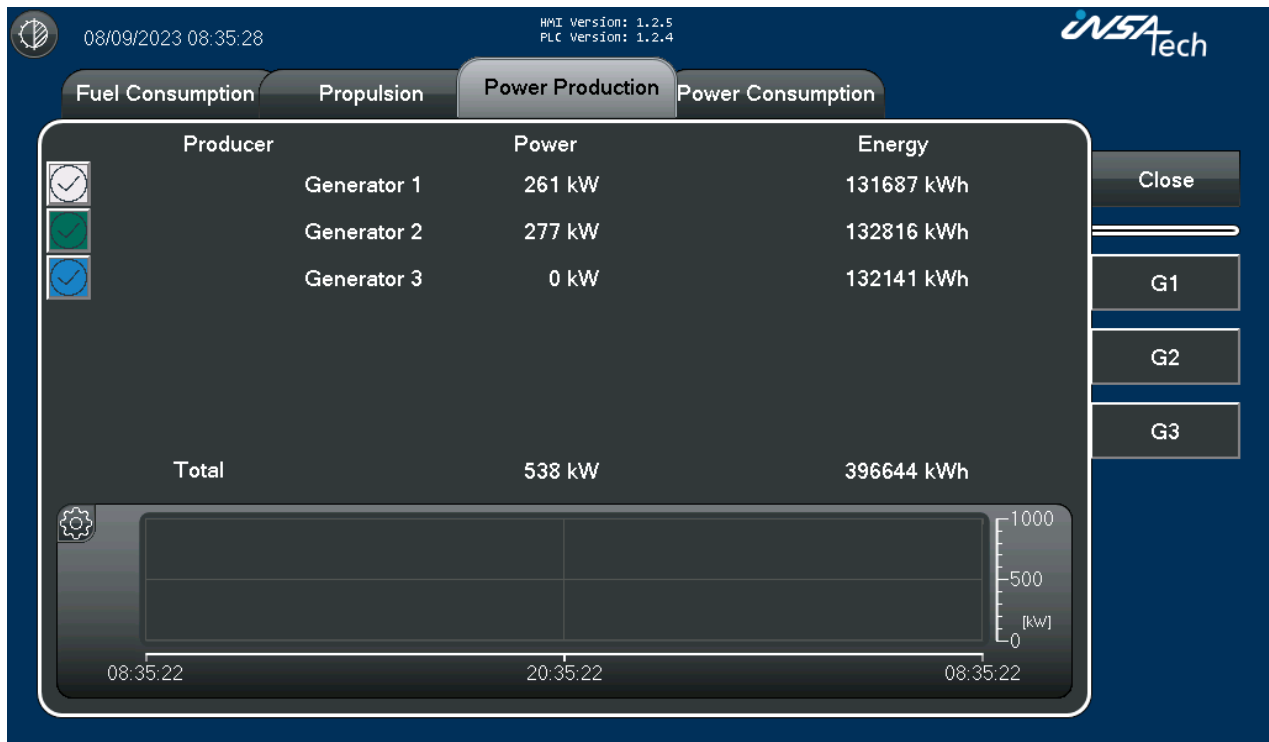
- Correlate the two trends:
 - If you see a spike in kW and a corresponding increase in RPM, it means the vessel increased power to accelerate.
- Look for anomalies:
 - If the kW spikes but RPM doesn't change much, it might indicate inefficiency or a potential issue.
- Identify stable periods:
 - Consistent kW and RPM suggest efficient and steady cruising.

For more information see section [Performance Data – Trend Settings](#)

⁶ Only visible if a Shaft Power Meter supports thrust measurement.

3.5. Performance Data → Power Production

On the Power Production page, you find information of the energy-producing systems on the vessel where a power meter is installed.



3.5.1. Producers

This list represents the various energy-producing systems on the vessel, such as generators and shaft generators. Each of these has installed power meters to accurately measure their energy output.

3.5.2. Power (kW)

Each generator or energy producer provides a real-time power output in kilowatts (kW). This metric reflects the current energy being produced by the generator.

Monitoring this can help ensure that each generator is operating efficiently and providing the necessary power to meet the vessel's demands.

3.5.3. Energy (kWh)

Each generator or energy producer cumulative energy produced is displayed in kilowatt-hours (kWh).

This aggregated metric can help in understanding the overall contribution of each generator to the vessel's energy needs over time.

3.5.4. Trend

This trend displays of the power in kilowatts (kW) and can provide insights into the performance of the generators.

Interpreting the trend can provide actionable insights:

- Operational Adjustments:
 - If the power production frequently fluctuates, it might be worth investigating the cause and making operational adjustments for efficiency.
- Maintenance Indicators:

- Consistent drops in power output can be early indicators of required maintenance or potential issues with the generators.
- Efficiency Assessment:
 - Periods of consistent power output can be used to assess the efficiency of the generators and their ability to meet the vessel's energy demands.

For more information see section [Performance Data – Trend Settings](#)

3.6. Power Production → Generator → Detail View

The detail Power Production pages focuses on the individual power producers. Data is presented differently depending on the type of Power Meter used to measure the power production.

3.6.1. Power

Power production rate in kilowatts (kW).

3.6.2. Energy

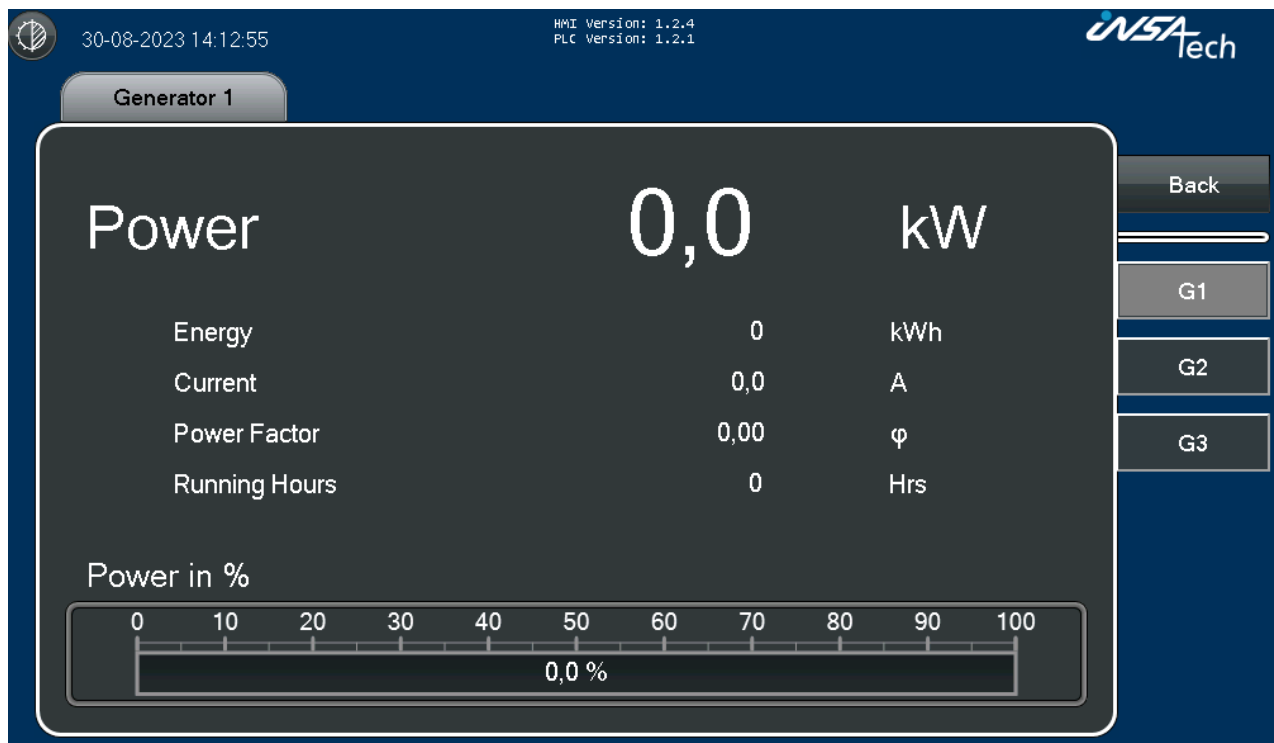
Cumulative energy production displayed in kilowatt-hours (kWh).

3.6.3. Power Factor

Power Factor is a measure of how effectively electrical power is being used in a system.

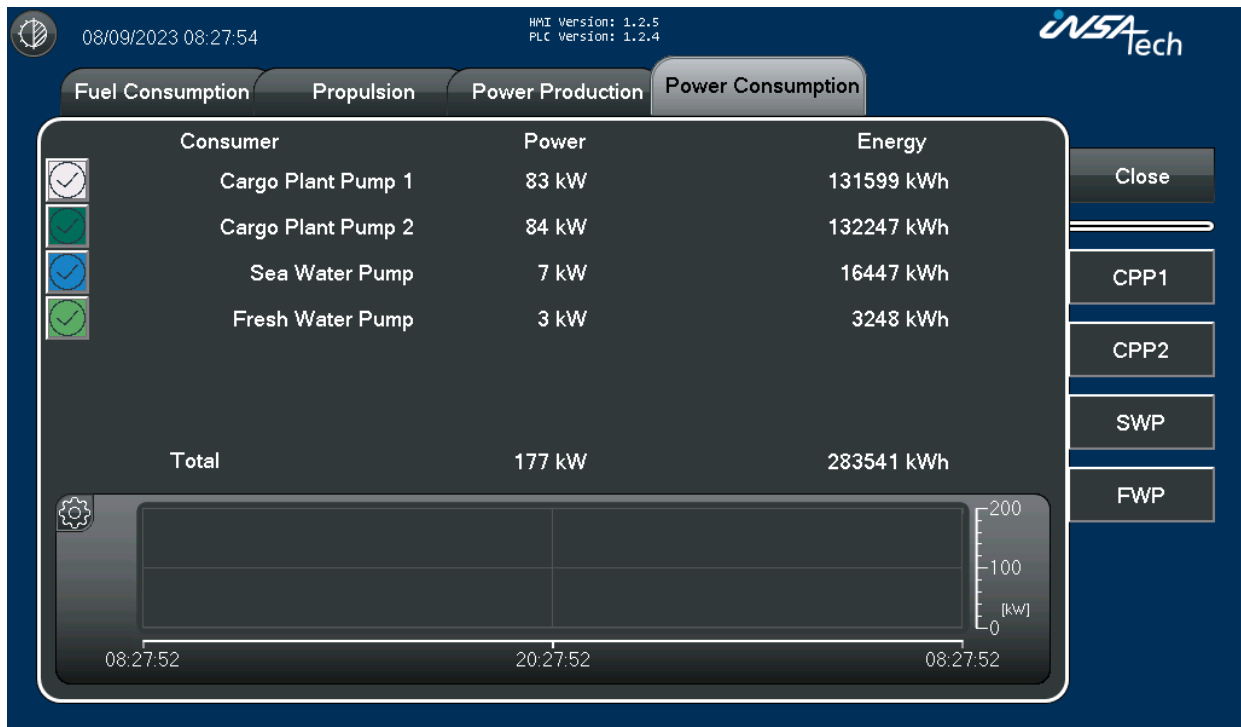
3.6.4. Running Hours

Counts the total number of hours the producer has been operational.



3.7. Performance Data → Power Consumption – Overview

On the Power Consumption page, you find information of the energy-consuming systems on the vessel where a power meter is integrated.



3.7.1. Consumers

This list represents the various systems or components on the vessel that consume power. These can include cargo pumps, cooling pumps, lighting systems, and other equipment. Each of these has installed power meters to accurately measure their energy consumption.

3.7.2. Power (kW)

Each power consumer provides a power consumption rate in kilowatts (kW). This metric reflects the current energy being drawn by the equipment or system.

Monitoring this can help ensure that each piece of equipment is operating efficiently and that the vessel's overall energy demands are being met.

3.7.3. Energy (kWh)

Each power consumer cumulative energy consumption displayed in kilowatt-hours (kWh).

This aggregated metric can help in understanding the overall energy demands of each piece of equipment or system.

3.7.4. Trend

This trend displays of the power in kilowatts (kW) and can provide insights into how the equipment and systems draw power over different periods.

Interpreting the trend can provide actionable insights:

- Operational Adjustments:
 - If power consumption frequently fluctuates, it might be worth investigating the cause and making operational adjustments to ensure energy efficiency.

- Maintenance Indicators:
 - Consistent increases in power consumption can be early indicators of required maintenance or potential inefficiencies in the systems.
- Efficiency Assessment:
 - Periods of consistent power consumption can be used to assess the efficiency of the equipment and their ability to operate without overloading the vessel's energy resources.

For more information see section [Performance Data – Trend Settings](#)

3.8. Power Consumption → Power Consumer – Detail View

The detail Power Consumption pages focuses on the individual power consumers. Data is presented differently depending on the type of Power Meter used to measure the power consumption.

3.8.1. Power

Power consumption rate in kilowatts (kW). This metric reflects the current energy being drawn by the equipment or system.

3.8.2. Energy

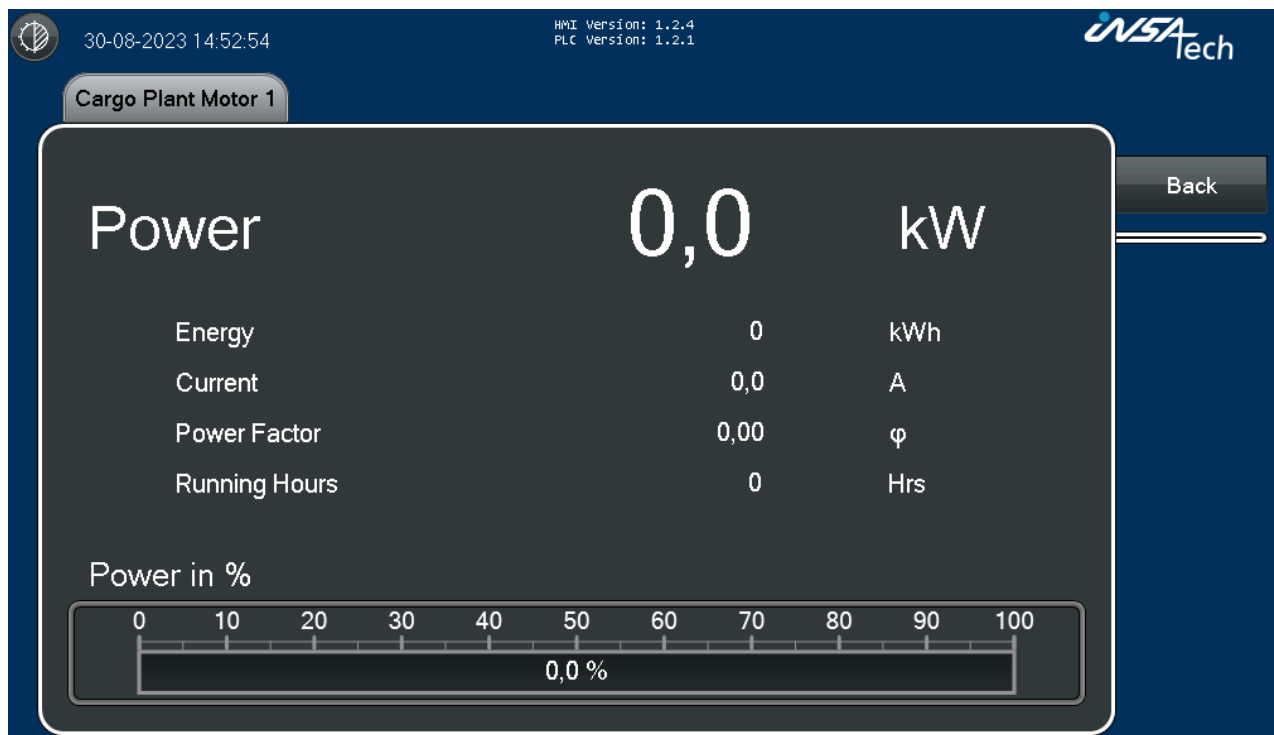
Cumulative energy consumption displayed in kilowatt-hours (kWh).

3.8.3. Power Factor

Power Factor is a measure of how effectively electrical power is being used in a system.

3.8.4. Running Hours

Counts the total number of hours the consumer has been operational.

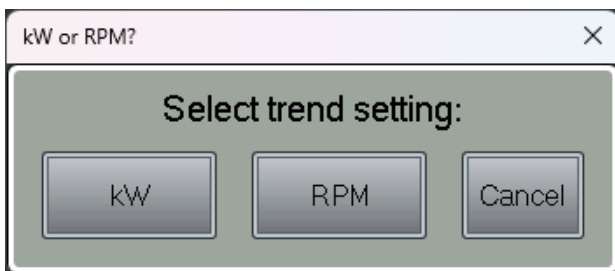


3.9. Performance Data – Trend Settings

The gear icon in the top left corner of the trend allows the user to change the setup for the trend.



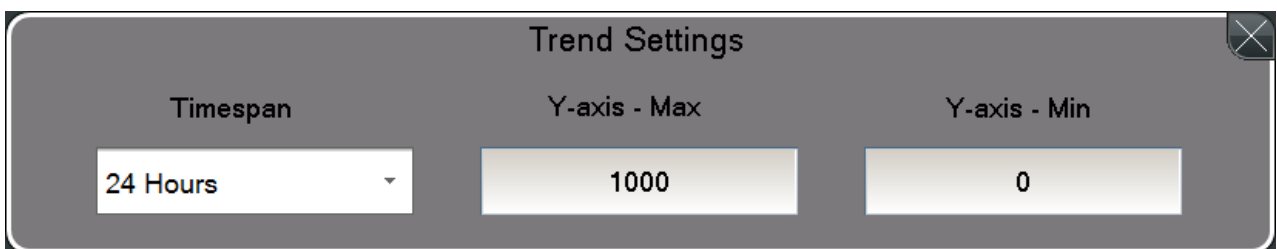
When pressing the gear icon on the Propulsion page the user gets the opportunity to change between kW or RPM.



3.9.1. Scalable settings

- Timespan:
 - From 10 minutes to 7 days
- Y-axis – Max:
 - Adjusts the maximum value of the trends y-axis.
- Y-axis – Min:
 - Adjusts the minimum value of the trends y-axis.

When finished adjusting the settings press the cross in the top right corner.



3.9.2. Visibility

A trend line can be removed from the trend by pressing the button to left of the names. If it



Trend line is visible.



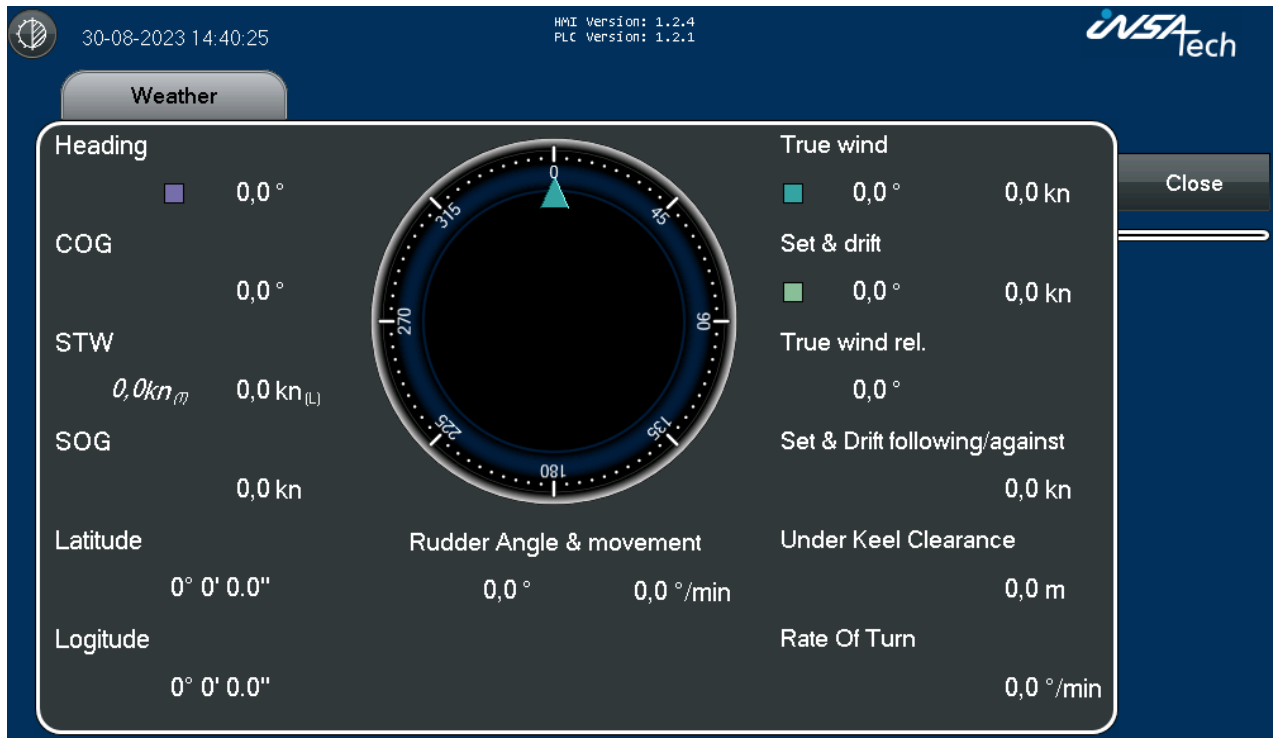
Trend line is invisible.

4. Navigation Data

4.1. Navigation Data – Weather – Detail Overview

Combines data from GPS, Gyro Compass, Doppler Log, Anemometer, etc. to give you an overview of the current weather and current conditions.

Of special interest is the True wind speed and the True wind direction relative to the vessel as well as the component of the current vector that is acting following/against the vessel.



Depending on the vessel inputs some data will not be visible.

5. Alarms

Alarms will generally be shown on Detail Views as applicable, but then only for the piece of machinery or measurement instrument that is selected. The full list of alarms can be found here.

5.1. Alarm – Overview

Overview of the list of all alarms that have been logged and their status.

The screenshot shows the 'Alarm Overview' window with the following data:

State	Text	Active Time	Inactive Time	Normal Time
Normal	OFB Sup. - Signal Failure	08/09/2023 06:48:06	08/09/2023 06:48:11	08/09/2023 06:48:17
Inactive	GE Sec. Sup. - Signal Failure	08/09/2023 06:47:56	08/09/2023 06:48:04	
Active	ME Sup. - Signal Failure	08/09/2023 06:47:45		
Acknowledge	GE Pri. Sup. - Signal Failure	08/09/2023 06:47:33		

Summary: Active: 1 Inactive: 1 Ack: 1 Normal: 1 Disabled: 0 [4 / 4]

Buttons: Close, Ack, Ack. All, Clear

Alarm Colors	Description
White	Inactive Acknowledged Alarms (can be cleared)
Green	Inactive not Acknowledged Alarms
Yellow	Active Acknowledged Alarms
Red	Active Alarms

When new active alarms are detected, this box will appear in the top of the screen:

New alarm detected HMI Version: 1.2.5
PLC Version: 1.2.4 **Go to alarms**

By pressing the arrow, it will navigate to the Alarm page, where acknowledgement of alarms can be done. And after handling the alarms, simply press close and it will return the page it came from.

On the Start page the Alarm button will blink red:



For more detail view and troubleshooting of each alarm see section [List of alarms](#)

6. Setting and Service

Contains all administrative functions. Generally modifying settings on the Operators Panel will require an administrator login, that is not available to you on board, but some specific thresholds and settings may be available without this login and can be changed by the crew.

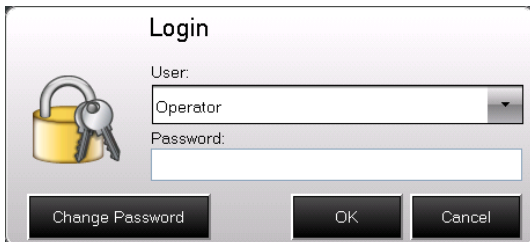
It's necessary to login to change the settings.

User: Operator

Password: 1989

Custom password will reset on system update or service request.

We don't recommend changing the password.



Login

User:
Operator

Password:

Change Password OK Cancel

6.1. Setting and Service → Project Info

This settings page allows you to see the device information and change contact, time zone and IP-settings.

Parameter	Description
IMO Number	IMO number of the vessel
Img Version	Image version of the HMI panel
Dev Version	Developer version if the HMI software
HMI Version	Version of the HMI program
PLC Version	Version of the PLC program

08/09/2023 07:04:57 HMI Version: 1.2.5 PLC Version: 1.2.4 **INSATECH**

Project Info | Scaling Settings | Clean Display

IMO Number : 1122340 Network
 Img Version: 8.0.909 IP: 192.168.0.5
 Dev Version: 2.47.473.0
 HMI Version: 1.2.5
 PLC Version: 1.2.4

Used Storage
 CPU Load
 Used RAM

Close
 Contact Info
 Manual
 Timezone Settings
 Login

The menu on the right side gives the opportunity to change between the settings.

6.1.1. Setting and Service → Project Info → Contact Information

Insatech A/S
 Næstvedvej 73C
 4720 Præstø
 DK-Denmark
 +45 5537 2095
 www.insatechmarine.com
 marinesupport@insatech.com

6.1.2. Setting and Service → Project Info → Manual

Download the Manual version matching the HMI user interface use the QR code or ULR link.



6.1.3. Setting and Service → Project Info → Time Settings

Standard settings for time zone it UTC Coordinated Universal Time, and its not recommended to changed.



To change the time zone, login as Operator is required.

6.2. Setting and Service → Scaling Settings → Consumers

This screen is dedicated to adjusting the scaling settings for various consumers on the vessel. Proper scaling ensures accurate representation and monitoring of fuel consumption and other relevant metrics.

On the left side, there's a list of all the consumers available in the system.

Parameter	Description
Low Cut	If consumption is below the low cut, consumption will not be set to zero for the specified consumer.
LCV	Lower Calorific Value from bunker test report. Used for the LCV corrected SFOC calculations of the given consumer.
Running hours offset	Use to synchronize with local hour counters.

The screenshot shows the 'Scaling Settings' screen for 'Consumers'. At the top, there are three tabs: 'Project Info', 'Scaling Settings' (which is active), and 'Clean Display'. The main area contains a table with the following data:

Consumer	Low Cut	LCV	Running Hours Offset
Main Engine	0 kg/h	41067 kJ/kg	0 hrs
Generator Engines	0 kg/h	41067 kJ/kg	0 hrs
Generator Engines Primary	0 kg/h	0 kJ/kg	0 hrs
Generator Engines Secondary	0 kg/h	0 kJ/kg	0 hrs
Oil Fired Boiler	0 kg/h		0 hrs

On the right side, there is a vertical menu with buttons for 'Close', 'Consumers', 'Flow Meters', 'Power Meters', 'Shaft Power Meters', and 'Login'. The top of the interface shows the date and time '08/09/2023 07:08:08', version information 'HMI Version: 1.2.5' and 'PLC Version: 1.2.4', and the 'NSATech' logo.

The menu on the right side gives the opportunity to change between the settings.

6.2.1. Setting and Service → Scaling Settings → Flow Meters

This screen is dedicated to adjusting the scaling settings for various consumers on the vessel. Proper scaling ensures accurate representation and monitoring of fuel consumption and other relevant metrics.

On the left side, there's a list of all the mechanical flow meters available in the system. If no mechanical flow meters in the system noting the visible on this screen.

Parameter	Description
Mech. FM Settings	Constant for pulses per liters or mA limits used to calculate volume flow from volumetric flow meters.
Man. Temp.	A manual temperature can be entered if the temperature sensor of the flow meters is defect.
Density @ 15°C	Enter the Density15 from the bunker test report for fuel oil used.

The screenshot shows the INSA Tech HMI interface. At the top, there is a navigation bar with tabs: Project Info, **Scaling Settings**, Clean Display, and Tag Monitor. The main content area displays a table for scaling settings:

Flow Meter	Mech. FM Settings	Man. Temp.	Density @ 15°C
COFB Supply	106.300 p/l		850.0 kg/ m³
IGG Supply	4mA: 0 l/h 20mA: 2000 l/h		925.0 kg/ m³

On the right side of the window, there are several buttons: Close, Consumers, Flow Meters, Power Meters, Shaft Power Meters, and Login. The top right corner of the interface shows the INSA Tech logo, the date and time (08/09/2023 07:32:16), and version information (HMI Version: 1.2.5, PLC Version: 1.2.4).

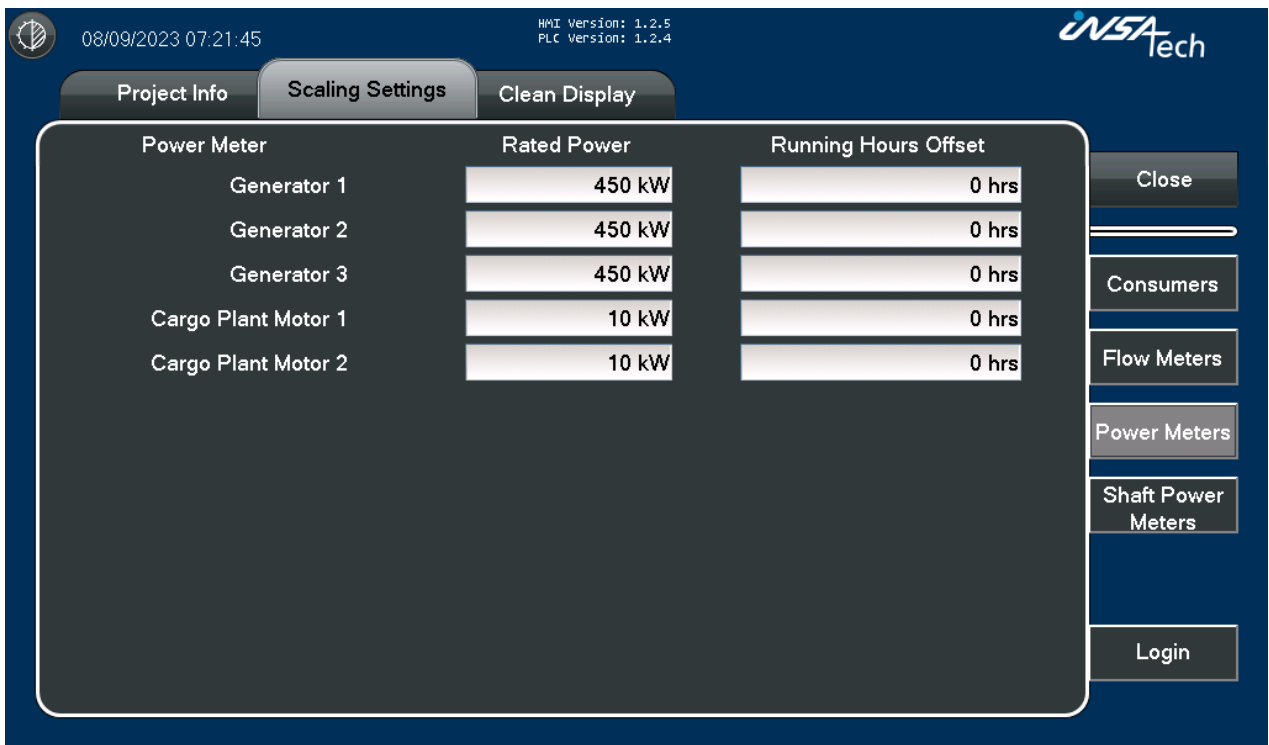
6.2.2. Setting and Service → Scaling Settings → Power Meter

This screen facilitates the adjustment of scaling settings specifically for the power meters on the vessel. Accurate scaling for power meters ensures precise monitoring of power production and consumption metrics.

On the left side of the screen, there's a list of all the power meters integrated into the system.

- Rated Power: Generators rated power
- Running hours offset: Use to synchronize with local hour counters.

Parameter	Description
Rated Power	Rated power of the power producers and consumers.
Running hours offset	Can be used to synchronize with local hour counters.



The menu on the right side gives the opportunity to change between the settings.

6.2.3. Setting and Service → Scaling Settings → Shaft Power Meters

This interface is designed for adjusting the scaling settings specific to the shaft power meters on the vessel. Proper scaling of these meters is crucial for accurately monitoring the power transmitted through the shaft, which can be a vital metric in assessing propulsion efficiency and overall vessel performance.

On the left, a list displays all the shaft power meters integrated into the system.

Parameter	Description
Rated Power	Rated power of the Main Engine
Rated Speed	Rated speed of the shaft
Pitch Length	Enter the pitch length in mm of the propeller ⁷



The menu on the right side gives the opportunity to change between the settings.

⁷ Pitch Length: The theoretical distance a vessel would move forward with one full rotation of the propeller in a solid medium.

6.3. Setting and Service → Clean Display

The clean display button, allows the user to clean the screen in 10 sec and return to previous page afterwards.



7. Troubleshooting

This is a list of alarms that you may encounter and a detailed explanation of their meaning and how to resolve the underlying cause of the alarm.

7.1. List of alarms

7.1.1. Flow Meter Alarms

Message	Type	Reason	How to resolve	Ack. Required
Communication Error ^{YPA}	Error	Flow Meter is not responding to PLC Modbus requests, pulse rate too high or analog signal is out of range.	Check power supply to flow meter. Check wires and cables.	Yes
Frequency Failure ^Y	Error	Sensor (resonance/drive) frequency abnormality.	Check connection between sensor and transmitter.	Yes
Signal Failure ^Y	Error	Phase difference abnormal.	Reduce flow. Check connection between sensor and transmitter	Yes
Sensor 1 Error ^Y	Error	Sensor 1 signal line short.	Check connection between sensor and transmitter	Yes
Sensor 1 Defect or Drive Current Circuit abnormal ^Y	Error	Sensor 1 error or drive current circuit abnormal.	Check connection between sensor and transmitter	Yes
Sensor 2 Error ^Y	Error	Sensor 2 error	Check connection between sensor and transmitter	Yes
Sensor 2 Signal Failure ^Y	Error	Sensor 2 signal line short	Check connection between sensor and transmitter	Yes
Temp. Range Failure ^Y	Error	Temperature range violation. Measured temperature error.	Adjust temperature. Check connection between sensor and transmitter	Yes
Temp. Sensor Defect ^{YPA*}	Error	Temperature sensor failure	Adjust temperature. Check connection between sensor and transmitter	Yes
Transmitter Device Failure ^Y	Error	Critical internal error in transmitter.	Contact Insatech Marine.	Yes
Empty Pipe Detected ^Y	Alarm	No fuel in flow meter pipe	Fill pipe	No
Autozero Multiphase Error ^Y	Alarm	Unstable measurement when performing Autozero adjustment.	Stop multiphase flow. Fill pipe Reduce gas bubbles in process. Perform Autozero adjustment again	No
Autozero Flow Error ^Y	Alarm	Flow during Autozero adjustment.	Check valve. Check flow. Check vibration. Check density. Check electrical connections. Perform Autozero adjustment again	No
Autozero Temperature Error ^Y	Alarm	Unstable temperature during Autozero adjustment.	Stabilize process temperature. Perform Autozero adjustment again.	No
Analog Input Failure ^A	Alarm	Analog current input has exceeded measurement range.	Check analog current input cable connection. Check connected device.	Yes
Autozero adjustment is running ^Y	Warning	Autozero adjustment in progress.	Wait until zero adjustment has completed.	No
Autozero Error ^Y	Warning	Error during Autozero adjustment.	Delete errors and perform Autozero adjustment again.	No

Alarms supported by flow meters:

- Y: Yokogawa Rotamass TI
- P: Pulse flow meters
 - *Only if Temperature sensor is available
- A: Analog flow meters
 - *Only if Temperature sensor is available

7.1.2. Power Meters

Message	Type	Reason	How to resolve	Ack. Required
Communication Error	Error	Power Meter is not responding to PLC Modbus requests or analog signal is out of range.	Check power supply to Power meter. Check wires and cables.	Yes

7.1.3. Shaft Power Meters

Message	Type	Reason	How to resolve	Ack. Required
Communication Error	Error	Shaft Power Meter is not responding to PLC Modbus requests, NMEA0183 is not transmitted or analog signal is out of range.	Check power supply to Shaft Power meter. Check wires and cables.	Yes

gdfgdfg⁸

⁸ Dette er en ny fodnote