Fuel and Performance **Systems** **– for all Vessels**
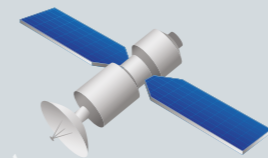
iNSATech

On board

DataLink

On shore

Fuel and Performance Monitoring
Real-time Decision Support

On board server
with database containing vessel data, model etc.

Bulk

Tanker

Cruise

...and many more.

On shore server or cloud storage
with data from entire fleet connected to the system.

Fuel Consumption System

The system presents past, present and accumulated consumption based on flow meter measurements for which error, alarm and warning logs are included to ensure the system integrity and reliability. The system also provides you with immediate cause and effect feedback.

Performance Monitoring System

The system utilizes a variety of sensor inputs to help you make real-time decisions and improve your vessels performance on speed, consumption, power, steam, charter party and behavior, through customized KPI calculation and visualization.

On board server

Vessel specific server that handles all data exchange between ship and shore.
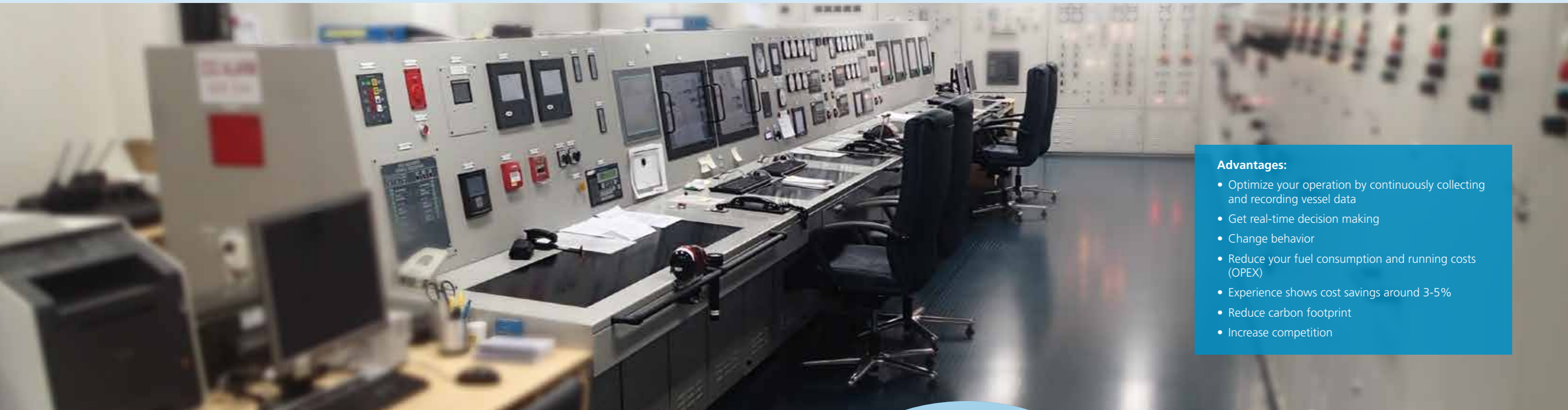
DataLink

Linking vessels to shore operations, ensuring both sides have access to the same data. Intelligent connection monitoring and minimized data transfers with zero loss.
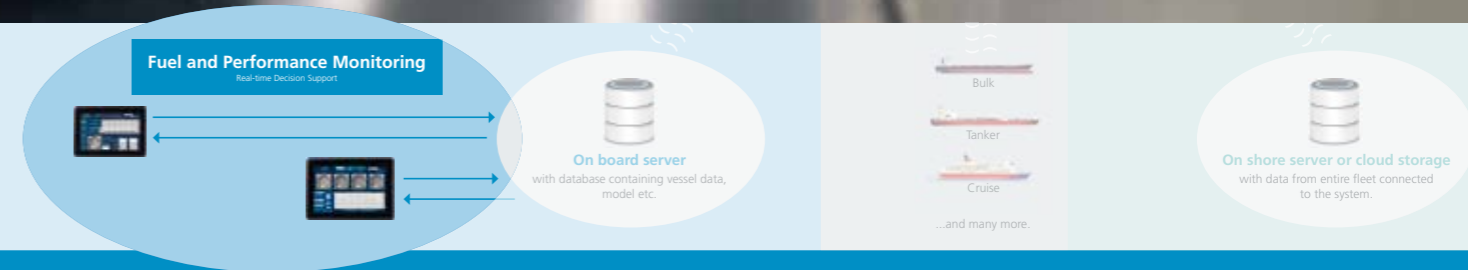
On shore server

Customer specific server or cloud storage that handles all data exchange between the fleet and Insatech.

Performance Monitoring System

Advantages:

- Optimize your operation by continuously collecting and recording vessel data
- Get real-time decision making
- Change behavior
- Reduce your fuel consumption and running costs (OPEX)
- Experience shows cost savings around 3-5%
- Reduce carbon footprint
- Increase competition

*The Insatech **Performance Monitoring System** gives you the flexibility to collect data from any source and makes it possible to implement ship wide performance improvements.*

Fuel and Performance Monitoring
Real-time Decision Support

On board server
with database containing vessel data, model etc.

Bulk

Tanker

Cruise

...and many more.

On shore server or cloud storage
with data from entire fleet connected to the system.

The second step of getting to know your performance is the Performance Management System (PMoS), which builds upon the FCoS platform and gives you the flexibility to collect data from any sensor on board. PMoS includes an expanded operator panel, that allows you to specify and calculate any Key Performance Indicator (KPI) imaginable. If you are missing data points for your KPI's we can help you collect that data by installing new sensors.

The KPI's you create, can help your crew improve the operation of the ship and help you save money by optimizing performance. The system contains a lot of valuable KPI's, and we are always ready to help you create new KPI's that support your business.

Compare Charter Party Terms with Actual Performance
By using the PMoS you can compare contractual charter party speed, consumption and weather clause with the current or overall voyage performance. This can help your crew keep within the charter party conditions. You can also see the accumulated consumption in- and outside the weather clause. When your vessels perform better your charterers can save money on consumption and you can earn money by increasing charter rates.

Increase the Flexibility of Your Current Data
The system can also give you more flexibility than your current systems. For example, your engine control system might measure exhaust gas temperatures across cylinders or banks of cylinders to ensure, they do not deviate too far from the average. But it might not be possible to monitor any other KPI's than the ones that are available. With the PMoS you can gather the sensor data and use it to make your own KPI's or set your own warning and alarm thresholds without the need to involve any third party. This gives you the power to create even better insight into your performance.

Shut It Down and Save Money
PMoS can also help create awareness about how the base load of the vessel impacts expenses. This can be done by showing how much it costs to run machinery and how much can be saved by shutting it down. This can be done calculating the price of running the machinery using the current consumption and the price of the fuel, which will make it easier for the crew to see, how running the machinery affects the costs.

Collect and Validate
The system is built by collecting data from available instrumentation, manual logs, meta and third-party data. The increase of signals makes it possible to cross reference data to identify faulty and inaccurate sensors. This is done to validate the dataset and make sure the KPI's are correct before you start drawing conclusions from it.

Typically, data comes from:

- Shaft power meter
- kWh counters on production and consumption
- GNSS signals
- Speed log
- Echo sounder
- Anemometer
- Gyro and gyro compass

Data can also include motion sensors and draught sensors, as well as any signal that goes into the engine control system, including alarm logs etc.

(continued)

Performance Monitoring System

Power Production

Discover how much time you spend running generator engines parallel on low load, costing you fuel and wasting running hours that impacts maintenance costs. Set up KPI's for low load parallel running, and configure the thresholds for target, minimum and maximum load for each vessel individually, sister vessel groups or fleet wide. See your historical performance and compare it to your current.

Trim and List

Monitor your dynamic trim in real-time and compare it with your trim table to highlight any savings potential from changing your trim. Enable the crew to detect even minor angles of list, even when the vessel is rolling, to allow them to right the vessel and save fuel. Get an objective insight into how much the bow is pitching and how much the vessel is actually rolling, with indicators for maximum and average angels as well as angular velocity.

Boilers

Optimize your boiler operation by ensuring that the boiler is not starting and stopping unnecessarily often. Adjust steam pressure set points to reflect your current operational condition. Set up triggers to alert you to undesired running patterns.

Propulsion

Under sea passage conditions, your combinator curve may not offer the optimum pitch settings at the given speed. Improve your propeller performance by optimizing your propeller pitch. Benefit from constant power speed instruction, by adjusting your engine speed to changing external conditions to run at constant power. Ensure that you are running on or below your nominal propeller load index, to avoid heavy run on the propeller, stressing the engine and lowering performance.