

SEEMP

Ship Energy Efficiency Management Plan

- > On Board Energy Audits
- > Remote On-Line Energy Audits
- > Long Experience in Ship Performance
- > Adding Value to your Business



TECNOVERITAS®

Dedicated to innovation

www.tecnoveritas.net



YOUR SHIP ENERGY PARTNERS

Reduction of fuel cost by increasing the efficiency of vessel systems

Fuel accounts typically between 35 and 65% of ship's total operational costs. In the present market dominated by increasing fuel prices and environment awareness the energy optimisation is playing a vital role on the nowadays market competition. Effective reduction of fuel consumption is possible by in service energy consumption monitoring and through the adoption of adequate design stage solutions.

Vessel performance monitoring as a whole, vessel operational management, and analysis of the various vessels processes are used to identify energy optimisation opportunities.

How can TecnoVeritas help you?

TecnoVeritas is a ISO 9001 certified company in the area of energy, environment and marine engineering. **TecnoVeritas is offering you more than 20 years experience** in performance analysis and condition monitoring of propulsion and auxiliary machinery, and a vast experience and knowledge in exhaust emissions testing and ship trials on all types of ships.

TecnoVeritas, has been involved in European Research and development programmes on ship energy optimisation making available techniques to access Key Performance Indicators that are used to optimise your fleet in terms of energy consumption.

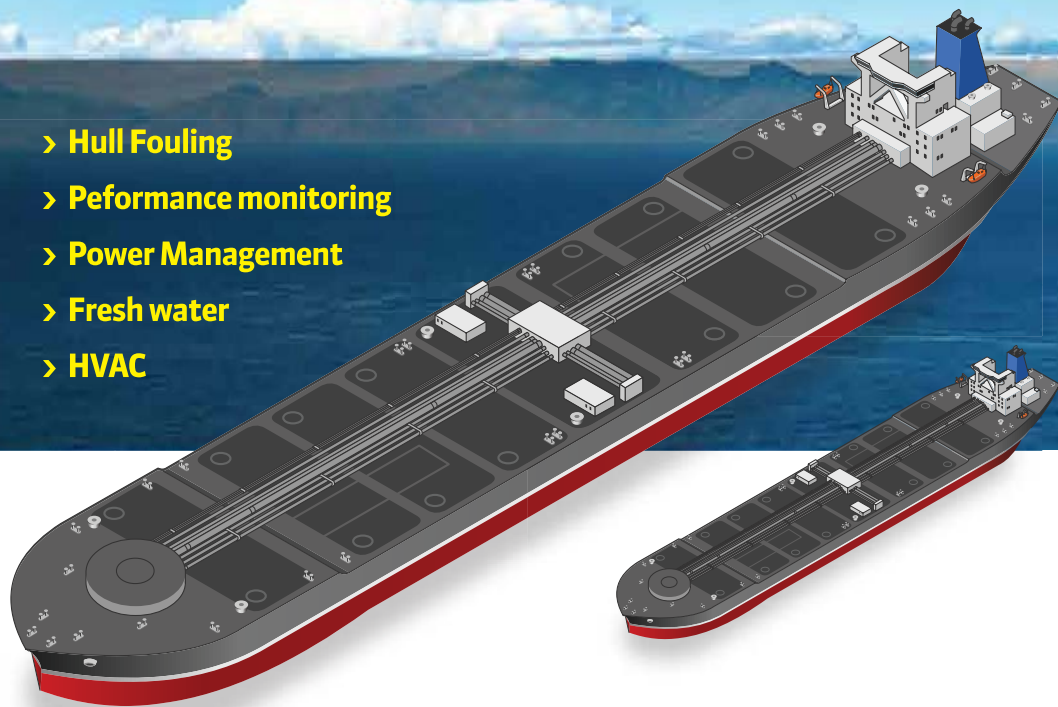
The identification of energy saving opportunities results not only in a decrease in fuel costs and emissions but in a reduction of vessel systems downtime, both planned and unplanned maintenance, therefore contributing for and increased vessel availability.

“(...) the energy optimisation is playing a vital role on the nowadays market competition.”

TecnoVeritas surveyors work during a first phase (on board energy audit) in close cooperation with the ship crew during the, and with the ship management team during the second phase (implementation of energy saving measures).

In this way TecnoVeritas offer a range of ship energy services that can be customised accordingly to your needs.

- > Waste Heat recovery
- > Operational controls
- > Speed management
- > Route planning
- > Itinerary
- > Hull Fouling
- > Performance monitoring
- > Power Management
- > Fresh water
- > HVAC



Tecoveritas has developed SEEMPs for customers around the world. We bring a systematic, structured and cost effective approach to each project.

Our SEEMP development services have been built on the experience gained from the delivery of SEEMPs, detailed energy efficiency projects like Energy Audits.

PROPULSION MEASURES

- Main engine performance (Diesel or turbines),
- Shaft power measurement,
- CPP schedule adjustments for optimum matching,
- Determination of optimum propeller rpm for slow steaming,
- Turbocharger re-matching,
- Diesel generator performance,
- Cooling system optimization,
- Power factors analysis and load profiles,
- Power grid unbalance and Harmonics,
- Lightning load, and load adjustments,
- High efficiency motors substitution identification.

MACHINERY MEASURES

- Boiler efficiency calculation and adjustments,
- Infrared inspection of boiler casing and steam (or thermal fluid) piping,
- Condenser performance,
- Variable Speed Drives (VSD) application to central cooling systems,
- Engine room fans and boiler feed water pumps,
- Heat exchanger optimisation,
- Compressed air system inspection and optimization,
- COP's Cargo turbo pumps (or with electric drives) efficiency optimization,
- Rudder stability inspection,
- Possible waste heat applications.

MACHINERY MEASURES

- Voyage optimization,
- Weather routing,
- Trim optimization,
- Lean navigation,
- crew training on energy awareness,
- Optimisation of slow steaming conditions,
- Ship performance projection up to 900 days,
- Fleet performance bench marking,
- SEEMP booklet with feed back information according to ISO 50 000 series.



In-service and energy optimisation

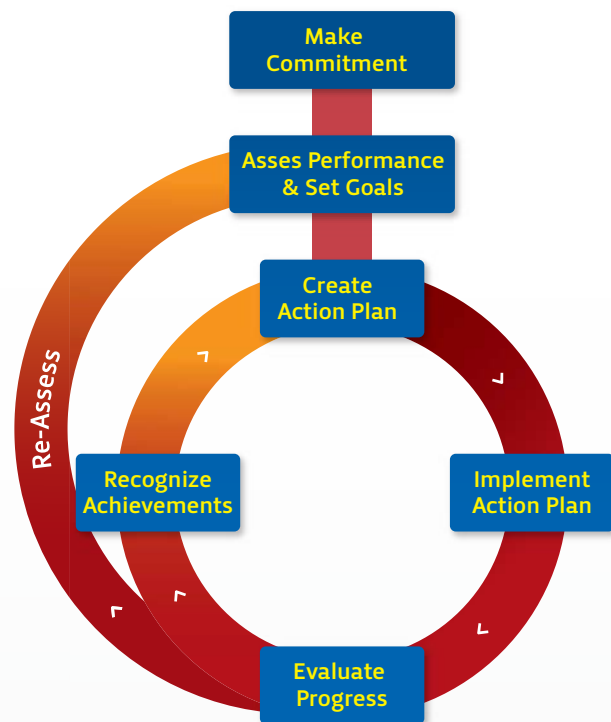
Techniques used during the Energy Audit :

First Phase - Holistic investigation encompassing technical and non technical aspects of ships operation, involving data acquisition and analysis combined with shipboard audit.

Second Phase - Identification of energy savings opportunities. The identification of this opportunities is accompanied by a technical and economical calculations, to access the investment return of each energy saving measure.

Third Phase - Production of a report with the found energy saving opportunities their investment and rate of return.

Once the energy saving measures proposed are approved by the management, an Energy Rationalisation Plan is produced. This plan will work as a reference document for the implementation of the accepted energy saving measures, as well as to monitor the energy savings achieved on a time basis.



EEDI Verification and Design Advise

In case you are preparing for a new construction, TecnoVeritas can access during the design phase how energy efficient your ship and ship systems will be. A simulation of energy consumption profiles is also available.

TecnoVeritas can also carryout an energy performance assessment during commissioning trials to ensure that it complies with the specification.

Qualifications

To meet the energy reduction goals, TecnoVeritas employ licensed engineers who are Certified Energy Managers accredited by EU member states and recognised worldwide. Analysis of data and development of deliverables is carried out by TecnoVeritas using the most adequate analytical software particularly developed for ship energy management.

Natural Gas and Green Technology

TecnoVeritas has extensive expertise in Natural Gas technology as a fuel for marine Diesel engines with an important portfolio of conversions to Dual Fuel operation. Therefore TecnoVeritas may be a reliable partner with hands on job expertise, for consultancy and advice.

Fleet energy management support

Making use of its system VEEO, Voyage Energy & Emissions Optimizer, TecnoVeritas may carry remotely on-line energy audits to ships, optimization of fleets and also projection of ship or fleet performance up to 2 years. VEEO is a Type Approved system, fully compliant with IMO MEPC 683 (SEEMP) and 684 (EEOI) Circulars.

Propulsion measures

Main engine performance (Diesel or turbines), Shaft power measurement, CPP schedule adjustments for optimum matching, Determination of optimum propeller rpm for slow steaming, Turbocharger re-matching, Diesel generator performance, Cooling system optimization, Power factors analysis and load profiles, Power grid unbalance and Harmonics, Lightning load, and load adjustments, High efficiency motors substitution identification.

Machinery measures

Boiler efficiency calculation and adjustments, Infra-red inspection of boiler casing and steam (or thermal fluid) piping, Condenser performance, Variable Speed Drives (VSD) application to central cooling systems, engine room fans and boiler feed water pumps, Heat exchanger optimisation, Compressed air system inspection and optimization, COP's Cargo turbo pumps (or with electric drives) efficiency optimization, Rudder stability inspection, Possible waste heat applications.

Strategies

Voyage optimization, Weather routing, Trim optimization, Lean navigation, Crew training on energy awareness, Optimisation of slow steaming conditions, Ship performance projection up to 900 days, Fleet performance bench marking, SEEMP booklet with feed back information according to ISO 50 000 series.



TECNOVERITAS®

Dedicated to innovation

Portugal Office | Europe

Av. Dr. Francisco Sá Carneiro
NEM - Pavilhão 36-A
2640-486 MAFRA
T. +351 261 819 819
F. +351 261 819 820



WINNER
Clean Shipping



Maio 2015