

## **Planning**

- This is the most important stage of the SEEMP. It primarily determines the “current status of ship energy usage” and “the expected improvement of ship energy efficiency. Therefore a good bit of time is devoted to planning, so that the plan as developed, is appropriate, effective and implementable plan is developed.

### **Ship specific Measures:**

- The various options to improve energy efficiency are, e.g. (i) speed optimization, (ii) Weather routing, and,(iii) Hull maintenance etc.;
- The best combination of measures for improving efficiency varies from ship to ship, depending on the ship-type, cargoes carried, routes traversed and other allied factors. These should be identified as a package of measures to be implemented.
- Therefore, it is important to assess the ships extant status of energy-usage. This will enable the SEEMP to identify the measures that can be adopted to further improve upon energy saving and monitor the degree of their effectiveness. It may be noted that there is seldom a straight-jacketed, one-formula approach to all ships or, all operating conditions, even if the ship remains the same. In some cases, certain measures are mutually exclusive.
- “Best Practices enumerated below” will help in formulating the planning, during which, the increase of shipboard administrative burden needs to be borne in mind.

### **Company Specific Measures**

- The improvement of energy efficiency of ship operations depends on a number of stakeholders which may include ship repair yards, shipowners, operators, charterers, cargo owners, ports and traffic management services. Such coordination among stakeholders is always better to be undertaken by the shipping company, before which the “energy management plan” to manage the company’s fleet, has to be in place.

### **Human Resource Development**

For effective implementation of these measures, providing necessary training for personnel, ashore and aboard, and, raising awareness amongst them is of great importance. This human resource development is encouraged and should be considered as an important action for planning and a critical element for implementation.

### **Goal setting**

The final part of planning is goal-setting, which is a voluntary exercise. This exercise is necessary to serve as a strong input to enable the involved people to set targets for committed

implementation of energy efficiency and be able to evolve proper incentives and encouragement to this cause. The goal can be in any form, such as, say, annual fuel consumption or a specific target of the Energy Efficiency Operational Indicator (EEOI). The goal ought to be clearly understandable, relevant and easily measurable.

## **Implementation**

Next a system for implementation of the identified measures ought to be formulated, (i) by developing the procedures for energy management, (ii) by defining the tasks and, (iii) by assigning them a qualified personnel. Therefore, the SEEMP must elaborate the ways in which the measures should be implemented and who must be held accountable for this implementation. The starting and concluding dates of each measure as executed needs to be recorded for self-evaluation at a later stage and should be encouraged. This step could always be included in the planning stage. Reasons for non-implementation of an identified measure, ought to be recorded.

## **Monitoring**

- The energy efficiency of a ship ought to be monitored quantitatively, preferably in relation to an international standard, viz, the EEOI which is an established tool. This provides a quantitative indication of the energy efficiency of a ship and / or fleet in operation, and, can be well used for this purpose. If the EEOI is used for this evaluation, it is necessary that the IMO's MEPC.1/Circ. 684, be referred to for compliance. If beneficial to the ship owning company, other measuring tools could always be deployed, however, in such cases, the method of the monitoring may be determined in advance at the planning stage, itself.
- It may be remembered that continuous and consistent data collection is the very basis of monitoring. The monitoring ought to be consistent and, knowledgeable personnel ought to be developed and made responsible for this purpose. This activity could also be included as a part of the planning exercise. Preferably, monitoring should be carried out by shore staff utilizing the data obtained from existing records (say, official and engineering log books, oil record books), so that administrative burden on ship's staff is not excessive.
- If under any unforeseen circumstances, a ship is pulled-out from its normal schedule and deployed for search and rescue activities, the data obtained during such operations is not to be used for energy efficiency monitoring and, the data as arrived at during search and rescue should be recorded separately.

## **Self Evaluation and Improvement**

- Periodical self-evaluation and improvement (based on the data collected through monitoring) is the final stage of the energy efficiency implementation management cycle. The purpose is to assess the effectiveness of the implementation of the planned measures such that a deeper understanding of the overall characteristics of the ship's operations is elicited; which type of the measures can or can not function effectively etc. This is the crucial stage which ought to provide constructive inputs for improving the existing SEEMP for undertaking the first phase of the next cycle. For this purpose, necessary procedures for self-evaluation of the ship energy management should be developed.
- Time ought to be invested for pin-pointing the cause and effect of the performance during the evaluated period for taking remedial measures for improving the next stage of the management's aspirations.