Environmental Sustainability Bulletin 04/19

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These bulletins summarise key ideas and solutions to environmental and sustainability matters, allowing wider dissemination of lessons learnt from them. The information below has been provided in good faith by IMCA members and should be reviewed individually by recipients, who will determine its relevance to their own operations.

The effectiveness of these bulletins depends on receiving reports from members in order to pass on information and continue to present innovative solutions. Please consider adding the IMCA secretariat (sustainability@imca-int.com) to your internal distribution list for similar internal reports and/or manually submitting information on specific solutions that you consider may be relevant. All information can be anonymised or sanitised, as appropriate.

A number of other organisations issue environmental sustainability updates and similar documents which may be of interest to IMCA members. Where these are particularly relevant, these may be summarised or highlighted here. Links to known relevant websites are provided at www.imca-int.com/links. Additional links should be submitted to sustainability@imca-int.com.

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Saipem *eco*-Operations Program

This is the fourth IMCA Environmental Sustainability bulletin, and, like the others, it is drawn from one of the nominations for the inaugural IMCA Environmental Sustainability Awards made at the IMCA Annual Seminar in Den Haag, Netherlands, in November 2018. It covers how Saipem has made energy efficiency a priority objective, committing itself to curtailing greenhouse gas (GHG) emissions significantly. One of the main activities of this strategy is the Saipem *eco*-Operations Program for the Saipem Offshore Construction fleet.

What was done?

As a contractor, Saipem is aware of the growing environmental threat posed by climate change and is determined to play its role in ushering in the energy transition and influencing social change. For this reason, the company has decided to integrate the reduction of greenhouse gas emissions into its business strategy. Thus, the governance, principles and targets are included in a four-year GHG Strategic Plan.

Saipem's GHG Strategic Plan was developed during 2018 by means of several workshops (including top management and technical departments) focused on goals and milestones and the strategies required to achieve them.

Within the GHG Strategic Plan, Saipem's Offshore Division developed the Saipem *eco*-Operations Program, with a view to striving towards energy saving.

How did the improvement come about?

Saipem believes that, following the strong consensus within its industry, energy efficiency in operations is achieved through a hierarchical approach, first and foremost by eliminating unnecessary energy waste.

Within the Saipem *eco*-Operations Program, and in order to assess areas of improvement accurately, energy assessments were carried out on construction vessels by third-party personnel qualified in energy management. Through these studies the main energy flows were identified from the sources up to the end users. As a result, technical and management improvements were defined to reduce consumption and increase the overall efficiency of the vessel, while maintaining the highest standards of operational safety.

While the technical improvements are evaluated in terms of the investment plan (e.g. installation of a heat recovery system or vessel traditional light replacement with LED), management improvements are at the core of the Saipem *eco*-Operations Program launched across the fleet.

Saipem *eco*-Operations are a set of best practices identified for each vessel by the energy assessment. They are defined as management actions with associated fuel savings per hour (and consequently GHG emission reductions).

Each vessel involved receives a specific list of Saipem *eco*-Operations (SeO). Every action is linked to the savings achievable when implemented (calculated and certified by third party energy experts) and to relevant personnel of each discipline. An example may be seen in the table below:

Measure	Type of Measure	Power Consumption Avoided kWh/h	Fuel Consumption Avoided kg/h	GHG Emissions Avoided $kgCO_2e/h$
Measure #LC-1: Minimization of Energy Consumption for Freshwater Production	Management	– 21.0	97.2	311.6
Measure #LC-2: Adoption of Green DP® Mode	Management	500.0	100.0	320.6
Measure #LC-3: Switch Off Generator Auxiliaries when not Needed	Management	285.0	57.0	182.7
Measure #LC-4: Reduction of the Use of Steering Pumps for Thrusters	Management	26.3	5.3	16.9
Measure #LC-5: Optimization of Anti-Heeling System	Management	44.0	8.8	28.2
Measure #LC-….: Optimization of Ventilation Fan Speed	Management	138.7 (port) 115.5 (navigation)	27.7 (port) 23.1 (navigation)	88.8 (port) 74.1 (navigation)

Data are reviewed on a monthly basis, assessing how many different Saipem *eco*-Operations have been put in place and for how many hours. The fuel and GHG emissions saved are then calculated by combining the implementation time with the hourly savings already provided by the third party in the energy assessment.

In order to engage the vessel crew, the overall SeO Program is driven by the Saipem Offshore Division Chief Operating Officer who actively shares his/her vision and objectives through a highly motivating video called "Become a Force for Nature". This video is tailored to Saipem's everyday life and contains real situations as well as powerful messages inviting the crew to get actively involved with their actions.

What are the challenges?

Clearly defining energy saving measures for offshore vessels is challenging, since they are strongly related to the equipment/systems on-board and to their operational modes. For example, fuel consumption varies significantly between a DP unit and an anchor one; for the same vessel, the energy flows are quite different during a pipelay or a heavy lift project, in navigation and/or in port.

For this reason, a general environmental campaign on energy saving could not capture the specificity of each vessel, since it carries the risk of comparing consumption data related to different operational patterns. To overcome this challenge, a dedicated energy assessment needs to be carried out on each vessel involved.

Once *eco*-Operations are identified, a further challenge is their regular and systematic application by the crew. In fact, this requires them carefully to assess, on a day-by-day basis, which best practices are applicable and can be put in place based on current vessel operations, as well as to provide supporting evidence therefor.