



# IMO Minimum Power Requirement – A joint way ahead in adverse conditions

New JIP aims to deliver better design for sustained speed in a seaway, following new EEDI regulations.

Johan de Jong  
J.H.de.Jong@marin.nl

In 2013 the IMO introduced EEDI regulation requiring a final 30% reduction of the EEDI number from the starting baseline, which essentially boils down to a 30% reduction in installed power. Potentially, EEDI could then affect safety in adverse conditions as the lowered installed power diminishes course keeping capability and the ability to make sufficient headway. IMO has recognised this potential shortfall and defined Minimum Power Requirements (MPR). The first MPR assessment method of choice is based upon a reference environment (sea state and wind) and requires an installed minimum power using a vessel type specific, DWT dependent linear relation.

The alternative method, the simplified assessment, defines a minimum sustained

speed of 4 knots in head-on waves condition (and any wind). This is to make sure that the vessel can sail away from downwind dangers and/or maximum storm conditions. However, in order to ensure that this speed requirement also covers a proper course recovering capability a check has to be done and this could result in a higher required speed in head-on waves to maintain the manoeuvrability. This check looks into the available rudder area and lateral wind area compared with the chosen standards, which matched with the complying 4 knots head seas speed requirement.

In a preliminary type of study MARIN, in cooperation with Conoship, investigated the following question: Is sailing in head-on waves the worst case condition?

For the smaller vessels the answer was 'No'. Being able to arrive at the head-on condition does require additional checks on the vessel's capability to regain the head-on course in adverse conditions. The complexity of the issues determining these capabilities requires a study into the integrated powering and manoeuvring in the seaway aspects of the vessel. The added resistance in (oblique) waves is an important aspect, as well as potential propeller ventilation and engine torque-rpm behaviour.

MARIN is currently preparing a JIP on this subject. In addition to the MPR evaluation a better design for service capabilities will be delivered because sustained speed in a seaway is an important part of an operationally efficient ship. □