Igorova promišljanja (54) – Igor’s Reflections

The Ship and Today’s Diesel Engine

Summary

From middle of 20th century, as the main propulsion engine in ocean going merchant ships, dominates directly coupled slow speed two stroke marine diesel engine. In the second half of the century the two stroke engines of 750 and 900 mm bore have typically a speed of 122 rpm which is apparently too high for relatively slow ships such as e.g. large tankers and bulk carriers. The higher propeller efficiency suggests slower speed of some 100 rpm and even less. Accordingly by the end of century builders of two stroke diesels adopted the concept of uniflow scavenging and longer stroke. This enabled to lower substantially the engine speed and to increase the propulsion efficiency. Thus e.g. in the MAN Diesel & Turbo Marine Engine programme 2017 one can find engine G80ME-C9.5 having nominal 72 rpm and the absolute minimum of 58 rpm only.

In the sector of medium speed four stroke engines MAN Diesel announces the new 45/60 CR engine for the next future. The newcomer will have cylinder diameter $d = 450$ mm, stroke $s = 600$ mm, brake mean effective pressure $b_{\text{mep}} = 25.24$ bar, speed $N = 600$ rpm, mean piston speed $mps = 12$ m/s, cylinder output $P = 1300$ kW. It is worthy to note the engine speed of 600 rpm, the latter known as the magic number being suitable for both 50 Hz and 60 Hz frequency. The first set of V-type engines will be available from end 2020 with delivery of the first L-type engines due from 2022.