THESIS SUMMARY

Considerations on adjustment of the supercharging unit with the naval two-stroke engine

Author: **PhD candidate Eng. ION ŞERBĂNESCU**
Email: ionserbanescu@yahoo.com; *Tel.* 0752312250
PhD supervisor: **prof. univ. phd. eng. ANASTASE PRUIU**

According to the thesis title (*„Considerations on adjustment of the supercharging unit with the naval two-stroke engine"*), the **main purpose of the paper** is laying some technical, constructive and operating measures, which ensure the optimization of the engine performance, in accordance with the supercharger unit behavior.

Given the complex issues subject to review in the paper, among its **main objectives** may be mentioned:

- the development of experimental research on engine-supercharger unit assemblies and the achievement of tests aimed at improving the behavior of engine-turbocharger assembly;
- the highlighting and implementation of some qualitative analysis processes in operation of the turbocharged naval diesel engines, based on experimental data, in various operating conditions prevailing on board a ship;
- the design and implementation of operational variants of the engine-supercharger unit assembly, that would provide the improvement of the technical and economic performance;
- the establishment of some final conclusions and the following areas of research.

In the first part of the work, it is presented the theoretical basis of the study. I tried to make a concise, systematic presentation relating to the characteristics of the adjustment process of the supercharger unit with the naval two-stroke engine.

To establish the concrete solutions to improve the operation of the engine-supercharger unit assembly, I performed numerous experimental measurements on board of the ships CMA CGM POTOMAC and CUMBRIAN FISHER. I analyzed the influences on engine operation by these two categories of parameters:

- the ambient temperature and the sea water temperature;
- the ambient temperature and the supercharging pressure.

In both cases, in most performed tests, we got behavioral improvements of the engine-supercharger unit assembly. These improvements have resulted in significant reductions of the fuel consumption, due to the improved engine and turbocharger operation. In the last chapter of the work, I listed a number of **personal contributions**, including the following:

- the presentation in premiere of a procedure (methodology) for the theoretical and experimental studies of operational parameters of the engine-supercharger unit assembly;
- the complex processing and interpretation of obtained experimental data;
- the influences analyze of the external and operational factors on the behavior of engine-supercharger unit assembly;
- the experimentation of two concrete solutions to improve the operation of the engine-turbocharger assembly, by intensifying the intermediate cooling of supercharging air and by appropriate adjustment of the supercharging pressure;
- the opening of new directions for the research into operation of the engine-supercharger unit assembly.

Keywords:*diesel naval engine, turbocharger unit, adjustment.*