ON Ph.D. TECHNICAL DISSERTATION INFORMATION

Dissertation title:	**Researching Vibration Monitoring on Marine Diesel Engine**
Major:	**Marine Machinery Operation and Maintenance**
Code:	**9520116**
Ph.D. candidate	**Lai Huy Thien**
Supervisors:	**Assoc.Prof.DSc. Do Duc Luu**
Education Institution:	**Vietnam Maritime University**

1. Research aim

The general aim is to research and build the modern system for measuring and monitoring vibrations with different types on marine diesel engines (DME).

The specific aims are:

- *To study the theoretical bases of vibrations* at locations which the Rules for Classification and Construction of Sea-going Ships (called The Rules) require such as math bases and algorithms for monitoring vibrations; technology bases for making measuring equipment.

- *To design a modern and multi-channel system for vibration measurement and analysis* to meet the requirements of The Rules to monitor and diagnose vibrations on DME, including: creating the principle scheme for the multi-channel vibration monitoring system (MMMVS); selecting a relevant configuration in accordance with the suggested system's scheme, designing some basic sub-VI for the equipment based on the LabView.

2. Research object and scope

Research objects: The vibration measurement and monitoring system on DME.

The scopes of this study: to study vibration measuring and monitoring methods on DME: Torsion (angular) vibrations on main propulsion plant; Axial ones, and Lateral vibrations perpendicular to the axis on MDE.

3. Research methods

Both the applied theoretical and experimental methods in this dissertation are as follows:

Theoretical methods: The Ph.D. candidate uses the combination of analysis, estimation and synthesis methods together with the modeling, simulation. Mechanical theory, technical vibration, digital signal processing, measurement theory, testing, statistical math are also used.

Practical methods: Build the MMMVS. *The experiments on the real objects* (physical model, LAB model, and real ship) are conducted to test, to adjust the equipment in order to verify scientific and technological bases that have been studied and implemented.

4. Contributions of PhD. Thesis

The dissertation shows the following key contributions:

(1) Provided the theoretical bases for vibration monitoring on DME;

(2) Built some numeric simulation VIs, and physical models for studying the vibrations on marine diesel propulsion plants;

(3) Given out the principle scheme, selected the hardware and built some basic software modules for successful making the MMMVS on DME. This portable equipment is suitable for on-board vibration monitoring tasks as well as further development research.

5. Structure of dissertation

The dissertation includes six parts: Introduction, main content composed of four chapters, conclusion and recommendation, list of related publications, references, and appendix.

Hai Phong, March 10th 2020

Supervisor	**Ph.D. candidate**
	
Assoc.Prof.DSc. Do Duc Luu	**Lai Huy Thien**