
Abstract

The habilitation thesis in mechanical engineering of the candidate Associate Prof. PhD. Eng. Bogdan Ovidiu Varga, is the synthesis of the work completed at the Technical University of Cluj- Napoca, Automotive and Transportation Department, over more than 10 years of teaching and scientific activities. Exhaustive research undertaken by the candidate refers to assessing opportunities for hybridization and electrification of propulsion systems for urban passenger public transport, particularly buses.

Related research activities undertaken in identifying real problems faced by ecological metropolitan transport and by using original methods accepted by international academic environment, succeeded in establishing the conclusions and solutions relevant applications submitted to the scientific community through articles and specialized scientific books published in parallel with a useful study for Cluj -Napoca.

The situation behind the candidate need empowerment in science is dissected and justified in the first chapter.

In the second chapter of habilitation thesis are presented research directions followed by the candidate and presented as a result of professional and academic development, highlighting the core competencies of the candidate.

Chapter 3 presents the results obtained by scientific research activities. They presented scientific articles, published books in the field, experience in the management and conduct research projects, awards and distinctions obtained, patent applications, national and international collaborations with academia.

Development of research extensively in hybridization and electrification of powertrain systems for urban buses used in passenger transport is performed in Chapter 4. Based on an exhaustive study elaborated for the city of Cluj-Napoca, identified methodology and approach followed intended to be used by the local community to achieve chemical and noise pollution standards imposed for European metropolises, based on public passenger transport; this type of transport is one of the pillars of the European applied research themes in Horizont 2020 platform.

Conclusions issued on the basis of the above, find themselves in a clear form, in the fifth chapter of the habilitation thesis. They also present new research directions opened the results already obtained.

In the last chapter of habilitation thesis there are highlighted directions for current and future academic career, as well as research directions to be followed by the candidate and also to continue dissemination of research results.