



UNIVERSITATEA „VALAHIA” DIN TÂRGOVIȘTE

**FACULTATEA DE INGINERIE ELECTRICĂ, ELECTRONICĂ
ȘI TEHNOLOGIA INFORMAȚIEI**

**DEPARTAMENTUL DE AUTOMATICĂ INFORMATICĂ
ȘI INGINERIE ELECTRICĂ**

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**COMPONENTE ELECTROTEHNICE COMPATIBILE
CU DEZVOLTAREA DURABILĂ**

– Rezumatul tezei de abilitare –

**ELECTROTECHNICAL COMPONENTS COMPATIBLE WITH
SUSTAINABLE DEVELOPMENT**

– Abstract of the Habilitation Thesis –

Abstract of the Habilitation Thesis

The habilitation thesis **Electrotechnical components compatible with Sustainable Development** summarizes the scientific, academic and professional achievements of the author from the postdoctoral period, starting with obtaining the scientific title of PhD in the Electrical Engineering field (based on the Order of the Minister of Education and Research no. 5663 of 15.12. 2003) and until now.

The work, structured in three chapters, opens with a concise introduction and ends with a selective bibliography.

The first chapter, **Introduction**, is divided into three sections.

The first of these, *The context of the development of the habilitation thesis*, presents the opinion of the author of the thesis regarding the career of a university professor in the broadest sense of this profession. The university professor is unanimously recognized as the director of the didactic activity, more precisely of the entire field whose purpose is to transform the student into a highly competent specialist. He must possess a significant volume of psycho-didactic and methodical knowledge and skills and have the ability to be the leader of the research team which, as a rule, includes doctoral students, master's students - young specialists, a group that will be able to approach a program of research, program that was previously outlined by the contribution of each component member of the realized group.

The second section, *Professional Achievements*, presents the stages of development of university career as follows: Preparatory Teacher (1 October 1997 to 1 March 2000), Assistant Professor (1 March 2000 to 1 October 2001), University Lecturer (1 October 2001 to 1 October 2008), Associate Professor (October 2008 - 1 October 2017) and University Professor (from 1 October 2017 - until now).

The results obtained by the author of the habilitation thesis, after the defense of the doctoral thesis in 2003, consist of: *The Award of the Academy of Sciences of the*

Republic of Moldova for essential contributions to the development of electrical, electrotechnical and electronic installations for the conversion and transmission of energy, as well as for the promotion of collaboration between the scientific and cultural organizations of Târgoviște and the Academy of Sciences of Moldova, December 2, 2019, 1 invention patent awarded at several invention salons (*Gold Medal at the International Salon of Inventions in Geneva*, April 12, 2013, *Gold Medal at the Salon of inventions and innovations EUREKA from Brussels*, November 2012, *OSIM Special International Award*, 2013), *Diploma of Merit* for the contribution to the development of Valahia University Târgoviște, June 1-2, 2012, *First Prize of the Editorial Salon "Ion Heliade Rădulescu"* - Edition of 5th, November 2006 for a scientific book, awarded for the work "Electrical Engineering Treatise", vol.1, first author Mihail-Florin STAN, Târgoviște, Ed. Bibliotheca, 450 pg., ISBN 973-712-099-X, ISBN 973 -712-100-7, 2005, *Diploma of excellence* on the occasion of the Scientific Symposium with international participation "Competitive and European Romanian products / technologies and services for the EU" organized by the Ministry of Education and Research, the Ministry of Economy and Trade and the National Institute of Research and Development for Mecanica Fina Bucharest, November 28 - 29, 2005, 1 book chapter in an international publishing house (InTech Publishing House), 34 books in national publishing houses recognized by CNCSIS and ANCS, over 110 scientific articles published in journals, magazines, scientific bulletins, annals, volumes of international and national conferences, etc. (among them, over 55 articles appear in ISI, IEEEExplore, SCOPUS and INSPEC indexed/quoted publications), over 120 ISI, BDI citations, international master's, doctorate and habilitation theses, 17 projects / national grants carried out / educational programs / training programs (among them 3 directors / responsible as follows: *Electrical components compatible with sustainable development*, *Study on the unification of the methods of choosing earth sockets and grounding methods for consumers and distributors in low and medium voltage electricity networks*, *Modeling, simulation and control of photovoltaic systems used in LED street lighting in isolated areas*).

The second chapter, titled **Research Activity and Results obtained**, presents in extenso representative works for each research direction among the considered three.

With respect to **D1**, we can say that the wide field of electric vehicles has started in the last decade, this distinct group has become more and more clear electric servomotors. These machines, usually of low power, extend from fractions of watts to hundreds of watts and raise a number of special problems of a dynamic nature, which are different from other "classic" electrical machines. With all diversity of their constructive forms, these machines present many common aspects from functional, technological and design point of view, which justifies and allows their treatment in a unitary form.

For **D2**, though the use of some expressions in the economy, which encompass the word "sustainable", there is still from antiquity, the current meaning of the term "Sustainable Development" is relatively new. The current concept of sustainable development means that way development that is achieved without jeopardizing the chances of existence of future generations.

The concept began to have consistency with the onset of awareness of exhaustiveness of the Earth's resources use for a consuming population growing bigger. This was the seed of the current concept of sustainable development, concept that was later enriched, reaching a definition based on three pillars: human resources, environment and energy.

With respect to **D3**, it can be asserted that magneto-electronics is one of research fields that are developing very rapidly due to numerous applications required by industry. Multilayer magnetic configurations are one of the important aspects in this area, because they take into account the uniqueness of the use of phenomena of the types of micro-magnetic, magneto-optical and magneto-electronic types that can not be put into evidence by conventional materials.

Chapter Three **Plans for evolution and development of professional, scientific and academic career**, presents a set of principles that will underpin the future activity, the directions of professional development, the future research directions, as well as the elements which will contribute to their performance in the future. Future development directions are detailed by scientific fields, with future

plans related to the participation in national and international funding competition projects.

The thesis ends with a selective bibliographic list with both own references and with references from specialty literature.