UNIVERSITY „VALAHIA” OF TÂRGOVIŞTE
Aleea Sinaia nr. 13 - 130004 Târgoviște, Romania
Phone: +40-245-206101; Fax: +40-245-217692
web: www.valahia.ro, e-mail: rectorat@valahia.ro

THE DOCTORAL SCHOOL OF ENGINEERING SCIENCES
THE DOCTORAL STUDY DOMAIN: ELECTRICAL ENGINEERING

INTERNAL EVALUATION REPORT

July 2021

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No. institution registration ..... No. ARACIS registration .....

Doctoral study domain: ELECTRICAL ENGINEERING

INTERNAL EVALUATION REPORT

Domain contact person: Prof. Dinu COLȚUC

Rector,
Assoc. Prof. Laura-Monica GORGHIU

Director,
Prof. Dinu COLTUC

Stamp

The data contained in this Report are complete, correct and in accordance with the principles of professional ethics

ABBREVIATIONS

AIEER	Romanian Association of Electrical and Electronics Engineers
AGIR	General Association of Romanian Engineers
ASE	Academy of Economic Studies
ASRO	Romanian Standardization Association
BDI	International Databases
CC-IEETI	Research Center in Electrical Engineering, Electronics and Information Technology
CCVE	Electric Vehicle Research Center
CEAC	Commission for Evaluation and Quality Assurance
CNATDCU	National Council for Attestation of University Degrees, Diplomas and Certificates
CNCSIS	National Council for Scientific Research in Higher Education
CSD	Doctoral Studies Council
CSUD	Council for Doctoral Studies
DCEM	Department of Energy-Environment Research
USA	European Universites Association
FIEETI	Faculty of Electrical Engineering, Electronics and Information Technology
GD	Government Decision
HS	Senate Decision
ICSTM	Institute for Multidisciplinary Scientific and Technological Research
ICPE	Research Institute for Electrical Engineering
IOSUD	Institution Organizing Doctoral University Studies
IEEE	Institute of Electrical and Electronics Engineers
INP	National Polytechnic Institute
OP	Operational Procedure
POSDRU	Operational Plan Human Resources Development
PNCDI	National Plan for Research and Development and Innovation
REG	Regulation
SDSI	Doctoral School of Engineering Sciences
SDSEU	Doctoral School of Economics and Humanities
SIEAR	Society of Electrical Installations and Automation
SMC	Quality Management System
SRR	Romanian Robotics Society
UMF	University of Medicine and Pharmacy
UMS	University Management System
UPB	Polytechnic University of Bucharest
UTC	Technical University of Cluj-Napoca
UVT	University Valahia of Târgoviște

CUPRINS

1. GENERAL INFORMATION

1.1 The Doctoral School managing the doctoral study domain

The Doctoral School of Engineering Sciences (SDSI), was established in 2012 by the Decision of the UVT Senate no. 105D / 09.03.2012 (Annex 2) on the reorganization of the UVT Doctoral School into an Institution Organizing Doctoral University Studies (IOSUD) with two doctoral schools, with 3 doctoral fields each. SDSI organizes doctorates in the fields of **electrical engineering, materials engineering** and **mechanical engineering**. The Doctoral School Council (CSD), established according to the *Methodology for electing the members of the Doctoral School Council and for appointing the director of the doctoral school* (Annex 24.a), has the following composition: prof. Dr. Eng. Dinu COLȚUC (UVT), prof. Dr. Eng. Rodica Mariana ION (UVT), Dr. Corneliu Gabriel BUICA (UVT), Prof. Dr. Eng. Gheorghe BREZEANU (U.P.B.), Prof. Dr. Eng. Corneliu RUSU (U.T.C) ((Annex 16). The director of SDSI is Dinu COLȚUC. The mission of SDSI is to organize doctoral education in IOSUD-UVT in the fields of electrical engineering, materials engineering and mechanical engineering and to ensure the training of specialists for insertion in the labor market of highly qualified: higher education, research and development (R&D).

At the IOSUD level, an annual quality assurance program is developed and implemented (Annex 23.2b) with objectives in line with the ones set at the UVT level. The system of objectives in the field of quality targets with priority the fields: quality management, education / continuous training, scientific research and university creation, national and international cooperation. For each objective, actions, deadlines, responsibilities, performance indicators and resources are specified. The system of quality objectives set at the IOSUD level is reviewed annually. The evaluation of the degree of achievement of the objectives is done annually and the *Report on the analysis of SMC* at IOSUD level is prepared (Annex 23.7). The degree of achievement of the proposed objectives is evaluated based on the analysis of performance indicators. The internal audit of the quality management system within IOSUD is carried out annually and is carried out by the internal auditors (Annex 23.1), under the coordination of the *Quality Assessment and Assurance Department and the Quality Assessment and Assurance Commission* (CEAC) (Annex 23.1), the results being recorded in the form of a Report (Annex 23.4). The internal audit is carried out on the basis of the annual program approved by the University Senate and the audit plan (Annex 23.3b). The quality management system at UVT level is ISO 9001: 2015 certified (Annex 23.5). The external supervision audit of SMC is performed by AEROQ Bucharest (Annex 23.5).

The provisions of the UVT *Code of Ethics and Professional Ethics* apply to SDSI (Annex 20). *The Ethics Commission* operates in UVT, which monitors compliance with the code of ethics and investigates cases of deviations from professional ethics and proposes to the UVT management the necessary measures. The reports of the ethics commission are made public on the university's website http://www.valahia.ro/ro/comisia-de-etica .

In SDSI, there are 12 doctoral supervisors, namely, 4 in electrical engineering, 5 in materials engineering and 3 in mechanical engineering. Six are employed by UVT, and the oyher six are associates with UVT. We must mention the national and international visibility of our doctoral supervisors and their experience in research. We emphasize that in each of the three fields, SDSI has doctoral supervisors recognized by the international community and with prestigious achievements. At SDSI, 40 PhD students are enrolled, 16 PhD students in electrical engineering, 14 in materials engineering and 10 in mechanical engineering.

The PhD students of SDSI have unrestricted access to the research and documentation infrastructure of UVT, i.e., of the Institute for Multidisciplinary Scientific and Technological Research (ICSTM), the Faculty of Materials Engineering and Mechanics, the Faculty of Electrical Engineering, Electronics and Information Technology. ICSTM brings together the institutionally accredited research centers of the university. The research infrastructure covers an area of 6270 m2 developed area and 2220 m2 built area, comprising 33 laboratories, 1 amphitheater, technological spaces. ICSTM is equipped with modern computing technology and modeling and design software (Annex 14.3).

Among the most representative equipment that ICSTM laboratories are equipped with are the photovoltaic experimental platform, wind experimental platform, solar thermal experimental platform, PV module development and prototyping system, coupled and mass plasma spectrometry (ICP-MS), vacuum deposition installation and sputtering dielectrics, electron microscope (SEM) equipped with directed ion beam (FIB), atomic force microscope (AFM), LASER ablation system, nanoindenter. The laboratories perform structural analyzes, quantitative analyzes, morphological and structural determinations, evaluation of surface topography (2D / 3D), electrical characterizations, design and prototyping services.

1.2 The doctoral study domain

The field of electrical engineering was established at Valahia University in 2010 by O.M. no. 3597 / 14.04.2010 of MECTS (Annex 1). At the time of its establishment, the field had three doctoral supervisors, namely, Prof. Dr. Eng. Nicolae VASILE, Prof. Dr. Eng. Horia Leonard ANDREI and prof.dr.ing. Dinu COLTUC. Prof. Dr. Eng. Nicolae VASILE transferred from U.P.B. (O.M. 5356 of 30.09.2010). Prof.dr.ing. Horia ANDREI and prof. Dr. Eng. Dinu COLTUC received the title of doctoral supervisors through O.M. no. 4631 / 11.08.2010. In 2011, Prof. Dr. Eng. Valentin DOGARU-ULIERU has obtained the abilitation to supervise doctoral thesis (OM 5268 of 05.09.2011).

SDSI-IE OBJECTIVES

- Creating a pole of excellence and research for the field of electrical engineering;
- Human resource training for high level activities, with a strong research component;
- Increasing the national and international visibility of UVT;
- Participation in international training and research programs in the field.

THE MISSION of the doctoral program in electrical engineering is didactic and research, respectively to deepen the knowledge acquired by students within the master cycle and to train the specific competencies of scientific research.

Teaching mission:

- Training of doctoral students in order to obtain the knowledge and skills necessary for research in the field of electrical engineering, respectively algorithms, methods and modeling techniques in electrical and energy engineering, electrical machines and drives, measurement and data acquisition systems, numerical methods in electrical engineering, renewable systems of energy, optimization of electric power systems, quality of electricity, signal processing, etc
- Training the skills necessary for the elaboration and management of scientific research projects in the field of electrical engineering and related fields;
- Development of a critical approach forevaluation of the research results;
- Educating doctoral students in the spirit of scientific research ethics;
- Training of specialists for insertion in the highly qualified labor market.

Scientific research mission:

- Participate in national and international competitions and research programs;
- Produce new knowledge in the field of electrical engineering and related fields;
- Disseminate knowledge;
- Collaborate with universities and research institutions from the country and abroad to carry out scientific works and joint research, etc.

The SDSI-IE CURRICULUM (Annex 6) covers a period of 3 years and includes the advanced study program (30 transferable credits) and the scientific research program (150 ETC). The training program based on advanced university studies includes 3 specialized courses (Annex 7) recommended by the doctoral supervisor depending on the subject of the thesis and the background of the doctoral student (courses or individual study based on a recommended bibliography containing mandatory recent articles in the field) and two disciplines of general interest, *Ethics and Academic Integrity* and *Research Methodology*. Each discipline ends with a colloquium to verify the knowledge of fields, the synthesis capacity, the ability to evaluate results, etc. The curriculum also contains three *Progress reports*, elaboration and defense of the doctoral thesis .

PHD SUPERVISORS

There are 4 doctoral supervisors (CVs are attached in Annex 3). Anlthough the number is relatively small, the national and international visibility of our PhD supervisors and their experience in research should be emphasized. Below, we present some significant aspects.

Horia Leonard ANDREI (Annex 3.1) is with FIEETI-UVT since 2000. His research interests are the analysis of electrical circuits, measurement and data acquisition systems, numerical methods in electrical engineering, renewable energy systems, optimization of power systems and electricity quality. He has published over 380 articles (93 in WoS-ISI publications -7 in Q1 journals), 64 monographs, books and book chapters and has participated in 42 research and human resource development projects (9 international), director/project manager in 15 projects. He was visiting professor with University of Rouen in 2005, Politecnico di Torino in 2006, 2007, 2009, 2014 and with the University College of Engineering - Copenhagen in 2010. Since 2012 he is Senior Member IEEE; is a member of the national professional associations AGIR, AIEER, SRR and in the term 2020-2024 he is a member of CNATDCU, Electrical Engineering commission. He served as reviewer for11 ISI-WoS journals and several ISI-WoS indexed conferences, he was guest editor at 2 volumes of Energy and Energies, he is a topic editor of Energies magazine, he is evaluator - national expert of research project proposals. He was member of the organizing / scientific committees at over 70 national and international conferences. Recipient of 7 prizes / diplomas in recognition of scientific activity, of which 3 international. He has over 900 citations.

Dinu Coltuc (Annex 3.2) is professor with FIEETI-UVT since 2000. His research interests include image and signal processing, watermarking and information security. Dinu Coltuc is director of SDSI (since 2012) and director of the Research Center for Electrical Engineering, Electronics and Information Technology - UVT (since 2009). He was invited professor with the *Université de Savoie* (4 months / year in 1997-1999), *Institut National Politechnique Grenoble* (6 months / year in 2001-2003, 3 months 2007, 4 months 2009), *Univ. Jean Monnet*, Saint Etienne, France (4 months), associate researcher with GIPSA-Lab, INP Grenoble (12 months in 2005-2006) and researcher with *Aristotle Univ. of Thessaloniki*, Greece (Nov. 1991- Jan 1993).

Member of the CES 28 (2014) and CES 39 (2016, 2017) expert committees of the *Agence Nationale de la Recherche*, France, for evaluation of research projects. He served as associate editor at *IEEE Trans. on Information Forensics and Security*, (2016-2020) and *Journal of Visual Communication and Image Representation*, Q2 Magazine (since 2016), *IEEE Senior Member* (since 2011). Since 2016 he is a member of CNATDCU, Commission 11. Dinu Colțuc is a recipient of the *Traian Vuia* Prize of the Romanian Academy for contributions to the development of image processing (1987), he authored-coauthores of over 100 papers (13 in ISI Q1 journals) and has over 2000 citations.

Nicolae Nicolae VASILE (Annex 3.3) has been a professor at FIEETI-UVT since 1998. He is a Member of the Romanian Academy of Technical Sciences, Electrotechnical-Energy Section, since 1997. He was: General Director of ICPE-SA during 1992-2005, President of the Scientific Council of the Romanian National Committee of the World Energy Council during 2007-2015, Founding President of the National Standardization Body during 1998-2000, President of the JM Foundation Juran, in the period 2003-2005, First Vice-President of the Chamber of Commerce and Industry of Romania in the period 2003-2005, Vice-President of the Bucharest Chamber of Commerce and Industry in the period 2005-2010. Publications: 33 technical books, 20 fiction books, 86 articles in specialized journals, 79 papers in conference proceedings. Reviewer for: *Revue Roumaine de Science Technique, Serie Electrotechnique-Energetique* (ISI), *Electrotehnica-Electronica-Automatica* (Scopus), *Buletinul AGIR* (Scopus) etc. He supervised 8 doctoral theses at the Polytechnic University of Bucharest and 6 at UVT. Member of 92 Doctoral Commissions at UPB, UVT, Univ. Bucharest, UBB, UT Cluj-Napoca, The Lower Danube Univ. Galați, Univ. Construction Technology in Bucharest.

Valentin Dogaru Ulieru (Annex 3.4)) has been with FIEETI-UVT since 2009. He specialized in electrical and non-electrical measurements, data acquisition, graphic programming, energy efficiency and renewable energy sources. He is a member of the *Society of Electrical Installations and Automations - SIEAR*, the *Romanian Standardization Association-ASRO; Romanian Association of Electrical and Electronics Engineers-AIEER; Romanian Robotics Society - SRR* and member of the *International Electrotechnical Commission, Technical Committee TC101*, coordinator of the IEC project TR 61340-1: 2012 / COR2: 2017 ED1 - *Electrostatic phenomena - Principles and measurements*.

PhD students

There are 16 PhD students enrolled at SDSI-IE: 2 supervised by Prof. H. Andrei, 5 by Prof. D. Coltuc, 3 by Prof. V. Dogaru-Ulieru and 6 by Prof. N. Vasile. In the last 5 years, 14 doctoral students have been admitted. So far, 26 SDSI PhD students have received the title of Doctor of Electrical Engineering, of which 17 during the evaluation period. The table with the theses defended in the period 2016-2020 is presented in Annex 10. The evolution of the theses defended and of the doctoral students admitted per year is presented in the table below.

	2016	2017	2018	2019	2020
Theses defended	5	-	4	4	4
Admitted PhD students	3	4	3	1	3

The number of theses defended in the period 2016 - 2020 is 21.4% higher than the number of doctoral students admitted in the same period. The difference is due to the reduction in the number of budget positions allocated to UVT.

We must emphasize that all 26 doctors are working in electrical engineering or related fields. A significant number of them are envolved in research activities. Thus, 7 are teachers at the *Faculty of Electrical, Electronic Engineering and Information Technology* (I. Căciulă, E. Diaconu, IC Drăgoi, I. Udroiu, MG Ioniță, I. Vasile and N Fidel), and 2, PhDs, V. I. Gurgu and Dr. V. Miron-Alexe, are researchers at ICSTM-UVT. Dr.ing. D. A. Ciubotariu is a patent examiner at the *European Patent Office, NL*. In addition to the 10, we also mention Dr. Eng. G. Nicolaescu - Director of *ENEL Energie Muntenia*, Dr. Eng. G. Oprea - head of energy department *Dero Lever* Ploiesti, dr.eng. Lucian Nastase - Head of the Anti-Fraud Department, ANAF, Prahova County, Dr. Eng. B. Tene - *Head of the International Relations, ERASMUS +, Programs, Projects and Information Technology* UVT office. Of the 14, 11 defended the thesis during the evaluation period. In conclusion, over 50% of SDSI-IE graduates (14 out of 26) work in research or hold positions of responsibility, a percentage that becomes 64.7% (11 out of 17) if we refer only to the period subject to evaluation.

RESEARCH CENTERS / LABORATORIES

SDSI-IE PhD students are members of the ICSTM research centers where their supervisors carry out their research activity, namely the *Research Center in Electrical Engineering, Electronics and Information Technology - CC-IEETI* (H. Andrei, D. Coltuc), *Electric Vehicle Research Center - CCVE* (V. Dogaru-Ulieru) and *Energy-Environment Research Department - DCEM* (N. Vasile). We enumerate the ICSTM laboratories to which the SDSI-IE doctoral students have access, grouped on research centers. The description of the main equipments is presented in Annex 14.3.

Research Center in Electrical Engineering, Electronics and Information Technology:

- Laboratory of Electrical and Electronic Systems for Renewable Energy Sources
- Center for PCB Development and Prototyping

Department of Environmental Energy Research:

- Energy Conversion Laboratory for Grid Connected Systems
- Materials for Energy Conversion
- Systems for Energy Management Distributed in Intelligent Networks

Electric Vehicle Research Center: laboratory of the same name.

We also list the laboratories from *the Faculty of Electrical Engineering, Electronics and Information Technology* (Annex 14.2)*:*

- Electrical Equipment and Installations
- Modeling and simulation of electrical networks
- Electrical and Electronic Measurements
- Protocols and Communication Interfaces for Industrial Environment and Embedded Systems
- Signal Processing Systems
- Image processing and pattern recognition

MAIN SCIENTIFIC RESULTS

During the evaluated period, 17 doctoral theses were defended at SDSI-IE (Annex 10). During this period, the PhD students authored/coauthored 77 publications: 11 book chapters, 11 articles published in ISI journals, 19 articles in BDI indexed journals, 32 articles presented at ISI indexed conferences and 5 at BDI indexed conferences. More than half of the publications, 48 (62%), are indexed by ISI. The complete list of publications of the last 5 years is presented in Annex 12.

During the evaluation period, SDSI-Electrical Engineering PhD students had a series of outstanding results. We mention below some of the doctoral students' performances.

- **Theses with "EXCELLENT" grade:**

1. FIDEL G. Nicolae, Advanced wireless power transfer technologies, (supervisor N. Vasile), 2020
2. MARINESCU C. Ioan, Analysis of the operational safety of the national power grid and the implementation of protective measures against risk factors, (supervisor H. Andrei), 2019
3. DRĂGOI I. Ioan-Cătălin, Contributions to prediction improvement for reversible watermarking (supervisor D. Coltuc), 2016

- **Articles in ISI Q1, Q2 listed journals (top 25%):**

1. H. Andrei, **C.A. Badea**, P. Andrei, F. Spertino, Energetic-Environmental-Economic Feasibility and Impact Assessment of Grid-Connected Photovoltaic System in Wastewater Treatment Plant: Case Study, *Energies*, 14(1), p.100., 2021, IF: 2.702 (Q2)
2. **D. A. Ciubotariu**, I. A. Ivan, C. Clévy, P. Lutz, Piezoelectric 3D actuator for micromanipulation based on [011]-poled PMN-PT single crystal, *Sensors and Actuators A: Physical* 252, pp. 242-252, 2016, IF: 2.904 (Q2)
3. **I.C. Dragoi**, D. Coltuc, Adaptive Pairing Reversible Watermarking, *IEEE Trans. on Image Processing*, 25(5): 2420-2422, 2016, IF: 9.340 (Q1)
4. **I.C. Dragoi**, S. G. Stanciu, R. Hristu, H.-G. Coanda, D. Tranca, M. Popescu, D. Coltuc, Embedding complementary imaging data in laser scanning microscopy micrographs by reversible watermarking. Biomedical Optics Express, 7(4): 1127-1137, 2016, IF: 9.340. (Q1).

- **Awards**

1. **I.V. Gurgu**, IEEE Robotics and Automation Society, Mobile Microrobotics Challenge, Best in Show – Winner, IEEE International Conference on Robotics and Automation - ICRA 2016, 16-20 May 2016 - Stockholm, Sweden;
2. **I.V. Gurgu**, IEEE Robotics and Automation Society, Mobile Microrobotics Challenge (MMC), Microassembly Challenge - 1st Place, IEEE International Conference on Robotics and Automation - ICRA 2017 29-03 June 2017 – Singapore;
3. **I.V. Gurgu**, IEEE RAS Micro/Nano Robotics & Automation (MNRA), 2018, Mobile Microrobotics Challenge, Autonomus Manipulation & Accuracy Challenge Event - First Place Award, IEEE International Conference on Robotics and Automation Brisbane, Australia, May 23, 2018;
4. **N. Fidel**, DIPLOMA OF THE ACADEMY OF SCIENCES OF MOLDOVA awarded for essential contributions to the development of electrical, electrical and electronic installations for energy conversion and transmission, as well as promoting collaboration between scientific and cultural organizations in Târgoviște and the Academy of Sciences of Moldova by Decision of the Presidium. 173 of December 2, 2019.

- **Projects won by UVT-IE doctors:** PN-III-P1-1.1-PD-2016-1666, *Local prediction reversible watermarking – Second generation*, și PN-III-P1-1.1-PD-2019-1165, *Contributions to the development of RDH into encrypted images*, director I.C. Dragoi

We end the section with some considerations on SDSI-IE doctoral students. The defense of 17 theses in 5 years leads to an average of 3.4 theses defended per year. For an engineering field with 4 doctoral supervisors, the annual average of the thesis defenses is very good. The analysis of the publications in Annex 12 shows that over 60% of the publications are indexed by ISI, respectively 48 out of 77.

One aspect that should be highlighted is the existence of outstanding results obtained by the doctoral students of electrical engineering (3 theses with excellent grade, 4 articles published in Q1 and Q2 ISI journals, international awards). Obtaining such results is a proof that the doctoral school fulfills its mission and manages to prepare specialists for high-level research in the field of electrical engineering. Such results are also explained by the effort of the doctoral school to integrate the PhD students in research teams and of course, by the continuous interaction between the doctoral supervisors, the guidance commissions and the doctoral students.

1.3 The functioning of the internal quality assurance system at the doctoral study domain level

The objectives in quality assurance are established at the level of IOSUD and target with priority the fields: quality management, education / continuous training, scientific research and university creation, national and international cooperation. For each objective, actions, deadlines, responsibilities, performance indicators and resources are specified. The system of quality objectives set at the IOSUD level is reviewed annually (Annex 23.2b).

In order to evaluate the degree of achievement of the proposed objectives, in each academic year, the *Report on the analysis of SMC* at IOSUD level is prepared (Annex 23.7). The degree of achievement of the proposed objectives is evaluated based on the analysis of performance indicators. Also, the document specifies the outstanding achievements and the promotion of the IOSUD image.

At the IOSUD level, the annual training program in the field of quality is established. The document highlights the topics to be covered, the period and the participants (Annex 23.6).

The internal audit of the quality management system within IOSUD is carried out annually and is performed by internal auditors, under the coordination of the Quality Assessment and Assurance Department and the Quality Assessment and Assurance Commission, the results being recorded in a Report (Annex 23.4)). The internal audit is carried out on the basis of the annual program approved by the University Senate and the audit plan (Annex 23.3c). The quality management system within the Doctoral School *includes M04-Methodology for self-evaluation of IOSUD activity* (Annex 24.a), developed by CSUD and evaluation procedures for doctoral students and doctoral supervisors, which are available on the university website. The quality management system in the UVT was evaluated in 2013 by EUA with a positive report (Annex 26).

The quality management system at UVT level is ISO 9001: 2015 certified (Annex 23.5). The external supervision audit of SMC took place on November 28, 2020, being performed by AEROQ Bucharest, as a certification body, with nationally and internationally recognized experts (Annex 23.5).

2. THE INFORMATION NECESSARY TO EVALUATE THE EXTENT TO WHICH THE CRITERIA, STANDARDS AND PERFORMANCE INDICATORS

A. INSTITUTIONAL CAPACITY

A.1. The administrative, managerial institutional structures and the financial resources

A.1.1. The institution organizing doctoral studies (IOSUD) has implemented the effective functioning mechanisms provided for in the specific legislation on the organization of doctoral studies.

A.1.1.1. The existence of specific regulations and their application at the level of the Doctoral School of the respective university doctoral study domain:

a) the internal regulations of the Doctoral School;
b) the Methodology for conducting elections for the position of director of the Council of doctoral school (CSD), as well as elections by the students of their representative in CSD and the evidence of their conduct;
c) the Methodologies for organizing and conducting doctoral studies (for the admission of doctoral students, for the completion of doctoral studies);
d) the existence of mechanisms for recognizing the status of a Doctoral advisor and the equivalence of the doctoral degree obtained abroad;
e) functional management structures (Council of the doctoral school), giving as well proof of the regularity of meetings;
f) the contract for doctoral studies;
g) internal procedures for the analysis and approval of proposals regarding the training for doctoral study programs based on advanced academic studies.

The indicator is fulfilled. IOSUD-UVT has developed and implemented the specific regulations in accordance with the legislation on the organization of doctoral studies (the documents are displayed on the website https://www.scoaladoctorala.valahia.ro/). More precisely:

a) REG 01 - SDSI – Internal Regulation of the Doctoral School of Engineering Sciences of UVT, 3rd edition, approved by the Senate of the University of Valahia in Târgoviște by HSU Nr. 61 E / 29.01.2020, entered into force on: 29.01.2020 (Annex 24.b).
b) M08 - Methodology for conducting elections for the members of the Doctoral School Council and for appointing the director of the doctoral school, approved by HS 22Q / 27.04.2017 (Annex 24.a).

- The director of SDSI is appointed by CSUD for a term of 5 years (art. 2, M08) and in accordance with art. 14.9 GD 681. The director of SDSI is Dinu COLȚUC.
- The election by the students of their representative in CSD took place in two rounds, respectively on 7.07.2017 and 14.07.2017, when ing. Liviu OLTEANU has been ellected. After the resignation of Liviu OLTEANU, on 15.04.2021, Corneliu Gabriel BUICA was elected, elections validated by the UVT Senate, HSU no. 26C from 22.04.2021.

c) methodologies for organizing and conducting doctoral studies: (admission of doctoral students, completion of doctoral studies):

- *REG 10 - The institutional regulation for the organization and development of doctoral university study programs at the University of Valahia in Targoviste* revised and approved by the Senate of the University of Valahia in Targoviste (Annex 24.b).

- *M11 - Methodology for organizing admission to doctoral studies*, approved by the Senate of the University of Valahia in Târgoviște on 26.04.2018 (HS 10B), entered into force on: 26.04.2018 (Annex 24.a).
- PO 07.28 *Organization and conduct of admission to the cycle of doctoral studies*, approved by the Monitoring Commission on: April 2, 2018, approved by the Senate of the University of Valahia in Targoviste on April 26, 2018 (Annex 24.c).
- PO 07.26 *Completion of doctoral studies*, approved by the Monitoring Commission on April 2, 2018, approved by the Senate of the University of Valahia in Targoviste on April 26, 2018 (Annex 24.c).
- PO 07.43 *Completion of doctoral studies using alternative methods* (Annex 24.c).

d) the existence of the mechanisms for recognizing the quality of doctoral supervisor and for equivalence of the doctorate obtained in other states;

- *PO 07.37 Recognition of the doctoral degree obtained abroad, approved at the meeting of the Monitoring Commission on 06.12.2018, approved at the meeting of the University Senate on 19.12.2018* (Annex 24.c).
- *PO 07.38 Recognition of the quality of doctoral supervisor obtained abroad,* approved in the meeting of the Monitoring Commission on 06.12.2018, approved in the meeting of the University Senate on 19.12.2018 (Annex 24.c).

e) functional management structures (Doctoral School Council), proving also the regularity of convening the meetings:

- CSD - SDSI is constituted according to the *Methodology for electing the members of the Doctoral School Council and appointing the director of the doctoral school* and has the following composition: Dinu COLȚUC (director, UVT), Rodica Mariana ION (UVT), Corneliu Gabriel BUICĂ (SDSI doctoral student) , Gheorghe BREZEANU (UPB), Corneliu RUSU (UTC). CSD meet as many times as needed (at least twice a year). The minutes of the assessed period are presented in Annex 18.

f) The doctoral studies contract is presented in Annex 21.

g) The training program based on advanced university studies is regulated in Art. 8-Art. 10 of REG 01 - SDSI.

A.1.1.2. The doctoral school' Regulation includes mandatory criteria, procedures and standards binding on the aspects specified in Article 17, paragraph (5) of the Government Decision No. 681/2011 on the approval of the Code of Doctoral Studies with subsequent amendments and additions.

The indicator is fulfilled. The SDSI Regulation (Annex 24.b) addresses the aspects of art. 17 para. (5) of HG 681/2011 with subsequent amendments and completions. So:

a. the acceptance of new doctoral advisors is regulated in Art. 7.1, and the withdrawal of the quality of member of the doctoral school in Art. 7.2;
b. the training program based on advanced university studies is regulated in Art. 8-Art. 10;
c. the change of the doctoral supervisor is discussed in Art.13.7-13.9, and the mediation of conflicts in Art. 13.5-13.6;
d. the interruption of the doctoral program is established at Art.14.3-14.6;
e. the prevention of fraud in scientific research, including plagiarism is discussed in Art. 13.10-13.12, Art. 20.17;
f. the access of doctoral students to research and documentation resources is provided in Art. 11.3; Article 15.g;
g. in Art. 17. 2 it is specified that the doctorate at SDSI is frequent or part-time, and in Art. 15.2.b it is specified that the doctoral student must carry out the activities provided in the individual plan of doctoral university studies under the conditions of frequency set by the doctoral supervisor.

A.1.2. The IOSUD has the logistical resources necessary to carry out the doctoral studies' mission.

A.1.2.1. The existence and effectiveness of an appropriate IT system to keep track of doctoral students and their academic background.

The indicator is fulfilled. IOSUD uses UMS (University Management System), an integrated software product developed by Red Point Software Solutions (https://rpss.ro/ro_RO/products/university-management-system/). UMS allows the management for the entire cycle, from admission to the completion of studies and allows the integration of both aspects related to the academic-didactic organization, list of positions, as well as tools dedicated to process and document management.

Currently, UMS is used in 24 Romanian universities. UVT is using UMS since 2011. In IOSUD, UMS has been introduced in 2018.

A.1.2.2. The existence and use of an appropriate software program and evidence of its use to verify the percentage of similarity in all doctoral theses.

The indicator is fulfilled - all doctoral theses are verified, since 2016, with www.sistemantiplagiat.ro. *Sistemantiplagiat.ro* is a software for detecting the similarity of texts created in 2002 by the Polish company Plagiat.pl, launched in Romania in 2012.

Sistemantiplagiat.ro is recognized by CNATDCU for establishing the degree of similarity for scientific papers, published in the MENCS Order no. 3485 of March 24, 2016. Currently, the program is used by 54 universities (ASE, Univ. Bucharest, UMF, ATM, etc.). The program calculates two similarity coefficients: for the calculation of the similarity coefficient 1, all the phrases discovered by the system in other documents are taken into account; for the calculation of the similarity coefficient 2, only the sentences whose length exceeds the imposed limit are taken into account.

UVT has developed a procedure (PO 07.27) for anti-plagiarism verification of bachelor's, dissertation and doctoral theses that establishes the working method and the limits for the two coefficients. The similarity ratio provided by the program is validated by the doctoral supervisor who analyzes, in addition to the values of the coefficients, the relevance of the fragments that have been discovered by the system in other texts.

In fact, since 2016, the similarity report is one of the pieces in the doctoral file that is submitted in electronic format, with electronic signature, for PhD theses validation by CNATDCU.

A.1.3. The IOSUD makes sure that financial resources are used optimally, and the revenues obtained from doctoral studies are supplemented through additional funding besides governmental funding.

A.1.3.1. Existence of at least one research or institutional / human resources development grant under implementation at the time of submission of the internal evaluation file, per doctoral study domain under evaluation, or existence of at least 2 research or institutional development / human resources grant for the doctoral study domain, obtained by doctoral thesis advisors operating in the evaluated domain within the past 5 years. The grants address relevant themes for the respective domain and, as a rule, are engaging doctoral students.

The indicator is fulfilled. There is currently an ongoing grant type PNIII-PED in which PhD student C. G. BUICA is involved and funded. Another 3 research grants, 1 IDEI type grant and two PARTNERSHIP type grants have been carried out in the last 5 years (I. C. DRAGOI was funded). We also mention a human resources development grant developed in the last 5 years. The projects obtained by the doctoral supervisors in the field are:

1. PN-III-P2-2.1-PED-2019-2464, Image lossless compression by reversible data hiding, director D. Colțuc, Aug. 2020 – July 2022;
2. PN-III-P4-ID-PCE2016-0339, *Reversible watermarking: advanced techniques - SWAT*, PN-III-P4-ID-PCE2016-0339, http://www.swat.valahia.ro/ director D. Colțuc, June 2016 – Dec 2019;
3. PN-II-PTPCCA-2013-4-1762, *Intelligent Management, Monitoring and Maintenance System for Pavements and Roads Using Modern Imaging Techniques - PAV3M*, 2013-2017, http://193.231.19.17/PAV3M/ responsible UVT D. Colțuc;
4. PN-II-PT-PCCA-2011-3.2-1162, *Far field and near field invesigation of melanoma - NANOLASCAN*, http://nanolascan.ro/ 2012-2016, responsible UVT D. Colțuc;
5. POSDRU/182/2.3/5/152783 "*Qualification, adaptation, performance - for a better life*", 2014-2016, director H. Andrei.

Other PhD students (A. CIUBOTARIU, V. GURGU, V. MIRON-ALEXE) were involved in research projects directed by the members of the guidance commissions of doctoral students or other staff members of UVT (associate professor A. IVAN, prof. E. Minca) (Annex 15).

A.1.3.2. The percentage of doctoral students active at the time of the evaluation, who for at least six months receive additional funding sources besides government funding, through scholarships awarded by individual persons or by legal entities, or who are financially supported through research or institutional / human resources development grants is not less than 20%.

The indicator is fulfilled with a percentage of **25%**. Four out of the 16 existing PhD students of SDSI-IE (Annex 11), have other sources of funding, namely C.G. Buică (20 months from project PN-III-P2-2.1-PED-2019-2464), B. Sălișteanu scholariry tax waiving of 50% (2016-2021), I. Istudor scholariry tax waiving of 50% (2016-2021)and I.V. Vasile who received funding from IOSUD-UVT as a fixed-term employee at ICSTM-UVT (2016-2017).

Regarding the financing of SDSI doctoral students from other sources, we must also mention that 8 PhD students (47%) out of the 17 PhD students who defended their theses during the evaluated period received funding from other sources. Thus, 5 PhD students received funding from research contracts, respectively (A. Ciubotariu 8 months from FP7- PEOPLE 276991/2010 / Marie Curie ERG and 8 months from PN-II-RU-TE-2011-3-0299, IC Dragoi 36 months from PN-II-PT-PCCA-2011-3.2-1162 and 20 months from PN -II-PT-PCCA-2013-4-1762, V. Miron-Alexe 37 months from PN-II-PT-PCCA-2013-4-0686 / 232, V. Gurgu 18 months from PN-III-P2- 2.1-PED-2016-1675 and MG Ioniță 6 months from the project Network of intelligent multisensory nodes for indoor monitoring (SMARD), contract CI100 / 2017). Three other PhD students received scholarity tax waiving of 50%, namely R.A. Enescu (Jan. 2020 - Oct. 2020), I. Vasile (2016-2019), B. Tene (2017-2018). (Annex 15).

***A.1.3.3. At least 10% of the total amount of doctoral grants obtained by the university through institutional contracts and of tuition fees collected from the doctoral students enrolled in the paid tuition system is used to reimburse professional training expenses of doctoral students (attending conferences, summer schools, training, programs abroad, publication of specialty papers or other specific forms of dissemination etc.).**

The indicator is partially fulfilled - the percentage is **7.64%**. We consider the budget allocation for engineering fields of 25.300 RON and 4.500 RON taxes. During the evaluation period, 11 PhD students were admitted to SDSI-IE by budget places and 3 by fee places. The budget allowance is paid for a period of 3 years. Considering the duration of 3 years and for the doctorates in fee regime we obtain an amount of 3 x 11 x 25.3 + 3 x 4.5 x 3 = 875,400 RON.

SDSI-IE PhD students benefited for professional training of RON 2750 representing participation fees for ISEEE 2017 (I. Marinescu), ECAI 2017 (IV Gurgu, CA Badea), EEEIC, Florence, Italy (CA Badea), ECAI 2016 (N. Fidel) and ISFEE 2017 (G. Oprea),

We also mention the payment for access to electronic resources via ANELIS, the purchase of licenses and software used by doctoral students. Thus, 10 ANSYS Academic Teaching Electronics Suite licenses, 10 ANSYS Academic Teaching CFD licenses and 5 ANSYS Academic Teaching Mechanical Licenses were purchased, the amount being 30,000 lei and during the period 2016-2020, the amount of 138,754 was been paid for Microsoft Office M365 EDU licenses A3. During all these years the interest in the development of applications using the resources of this contract having mainly been expressed by students in electrical engineering. Thus, we will consider the sixth part of this value, namely 23,126 RON. (Anexa 28).

SDSI-IE doctoral students employed by the UVT also benefited from 50% reductions on tuition fees, respectively of RON 41,046. Adding up, we have 2,750 + 23,126 + 41,064 = 66,992 RON, i.e., the total sum represents 7.64% of 875,400 RON.

We mention that SDSI supplemented the aspect of financing from UVT allowances / fees by financing from other sources, respectively from research contracts and POSDRU projects, an aspect that can be observed by examining the participations in scientific events (* B.3.1.2) and the financing of doctoral students from other sources (* A.1.3.2).

A.2. Research infrastructure

A.2.1. The IOSUD has a modern research infrastructure to support the conduct of doctoral studies' specific activities.

A.2.1.1. The venues and the material equipment available to the doctoral school enable the research activities in the evaluated domain to be carried out, in line with the assumed mission and objectives (computers, specific software, equipment, laboratory equipment, library, access to international databases etc.). The research infrastructure and the provision of research services are presented to the public through a specific platform. The research infrastructure described above, which was purchased and developed within the past 5 years will be presented distinctly.

The indicator is fulfilled. SDSI uses the UVT research infrastructure without restrictions. As presented in Section 1.2 of the report, SDSI-IE PhD students have access to the laboratories of the ICSTM research centers and the *Faculty of Electrical, Electronic and Information Technology Engineering*. We list the laboratories (main equipment is presented in Annex 14):

Environmental Energy Research Department:

- Energy Conversion Laboratory in Grid Connected Systems
- Materials Laboratory Used in Energy Conversion
- Systems Laboratory for Distributed Energy Management in Intelligent Networks

Electric Vehicle Research Center. The laboratory bears the same name.

Research Center in Electrical Engineering, Electronics and Information Technology (Anexa 14.1)*:*

- Laboratory of Electrical and Electronic Systems used in Renewable Energy Sources
- Printed Wiring Development and Prototyping Laboratory

Laboratories from the *Faculty of Electrical Engineering, Electronics and Information Technology* (Anexa 14.2):

- Electrical Equipment and Installations; Modeling and simulation of electrical networks
- Electrical and Electronic Measurements
- Protocols and Communication Interfaces for Industrial Environment and Embedded Systems
- Integrated Systems for Signal Processing
- Image Processing and Pattern Recognition

We also mention the unrestricted access to the documentation resources of the UVT Library, including the electronic resources (https://biblioteca.valahia.ro/resurse-online).

The research infrastructure is also presented on the doctoral school website or the centers' websites (eg www.ccieeti.ro). UVT equipment and the offer of services is also presented on the ERIS platform (https://erris.gov.ro/Valahia-University-of-Targoviste).

Among the equipment purchased for the doctoral students of IE in the last 5 years, we mention 1 server, two workstation for image and signal processing, 2PCs, FPGA development boards, microcontrollers etc. (Anexa 14.4). Ammong the equipment purchased in ICSTM we mention the *SMART flexible assembly system, ROKIDAIR cyber particle monitoring infrastructure, DustTrak DRX 8533 aerosol monitor*.

A.3. Quality of Human Resource

A.3.1. At the level of each domain there are sufficient qualified staff to ensure the conduct of doctoral study program.

A.3.1.1. Minimum three doctoral thesis advisors within that doctoral domain, and at least 50% of them (but no less than three) meet the minimum standards of the National Council for Attestation of University Degrees, Diplomas and Certificates (CNATDCU) in force at the time when the evaluation is carried out, which standards are required and mandatory for obtaining the enabling certification.

The indicator is fulfilled. Three doctoral thesis advisors (H. ANDREI, D. COLȚUC, N. VASILE) meet all the criteria as presented presented in Annex 4. We emphasize that their scores are significantly higher than the minimum score (2 to 9 times).

Prof. Dr. Eng. Horia Leonard ANDREI (Annex 4.1)

Nr crt	*Activity*	*Professor Conditions*	*Accomplished*
1	Teaching / professional activity (A1)	Minimum 120 points	757.415 points
2	Research activity (A2)	Minimum 360 points	1585.675 points
3	Recognition of the impact of the activity (A3)	Minimum 120 points	3431.51 points
	TOTAL	Minimum 600 points	**5774.6** points

Prof. Dr. Eng. Dinu COLTUC (Annex 4.2)

Nr crt	*Activity*	*Professor Conditions*	*Accomplished*
1	Teaching / professional activity (A1)	Minimum 120 points	165.23 points
2	Research activity (A2)	Minimum 360 points	2544.89 points
3	Recognition of the impact of the activity (A3)	Minimum 120 points	3391.26 points
	TOTAL	Minimum 600 points	**6101.38** points

Prof. Dr. Eng. Nicolae VASILE (Annex 4.3)

Nr crt	*Field of activity*	*Professor Conditions*	*Accomplished*
1	Teaching / professional activity (A1)	Minimum 120 points	494.45 points
2	Research activity (A2)	Minimum 360 points	737,78 points
3	Recognition of the impact of the activity (A3)	Minimum 120 points	643.29 points
	TOTAL	Minimum 600 points	**1875.52** points

***A.3.1.2. At least 50% of all doctoral advisors have a full-time employment contract for an indefinite period with the IOSUD.**

The indicator is fulfilled with 50% - two out of the 4 doctoral thesis advisors (D. COLTUC, V. DOGARU-ULIERU) have a full-time employement contract for an indefinite period with IOSUD -UVT (Annex 9).

A.3.1.3. The study subjects in the education program based on advanced higher education studies pertaining to the doctoral domain are taught by teaching staff or researchers who are doctoral thesis advisors / certified doctoral thesis advisors, professors / CS I or lecturer / CS II, with proved expertise in the field of the study subjects they teach, or other specialists in the field who meet the standards established by the institution in relation with the aforementioned teaching and research functions, as provided by the law.

The indicator is fulfilled.

The *Ethics and Academic Integrity* course was held until 2019 by Assoc. Prof. Gheorghiu (CV in Annex 8.1), from the Law Faculty of UVT where he teaches courses in *Intellectual Property Law, Private International Law, Commercial Law*. We also mention that, in addition to the didactic activity, Mr. Gheorghiu is an industrial property advisor, intellectual property arbitrator, member of the scientific council of the *Romanian Journal of Intellectual Property Law* and member of the editorial board of the magazine. From 2020-2021 the course of *Ethics and academic integrity* is held by prof. dr. Marius Petrescu, doctoral supervisor at SDSEU. Prof. Petrescu is a specialist in the field of Information Management, Security Management, Risk Management, author or co-author of over 50 books and over 115 papers and he supervised over 25 doctoral theses.(CVs in în Annex 8.2).

The *Research Methodology* course is taught by Prof. V. Bratu, PhD supervisor in the field of materials engineering at SDSI and dean of the Faculty of Materials Engineering and Mechanics (CV in Annex 8.3) or by Prof. N. Vasile, PhD supervisor in engineering electric. Both have extensive research experience. Prof. V. Bratu participated in 18 research contracts financed from the National Research - Development Programs or by industrial enterprises and design institutes (of which 2 as manager) an international research contract as director, a national contract as scientific director. It should also be mentioned that Prof. N. Vasile was for 13 years (1992-2005) General Director of the Research Institute for Electrical Engineering (ICPE) Bucharest.

The other 3 specialized courses are recommended by the doctoral supervisor depending on the subject of the thesis and the course of the doctoral student. Courses from the Master's programs given by the SDSI-IE doctoral supervisors can be recommended, and for doctoral students who have already followed the master's courses at UVT, an individual study is usually specified based on a recommended bibliography and which must include recent articles from that field.

***A.3.1.4. The percentage of doctoral thesis advisors who concomitantly coordinate more than 8 doctoral students, but no more than 12, who are themselves studying in doctoral programs1 does not exceed 20%.**

The indicator is fulfilled. No doctoral advisor guides more than 8 PhD students. More precisely, H. Andrei guids 2 PhD students, D. Coltuc 5, V. Dogaru-Ulieru 3 and N. Vasile 6 doctoral students.

A.3.2. The Doctoral advisors within the domain are carrying out a scientific activity visible at international level.

A.3.2.1. At least 50% of the doctoral thesis advisors in the evaluated domain have at least 5 Web of Science - or ERIH-indexed publications in magazines of impact, or other achievements of relevant significance for that domain, including international-level contributions that indicate progress in scientific research - development - innovation for the evaluated domain. The aforementioned doctoral thesis advisors enjoy international awareness within the past five years, consisting of: membership on scientific boards of international publications and conferences; membership on boards of international professional associations; guests in conferences or expert groups working abroad, or membership on doctoral defense commissions at universities abroad or co-leading with universities abroad.

The indicator is fulfilled. All 4 PhD supervisors have representative publications indexed Web of Science and international visibility. We list 20 publications (with a cumulative impact factor of **65,073**) and elements on the international visibility of doctoral supervisors in the last 5 years

INDEXED PUBLICATIONS Web of Science

Prof. Horia Leonard ANDREI

1. **H. Andrei**, F. Spinei, An extension of the minimum energy principle in stationary regime for electric and magnetic circuits, *Rev. Roum. Sci. Techn., Electroteh. et Energ*.- Editura Academiei Romane, Tome 52, pp. 419-427, Bucharest, 2007, Impact factor: **1.114**
2. **H. Andrei**, G. Chicco, Identification of the radial configurations Extracted from the Weakly Meshed Structures of Electrical Distribution Systems, *IEEE Transactions on Circuits and Systems, regular papers*, May 2008, vo. 55, no. 4, pp. 1149-1158, ISSN 1549-8328, Impact Factor **3.318**.
3. R. Kadri, **H. Andrei**, J.P. Gaubert, T. Ivanovici, G. Champenoise, P. Andrei, Modelling Of The Photovoltaic Cell Circuit Parameters For Optimum Connection Model and Real-Time Emulator With Partial Shadow Conditions, *Energy*, volume 42, issue 1, June 2012, pp. 57-67, ISSN 0360-5442, Impact Factor: **6.082**, WOS:000304975500008, DOI:10.1016/j.energy.2011.10.018.

4. F. Spertino, J. Sumaili, **H. Andrei**, H., G. Chicco, PV Module Parameter Characterization From the Transient Charge of an External Capacitor, *IEEE Journal of Photovoltaics*, vol. 3, no. 4, Oct. 2013, ISSN 2165-3381, IJPEG 8, pp. 1325-1333, 10.1109/JPHOTOV.2013.2271191, Impact Factor **3.052**.
5. **H. Andrei**, C.A. Badea, P. Andrei; F. Spertino, Energetic-Environmental-Economic Feasibility and Impact Assessment of Grid-Connected Photovoltaic System in Wastewater Treatment Plant: Case Study. Case study: modeling and simulation, Energies (ISSN 1996-1073) Energies 2021, 14, 100. https://dx.doi.org/10.3390/en14010100, indexat ISI, impact factor **2.702**.

Prof. Dinu COLTUC

1. I.C. Dragoi, **D. Coltuc**, Local Prediction Based Difference Expansion Reversible Watermarking, *IEEE Transactions on Image Processing*, vol. 23, nr. 4, p. 412-417, 2014, WOS:000338318100006, IF. **9.34**
2. **D. Coltuc**, Low Distortion Transform for Reversible Watermarking, *IEEE Transactions on Image Processing*, vol. 21, no. 1, p. 412-417, 2012, WOS:000298325500037, IF. **9.34**
3. **D. Coltuc**, Improved Embedding for Prediction Based Reversible Watermarking, *IEEE Transactions on Information Forensics and Security*, vol. 6, no. 3, p. 873-882, 2011, WOS:000293924700001, IF. **6.013**
4. **D. Coltuc**, Mathematical Complexity of Running Filters on Semi-Groups and Related Problems, *IEEE Transactions on Signal Processing*, Vol. 56, no. 7, p. 3191-3197, 2008, WOS:000257195900013, IF. **5.028**
5. **D. Coltuc**, Ph. Bolon, J.-M. Chassery, Exact Histogram Specification, *IEEE Trans. on Image Processing*, vol. 15, nr. 5, p. 1143-1152, 2006, WOS:000236807100009, IF. **9.34**

Prof. Valentin DOGARU-ULIERU

1. H. Andrei, **V. Dogaru-Ulieru**, G. Chicco, C. Cepisca, F. Spertino, Photovoltaic applications, *Journal of Materials Processing Technology*, Volume: 181, Issue: 1-3, pp. 267-273, ISSN: 0924-0136, DOI: 10.1016/j.jmatprotec.2006.03.043, 2007, WOS:000241963900054, **IF: 4.669**
2. C. Cepisca, H. Andrei, **V. Dogaru-Ulieru**, Evaluation of the parameters of a magnetic hysteresis model, *Journal of Materials Processing Technology*, Vol. 181, No. 1-3, pp. 172-176, ISSN: 0924-0136, DOI: 10.1016/j.jmatprotec.2006.03.020, 2007, WOS:000241963900034, **IF: 4.669**
3. A. Dragomir, **V. Dogaru-Ulieru**, C.I. Salisteanu, O. Nedelcu, F. Issa, Analysis On Islanding States Using Renewable Energy Systems, *16th International Multidisciplinary Scientific Geoconference (SGEM 2016)*, ISBN:978-619-7105-63-6 , Albena, Bulgaria, 2016, WOS:000391348600016
4. O. Nedelcu, C.I. Salisteanu, F. Popa, B. Salisteanu, C.V. Oprescu, **V. Dogaru-Ulieru**, The modified nodal analysis method applied to the modeling of the thermal circuit of an asynchronous machine, *International Conference on Applied Sciences (ICAS2016), Book Series: IOP Conference Series-Materials Science and Engineering*, Vol. 163, ISSN: 1757-8981, 2016, WOS:000399755300007
5. F. Ion, L. Stancu, **V. Dogaru-Ulieru**, A Model of a LED for Street Illumination - Simulations and Measurements, *2015 9th International Symposium On Advanced Topics In Electrical Engineering (ATEE)*, Romania, ISBN:978-1-4799-7514-3, DOI: 10.1109/ATEE.2015.7133898, 2015, WOS:000368159800124

Prof. Dr. Eng. Nicolae VASILE

1. C. Vasiliu, **N. Vasile**, Hardware-In-The-Loop Simulation For Electric Powertrains, *Revue Roumaine des Sciences Techniques-Serie Electrotechnique et Energetique*, vol. 57, nr. 2, p. 212-221, ISSN: 0035-4066, 2012, WOS:000305202600011, **IF: 0.760**
2. V. Miron-Alexe, I. Bancuta, **N. VASILE**, Hydroelectric Backup System for Off-Grid Households: Hybrid renewable energy sources management system, *9th International Conference on Electronics, Computers and Artificial Intelligence-ECAI 2017*, DOI: 10.1109/ ECAI.2017.8166448, 2017, WOS:000425865900064
3. D. Necula, **N. Vasile**, M. F. Stan, The Impact of the Electrical Machines on the Environment, *2013 8th International Symposium on Advanced Topics In Electrical Engineering (ATEE)*, Romania, ISBN: 978-1-4673-5979-5, DOI: 10.1109/ATEE.2013.6563397, 2013, WOS:000332928500051
4. D. Necula, **N. Vasile**, M.F. Stan, New Solutions in the Maintenance of the Asynchronous Motors with Integrated Gear and Single Demountable Bearing Shield. Devices to Extract and Insert the Ferromagnetic Cores of the Stator (Case Study), *2011 7th International Symposium On Advanced Topics In Electrical Engineering (ATEE),* Romania, ISBN: 978-1-4577-0507-6, 2011, WOS:000310701200029
5. H. Andrei, F. Spinei, C. Cepisca, P.C. Andrei, **N. Vasile**, Modelling of the Power Factor for AC Linear Circuits under Non-sinusoidal Conditions, *IEEE Mediterranean Electrotechnical Conference-MELECON*, 978-1-4244-5795-3, 2010, WOS:000286988200065

INTERNATIONAL VISIBILITY

Horia Leonard ANDREI

- Member of conference committees: IEEE ECAI (2016-2021), IEEE-ISEEE (2017-2021), IEEE-ISFEE (2018, 2020); IEEE-EMES (2017, 2019, 2021);
- Invited keynote lecture IEEE-ECAI 2020;
- Reviewer for: Applied Energy-APEN, Energy, Ecology and Environment, IEEE Trans. Ind. Electronics, Energy, IEEE Trans. Very Large Scale Int. Systems, IEEE J of Photovoltaics, J. of Cleaner Production, Reliability Engineering and System Safety, Energies.
- Reviewer for international conferences: IEEE-EEEIC, IEEE- ECAI, IEEE- ATEE, IEEE-ISCAS, IEEE-ISGTE, IEEE-EMES, IEEE-ISFEE, IEEE-EMES;
- Guest Editor of Special Issue "Power Systems Connectivity and Resiliency: Modeling, Simulation and Analysis", *Energies*, 2021;
- Topic Editor of *Energies* 2020-2024;
- Senior Member IEEE;
- International awards:
  - Journal of Aplied Energy –APEN (Impact Factor 7.182) „APEN Certificate of Reviewing-awarded, April 2016 – Awards of Best Reviewers
  - Springer Nature Award „Energy, Ecology, Environment Applied Energy 2018 Outstanding Reviewers for Exceptional Contributions of their Reviews to the Journal

Dinu Coltuc

- Associate Editor, 2016-2020, la *IEEE Transactions on Information Forensics and Security* (Q1 journal) and in the 2016 *Journal of Visual Communication and Image Representation* (Q2 journal).
- Member of project evaluation committees CES 27 (2014) and CES39 (2016, 2017), *Agence Nationale de Recherche* (ANR) France.
- Member of doctoral thesis committees:
  - *Enhancement of Image Quality for Improving Scene Content Representation*, autor Sobhan Kanti Dhara, is going to submit his thesis titled. As you are an expert in the field of Image Processing, Indian Institute of Technology - Kharagpur, India, conducator Debashis SEN
  - *Reversible watermarking scheme with watermark and signal robustness for audio*, autor María Alejandra Menéndez Ortiz, Instituto Nacional de Astrofisica, Optica y Electronica, Puebla, Mexico, 2017.
  - *Print quality assessment by image processing and color prediction models*, autor David Nébouy, Univ. Jean Monnet, Saint Etienne, Franta, 18.02.2015.
- External rapporteur for doctoral theses:
  - "Capacity Analysis in Reversible Watermarking Schemes", autor Rushikesh Prakash Borse la Indian Institute of Technology, Bombay, 2016.
  - "Reversible Watermarking based on Histogram Shifting and Error Expansion", autor Ayesha Siddiqa, Dept. of Computer and Inf. Sciences, Pakistan Inst. of Eng. and Applied Sciences, Islamabad, Pakistan, 2016
- Chairman *European Signal Processing Conference: EUSIPCO'2018 (*Roma, Italia).
- Member of the technical committee (TPC): *European Signal Processing Conference EUSIPCO 2014-2018, ICIP 2014-2021, ICASSP 20114-2021*, etc.
- Over 1500 citations in the literature
- Reviewer at over 20 ISI journals and conferences

Valentin DOGARU-ULIERU

- Chairman la *16th International Multidisciplinary Scientific GeoConference SGEM 2016*
- Reviwer: *Journal of Engineering and Computer Innovations (JECI), Journal of Scientific Research and Reports, British Journal of Applied Science & Technology*

Nicolae VASILE

- Member of the organizing committee of *International Symposium Advanced Topics in Electrical Engineering ATEE 2013, ATEE 2015, ATEE 2017, ATEE 2019*
- Reviewer *Revue roumaine des sciences techniques - Série Électrotechnique et Énergétique*
- Awards and gold medal at the Salon International des Inventions, *Geneve-2013*

***A.3.2.2. At least 50% of the doctoral thesis advisors in a specific doctoral study domain continue to be active in their scientific field, and acquire at least 25% of the score requested by the minimal CNATDCU standards in force at the time of the evaluation, which are required and mandatory for acquiring their enabling certificate, based on their scientific results within the past five years**

The indicator is satisfied with **75%**: 3 out of the 4 doctoral supervisors exceed, based on the scientific results of the last five years, 25% of the score of the minimal standards (Annex 5). Reporting the scores to 25% of the minimum score for habilitation (150 points), scores higher than 23 times (prof. Horia ANDREI), 16 times (Dinu COLTUC) and 3 times (prof. Nicolae VASILE) are obtained for the three advisors)..

Score for the last 5 years 2016-2020

Horia Leonard ANDREI (Annex 5.1)

Nr.crt	Field of activity	Professor Conditions	Accomplished
1	Teaching / professional activity (A1)	Minimum 120 points	183 points
2	Research activity (A2)	Minimum 360 points	303.47 points
3	Recognition of the impact of the activity (A3)	Minimum 120 points	3016.56 points
	TOTAL	**Minimum 600 points**	**3503.03 points**

Dinu COLȚUC (Annex 5.2)

Nr.crt	Field of activity	Professor Conditions	Accomplished
1	Teaching / professional activity (A1)	Minimum 120 points	13.70 points
2	Research activity (A2)	Minimum 360 points	455.34 points
3	Recognition of the impact of the activity (A3)	Minimum 120 points	1965.66 points
	TOTAL	**Minimum 600 points**	**2434.70 points**

Nicolae VASILE (Annex 5.3)

Nr.crt	Field of activity	Professor Conditions	Accomplished
1	Teaching / professional activity (A1)	Minimum 120 points	81.40 points
2	Research activity (A2)	Minimum 360 points	118.16 points
3	Recognition of the impact of the activity (A3)	Minimum 120 points	256.38 points
	TOTAL	**Minimum 600 points**	**455.94 points**

B. EDUCATIONAL EFFECTIVENESS

B.1. The number, quality and diversity of candidates enrolled for the admission contest

B.1.1. The institution organizing doctoral studies has the capacity to attract candidates from outside the higher education institution or a number of candidates exceeding the number of seats available.

B.1.1.1. The ratio between the number of graduates of masters' programs of other higher education institutions, national or foreign, who have enrolled for the doctoral admission contest within the past five years and the number of seats funded by the state budget, put out through contest within the doctoral domain is at least 0.2 or the ratio between the number of candidates within the past five years and the number of seats funded by the state budget put out through contest within the doctoral studies domain is at least 1,2.

The indicator is fulfilled with the ratio **14/11 = 1.27> 1,2**. 11 out of the 14 candidates enrolled in the past five years have been admitted on seats founded by the state buget. The three PhD students that have not been admitted on seats founded by the state buget are S. Sontea (2020) and I. Craiu, A. Enescu (in 2017).

B.1.2. Candidates admitted to doctoral studies demonstrate academic, research and professional performance.

***B.1.2.1. Admission to doctoral study programs is based on selection criteria including: previous academic, research and professional performance, their interest for scientific or arts/sports research, publications in the domain and a proposal for a research subject. Interviewing the candidate is compulsory, as part of the admission procedure.**

The indicator is fulfilled. According to the procedure PO 07, *The organization of admission to doctoral studies* (Annex 24.c),, art. 5.3, the contest consists of an eliminatory test competence for a main language of international circulation and a specialized exam, the content of which differs depending on the doctoral field. The specialized exam consists of an interview in which the scientific interests of the candidate, his research skills and his results are analyzed, based on the research topics established by each doctoral supervisor. The topics are displayed on the site (https://drive.google.com/file/d/1Z_WEtoOiA1x75lj8yJwefwonNAnj0qEk/view).

B.1.2.2. The expelling rate, including renouncement / dropping out of doctoral students 3, respectively 4, years after admission2 does not exceed 30%.

The indicator is fulfilled. The dropout rate in the first three years is **0%**.

B.2. The content of doctoral programs

B.2.1. The training program based on advanced university studies is appropriate to improve doctoral students' research skills and to strengthen ethical behavior in science.

B.2.1.1. The training program based on advanced academic studies includes at least 3 disciplines relevant to the scientific research training of doctoral students; at least one of these disciplines is intended to study in-depth the research methodology and/or the statistical data processing.

The indicator is fulfilled. The training program based on advanced university studies includes five disciplines (Annex 6), namely, *Research Methodology* (Annex 7.1), three other specialized disciplines proposed by the doctoral supervisor (master courses or individual study based on the bibliography indicated by the supervisor, bibliography which must include recent articles, relevant to the subject of the doctoral thesis, Annexes 7.3 – 7.8) and *Ethics and academic integrity* (Annex 7.2).

B.2.1.2. At least one discipline is dedicated to Ethics and Intellectual Property in scientific research or there are well-defined topics on these subjects within a discipline taught in the doctoral program.

The fifth discipline in the training program based on advanced university studies is *Ethics and Academic Integrity*, a discipline that ends with a colloquium. The theme of the course includes introductory notions on ethics and morals, research ethics in Romania, the correct writing of an academic paper, plagiarism and autoplagiarism, the use of computer programs to detect plagiarism, the code of ethics and professional ethics of UVT. The discipline sheet is presented in Annex 7.2).

B.2.1.3. The IOSUD has mechanisms to ensure that the academic training program based on advanced university studies addresses „the learning outcomes", specifying the knowledge, skills, responsibility and autonomy that doctoral students should acquire after completing each discipline or through the research activities.

The indicator is fulfilled. The training program based on advanced university studies includes *Ethics and academic integrity*, *Research Methodology* and 3 specialized courses recommended by the doctoral supervisor depending on the subject of the thesis and the background of the PhD student (master courses or individual study based on a recommended bibliography with recent scientific papers). For each discipline, doctoral students have a colloquium in which the acquisition of skills is verified (knowledge of the field, synthesis capacity, critical analysis, ability to evaluate results. The disciplines are presented in in Annex 7.

The curriculum also provides three *Progress reports* of the research which are presented before the guidence committee. CSD-SDSI recommends that PhD students' publications be included in these reports, allowing the guidance committee to analyze the evolution of the doctoral student in problems statement, formulating hypotheses, analytical skills, handling of the mathematical apparatus, writing and presentation.

B.2.1.4. All along the duration of the doctoral training, doctoral students in the domain receive counselling/guidance from functional guidance commissions, which is reflected in written guidance and feedback or regular meeting.

The indicator is fulfilled. The guidance commissions are made up of specialists in the field, teachers in UVT, with whom the doctoral student meets regularly (face to face or online). We exemplify functionality with joint publications of 4 doctoral students with theses defended in the evaluated period with co-authors from the guiding commissions. 4 of the 17 graduates of SDSI-IE represent 23,5%

1. **M.G**. **Ionita** – thesis defended in 2018, leader D. Coltuc, co-author H. Andrei (member of the guidance committee): V. Gurgu, **M.G. Ionita**, I. Vasile, D. Coltuc, I. A. Ivan, **H. Andrei**, Simulation method and measurement system of electromagnetic force used in micromanipulation systems, *9th International Conference on Electronics, Computers and Artificial Intelligence-ECAI 2017*, Târgoviște, June 2017, 2017
2. **V. Miron-Alexe** – thesis defended in 2018, leader N. Vasile, co-author H. Andrei (member of the steering committee): I. Vasile, V. Vasile, **V. Miron-Alexe**, E. Diaconu, I. Caciula, **H. Andrei**, Simulation And Modeling Of Battery Operation Used In Real-Time Monitoring Equipments Of Vital Human Parameters, 2017, *Journal of Science and Arts*, 4(41), p. 861-870, 2017, (http://www.icstm.ro/DOCS/josa/josa_2017_4/c_05_Vasile.pdf).
3. **I.V. Gurgu** – thesis defended in 2017, leader D. Colțuc, co-author I.A. Ivan (member of the steering committee): I. A. **Ivan**, C. Petit, **I. V. Gurgu**, R. Toscano, AFM Nanœye – Development of an education oriented high resolution profilometer, *The 20th World Congress of the International Federation of Automatic Control* – IFAC, 2017
4. **D. A. Ciubotariu** – thesis defended in 2016, leader D. Colțuc, co-author I.A. Ivan (member of the steering committee): **D. A. Ciubotariu**, **I.A. Ivan**, C. Clévy, P. Lutz, Piezoelectric 3D actuator for micro-manipulation based on [011]-poled PMN-PT single crystal, *Sensors and Actuators A: Physical*, Volume 252, pp. 242-252, 2016, Factor de Impact: 2.311.

B.2.1.5. For a doctoral study domain, the ratio between the number of doctoral students and the number of teaching staff/researchers providing doctoral guidance must not exceed 3:1.

The indicator is fulfilled. The training of the 16 PhD students enrolled at IE is provided by 12 teachers, respectively 4 PhD supervisors, 2 professors for *Research Methodology*, *Ethics* and 6 others in the guidance commissions (prof. N. Olariu, assoc. prof. C Sălișteanu, assoc. prof. A. Husu, assoc. prof. H. Coandă, lecturer I. Căciulă, lecturer IC Drăgoi), i.e., the ratio is of **16: 12 = 1,3: 1.**

B.3. The results of doctoral studies and procedures for their evaluation

B.3.1. Doctoral students capitalize on the research through presentations at scientific conferences, scientific publications, technological transfer, patents, products and service orders.

B.3.1.1. For the evaluated domain, the evaluation commission will be provided with at least one paper or some other relevant contribution per doctoral student who has obtained a doctor's title within the past 5 years. From this list, the members of the evaluation commission shall randomly select 5 such papers / relevant contributions per doctoral study domain for review. At least 3 selected papers must contain significant original contributions in the respective domain.

We present, below, the list of 29 (20 indexed or listed ISI) of representative publications of the 17 PhD students who defended their theses in the last 5 years. We mention that 5 articles are published in ISI Q1 journals (2.1 - 290 citations, 2.2–80 citations, 2.3 - 70 citations) and ISI Q2 (1.1, 7.2). Another 15 articles are indexed by ISI (2 published in the journal JOSA, in recognized conference proceedins in the field as *EEEIC* (1), *ATEE* (3), *ICSSC* (2), *ECAI* (4), *ISEEE* (3), *ICSTCC* (1) and a book chapter 12.1). The papers in extenso are grouped in Annex 13.

1. Adrian Dragoș CIUBOTARIU

1.1 **A. Ciubotariu,** I. A. Ivan, C. Clévy, P. Lutz, Piezoelectric 3D actuator for micro-manipulation based on [011]-poled PMN-PT single crystal, *Sensors and Actuators A: Physical*, 252, pp. 242-252, 2016, FI **2.904** (**ISI Q1**), 14 citari

2. Ioan Cătalin DRĂGOI

2.1 **I.-C. Dragoi**, D. Coltuc, Local-prediction-based difference expansion reversible watermarking, *IEEE Trans. on Image Processing*, 23(4): 1779–1790, 2014, factor de impact: **9.340**, **ISI Q1**, 291 citari

2.2 **I.-C. Dragoi**, D. Coltuc. On local prediction based reversible watermarking. *IEEE Trans. on Image Processing*, 24(4): 1244-1246, 2015, factor de impact: **9.340**, **ISI Q1**, 83 citari

2.3 **I.-C. Dragoi**, D. Coltuc, Adaptive Pairing Reversible Watermarking, *IEEE Trans. on Image Processing*, 25(5): 2420-2422, 2016, factor de impact: **9.340**, **ISI Q1**, 73 citari

3. Iulian UDROIU

3.1 **Udroiu**, D. Coltuc, On optimized histogram bin shifting reversible watermarking for color images, *International Symposium on Signals, Circuits and Systems (ISSCS 2015)*, Iasi, Romania, 2015

4.Gabriel OPREA

4.1 **G. Oprea**, H. Andrei, Measurement Data Analysis Of Power Quality For Industrial Loads, *IEEE-Advanced Topics in Electrical Engineering - ATEE*, Bucuresti, Romania, paper SIMOP P8, ISSN 2068-7966, 2015

4.2 **G.Oprea**, H. Andrei, Power analysis of industrial company based on data acquisition system, numerical algorithms and compensation results, IEEE-Int Symposium of Fundamentals of Electrical Engineering – ISFEE, 30 June-1 July, 2016, Bucharest, Romania, paper #148-POS15 indexat ISI-WOS

5. Ion Valentin GURGU

5.1 **Gurgu I.V.**, M. G. Ionita, I. Vasile, D. Coltuc, I. A. Ivan, H. Andrei, Simulation method and measurement system of electromagnetic force used in micromanipulation systems, *9th International Conferince ECAI 2017 – Electronics, Conputers and Artificial Intelligence*, 2017

6. Giorgian-Marius IONIȚĂ

6.1 **M.G. Ionita**, D. Coltuc, S. G. Stanciu, D. E. Tranca, Automatic moiré pattern removal in microscopic images, *2015 19th International Conference on System Theory, Control and Computing (ICSTCC)*, 2015, ISBN 978-1-47998481-7, 2015

6.2 **M. G. Ionita**, H. G. Coanda, Automatic periodic noise removal in microscopy images, *International Symposium on Signals Circuits and Systems - ISSCS 2017*, Iași, July 2017, ISBN: 978-1-5386-0674-2, 2017

7. Cristian Andrei BADEA

7.1 **C.A. Badea,** H Andrei. "Optimization of energy consumption of a wastewater treatment plant by using technological forecasts and green energy." 2016 IEEE 16th International Conference on Environment and Electrical Engineering (EEEIC), Florence, Italy, 2016

7.2 Andrei, H., **Badea, C.A**., Andrei, P. and Spertino, F., 2021. Energetic-Environmental-Economic Feasibility and Impact Assessment of Grid-Connected Photovoltaic System in Wastewater Treatment Plant: Case Study. Energies, 14(1), p.100., FI: **2.702**

8. Viorel MIRON-ALEXE

8.1 **V. Miron-Alexe,** I. Bancuta, N. Vasile, Renewable Energy Management Using Embedded Smart Systems. In Conference on Sustainable Energy (pp. 39-49). Springer, 2017

8.2 **V. Miron-Alexe**, Retrofitting Water Towers For Hydroelectric Power Generation, Journal of Science and Arts 19.4 (2019): 1049-1054.

9. TENE I. Bogdan – Ionuț

9.1 **B.Tene**, D.C. Puchianu, Nicoleta Angelescu, Evaluation of binarization algorithms in preprocessing of digital Mammographies, *The Scientific Bulletin of Electrical Engineering Faculty*, DOI: 10.1515/SBEEF-2016-0020, 2016

10. BOTEA C. Vasile Bogdan

10.1 **B.Botea**, I. Marinescu, C. Dragoi, H. Andrei, Modeling, Simulation and Analysis of Disturbance in Low Voltage Instalations, The Scientific Bulletin of Electrical Engineering Faculty, 2019, year (vol.) 19, Issue 1 (40), Published: May 2019, pp. 49–57, DOI: 10.1515/SBEEF-2019-0010

10.2 I.Marinescu, **B. Botea**, H.Andrei, Critical Infrastructure Risk Assessment of Romanian Power Systems, IEEE-5th Int Symposium on Electrical and Electronics Engineering-ISEEE, 20-22 oct. 2017, Galati Romania, paper 69, IEEE Catalog Number CFP1793K-USB, ISBN 978-1-5386-2058-8, indexat ISI Web of Science.

11. VASILE S. Ion

11.1 **I.Vasile**, V.Vasile, V. M. Alexe, E.Diaconu, I. Caciula, H.Andrei, Simulation and modeling of battery operation used in real-time monitoring equipment of vital human, *Journal of Science and Arts*, No. 4(41), pp. 861-870, 2017, ISSN 1844-9581; eISSN 2068-3049, indexat ISI Web of Science, WOS:000418405300028

12. MARINESCU C. Ioan

12.1 H. Andrei, P.C. Andrei, M. Gaiceanu, Marilena Stanculescu, I. Arama, **I. Marinescu**, Power Systems Recovery and Restoration Encounter with Natural Disaster and Deliberate Attacks, pp.247-267, chapter 10 of the book Power Systems Resilience, Modeling, Analysis and Practice, editors M. Tabatabaei, S.V. Ravadanegh, N. Bizon, Springer, 2019, 20 pages indexat ISI-WoS.

12.2 **I.Marinescu**, S. Deleanu, M. Stănculescu, L. Bobaru, P. Andrei, H. Andrei, Electrical equipment safety analysis and simulation. Case study: transformer's malfunctions, IEEE-6th Int Symposium on Electrical and Electronics Engineering-ISEEE, 18-20 oct. 2019, Galati Romania, paper 14, indexat ISI Web of Science.

13. NĂSTASE G. Lucian-Gheorghe

13.1 **L. Năstase**, H. Andrei, E. Lungu, Veronica Dulea, and E. Diaconu, Analysis and Optimization of Dual-Heating System Costs, pp.48–55, The Scientific Bulletin of Electrical Engineering Faculty, 2019, vol. 19 (2019), Issue 2, Published: Oct. 2019, DOI: 10.1515/SBEEF-2019-0020

13.2 **Lucian Nastase**, Horia Andrei, Emil Lungu, Veronica Dulea, Emil Diaconu, Modeling, Simulation and Optimization of Dual Heating System, IEEE - 6th ISEEE, October 18-20, 2019 Galaţi, Romania, indexat ISI Web of Science.

14. ANDREI C. Florin-Dumitru

14.1 **F.D. Andrei**, V. Dogaru Ulieru, I.C. Salisteanu, O. Nedelcu, B. Salisteanu, "Neutral point treatment in the medium voltage distribution networks" *International Multidisciplinary Scientific GeoConference: SGEM* 19, no. 4.1 (2019): 345-352.

15. FIDEL G. Nicolae

15.1 **N. Fidel,** Assessment and Testing of WPT System for the Design of Modern Wireless Energy Transmission Solutions, Scientific Bulletin of the Electrical Engineering Faculty, Year 19 No.2 (62–67) / 2019, Online ISSN 2286-2455, DOI: https://doi.org/10.1515/sbeef-2019-0023, Publisher DE GRUYTER OPEN;

15.2 Mihail-Florin Stan, **Nicolae Fidel**, Ionuț Mina, Adela-Gabriela Husu, Improvement of Wireless Power Transfer Efficiency for Home Electronics and Appliances with the Use of SMD Components, Proceedings of The 10th INTERNATIONAL CONFERENCE on ELECTRONICS, COMPUTERS and ARTIFICIAL INTELLIGENCE - ECAI 2018, June 28 - 30, 2018, Iași, Romania, indexat WoS;

16. ORBOIU V. Constantin-Sorin

16.1 **S. Orboiu**, H. Andrei, DAQ and Power Quality Analysis of Electrical Parameters in Romanian Schools, *IEEE XIth Int. Symposium on Advanced Topics in Electrical Engineering-ATEE*, March 28-30, 2019, Bucharest, Romania, Paper 129, 978-1-7281-0101-9/19/$31.00 ©2019 IEEE, indexat ISI Web of Science.

16.2 **S. Orboiu**, H. Andrei, Analyze of Eco-financial Impact of PV System Integration in Educational Institutions. Case Study in Romania, Proc of IEEE - Electronics, Computers and Artificial Intelligence - ECAI, 2020, ISBN: 978-1-7281-6843-2, indexat ISI Web of Science.

17. ENESCU Radu Alexandru

17.1 **A.Enescu**, H. Andrei, V. E. Diaconu, V. Ion, Numerical Methods for Modeling the Input-Output Characteristics in a Co-generation Plant, IEEE-ECAI, 28 June-1 July, 2019, Pitesti, Romania

17.2 H. Andrei, **A. Enescu**, E. Diaconu, V. Ion, I. Udroiu, Data Acquisition and Modeling of Cogeneration Power Plant Parameters, IEEE XIth Int. Symposium on Advanced Topics in Electrical Engineering-ATEE, March 28-30, 2019, Bucharest, Romania, Paper 113, 978-1-7281-0101-9/19/$31.00 ©2019 IEEE,

***B.3.1.2. The ratio between the number of presentations of doctoral students who completed their doctoral studies within the evaluated period (past 5 years), including posters, exhibitions made at prestigious international events (organized in the country or abroad) and the number of doctoral students who have completed their doctoral studies within the evaluated period (past 5 years) is at least 1.**

The indicator is satisfied with a ratio of **1.59**. 11 out of the 27 participations are at well-known international events, namely: 4 ones at *European Signal Processing Conference-(EUSIPCO)*, 4 participations at *International Conference on Robotics and Automation (ICRA)*, 1 at *International Conference on Environment and Electrical Engineering (EEEIC)*, 2 at *IEEE International Conference on Advanced Intelligent Mechatronics (AIM)*. The other 17 participations are at traditional conferences organized in the country, respectively 2 participations at *International Symposium on Advanced Topics in Electrical Engineering (ATEE), Bucharest*, a participation at *International Conference on System Theory, Control and Computing (ICSTCC), Sinaia*, 2 participations at *International Symposium on Signals, Circuits & Systems - ISSCS, Iasi*, 8 at *Int Conf. Electronics, Computers and Artificial Intelligence – ECAI*, 2 at *IEEE-Int Symposium of Fundamentals of Electrical Engineering – ISFEE*, and 1 at *Int. Symposium on Electrical and Electronics Engineering-ISEEE*. We further present the list of participations in international events:

1. D. A. Ciubotariu, *IEEE International Conference on Advanced Intelligent Mechatronics (AIM)*, Besancon, Franta, 2014;
2. D. A. Ciubotariu, *IEEE International Conference on Advanced Intelligent Mechatronics (AIM)*, Busan, Korea, 2015;
3. I.-C. Dragoi, *20th European Signal Processing Conference (EUSIPCO'2012)*, Bucuresti, Romania, 2012 – prezentare orală
4. I.C. Dragoi, *IEEE International Symposium on Signals, Circuits & Systems - ISSCS*, Iasi, Romania, 2015 – prezentare orală;
5. I.-C. Dragoi, *23rd European Signal Processing Conference (EUSIPCO2015)*, Nice, France, 2015 – poster
6. I.-C. Dragoi, *24th European Signal Processing Conference (EUSIPCO2016)*, Budapesta, Ungaria, 2016 – poster
7. G. Oprea, *International Symposium on Advanced Topics in Electrical Engineering (ATEE)*, 2015;
8. G. Oprea, *IEEE-Int Conf. Electronics, Computers and Artificial Intelligence – ECAI*, 2016, Ploiesti – poster;
9. G. Oprea, *IEEE-Int Symposium of Fundamentals of Electrical Engineering – ISFEE*, 2016 – poster;
10. V. Gurgu, *IEEE International Conference on Robotics and Automation (ICRA), Mobile Microrobotic Challenge*, Seattle, Washington, 2015;
11. V. Gurgu, *IEEE International Conference on Robotics and Automation (ICRA), Mobile Microrobotic Challenge*, Stockholm, Sweden, 2016
12. V. Gurgu, *IEEE International Conference on Robotics and Automation (ICRA), Mobile Microrobotic Challenge*, Singapore, 2017.
13. V. Gurgu, *9th International Conference on Electronics, Computers and Artificial Intelligence-ECAI 2017*, Targoviste, 2017;
14. V. Gurgu, *IEEE International Conference on Robotics and Automation (ICRA), Mobile Microrobotic Challenge*, Brisbane Australia, 2018.
15. G.M. Ionita, 2015 *19th International Conference on System Theory, Control and Computing* (ICSTCC), Octombrie 2015;
16. M. G. Ionita, *International Symposium on Signals Circuits and Systems* - ISSCS 2017, Iași, July 2017;
17. I. Marinescu, *IEEE Int. Symposium on Electrical and Electronics Engineering-ISEEE, 20-22 oct. 2017, Galati*, 2017;

18. V. Miron-Alexe, *The International Symposium on Fundamentals of Electrical Engineering* - (ISFEE 2016), June 30 - July 2, 2016. Bucharest, Romania;
19. V. Miron-Alexe, *9th International Conference on Electronics, Computers and Artificial Intelligence-ECAI 2017*, Targoviste, 2017;
20. C.A. Badea, *IEEE-Int Conference on Environmnet and Electrical Engineering* - EEEIC, 7-10 June, 2016, Florence, Italy
21. N. Fidel, The 10th International Conference on Electronics, Computers and Artificial Intelligence (ECAI). Date: Jun 28, 2018 - Jun 30, 2018. Iasi. Romania
22. N. Fidel, *The 11th International Conference on Electronics, Computers and Artificial Intelligence* (ECAI). Date: Jun 27, 2019 - Jun 29, 2019. Pitesti. Romania. Iasi. Romania;
23. N. Fidel, *The 11th International Symposium on Advanced Topics in Electrical Engineering*, ATEE, March 28-30, 2019, Bucharest, Romania
24. F.D. Andrei, International Multidisciplinary Scientific GeoConference, SGEM 2019, Bulgaria.
25. S. Orboiu, *12th International Conference on Electronics, Computers and Artificial Intelligence* (ECAI), Jun 25, 2020 - Jun 27, 2020, Bucharest, Romania
26. S. Orboiu, *12th International Conference on Electronics, Computers and Artificial Intelligence* (ECAI), Jun 25, 2020 - Jun 27, 2020, Bucharest, Romania
27. A. Enescu, *12th International Conference on Electronics, Computers and Artificial Intelligence* (ECAI), Jun 25, 2020 - Jun 27, 2020, Bucharest, Romania

B.3.2. The Doctoral School engages a significant number of external scientific specialists in the commissions for public defense of doctoral theses in the analyzed domain.

*B.3.2.1. The number of doctoral theses allocated to one specialist coming from a higher education institution, other than the evaluated IOSUD should not exceed two (2) in a year for the theses coordinated by the same doctoral thesis advisor.

The indicator is fulfilled. No PhD supervisor has assigned more than two theses in a year to the same external referent. There are 4 cases of two theses per year allocated by a leader to the same referent, namely to prof. **Radu DOBRESCU**, 2016 (theses supervised by D. Colțuc), prof. **Mihai Octavian POPESCU** and prof. **Gheorghe MANOLEA,** 2018 (theses supervised by N. Vasile), prof**. COSTIN CEPISCĂ**, 2019 (theses supervised by H. Andrei). We present bellow tables with external referees for the theses defended in 2016-2020.

Table of external references for the theses supervised by **prof. Horia ANDREI**

Year	Thesis	External reviewers
2016	G.OPREA	Prof. dr. ing. **Costin CEPISCA** - Univ. Politehnica Bucuresti Prof. dr. ing. **Sorin Dan GRIGORESCU** - Univ. Politehnica Bucuresti
2018	A.C. BADEA	Prof. dr. ing. **Mihai Octavian POPESCU** - Univ. Politehnica Bucuresti Prof. dr. ing. **Costin CEPISCA** - Univ. Politehnica Bucuresti
2019	V.B. BOTEA	Prof. dr. ing. **Costin CEPISCA** - Univ. Politehnica Bucuresti Prof. dr. ing. **Ioan LUNGU** – CEZ Romania
2019	I.VASILE	Prof. dr. ing. **Sorin Dan GRIGORESCU** - Univ. Politehnica Bucuresti Prof. dr. ing. **George SARITAN** - Univ. Politehnica Bucuresti
2019	I.MARINESCU	Prof. dr. ing. **Adriana ALEXANDRU** – INCDI, Bucuresti Prof. dr. ing. **Marian GAICEANU** - Univ. Dunarea de Jos, Galati
2019	L.G. NASTASE	Prof. dr. ing. **Mihai Octavian POPESCU** - Univ. Politehnica Bucuresti Prof. dr. ing. **Costin CEPISCA** - Univ. Politehnica Bucuresti
2020	C.S. ORBOIU	Conf. dr. ing. Marilena STANCULESCU- Univ. Politehnica Bucuresti Prof. dr. ing. **Nicu BIZON** - Univ. Pitesti
2020	R.A. ENESCU,	Prof. dr. ing. **Mihai IORDACHE** - Univ. Politehnica Bucuresti Prof. dr. ing. **Nicolae VASILIU** - Univ. Politehnica Bucuresti

Table of external references for the theses supervised by **prof. Dinu COLTUC**

Year	Thesis	External reviewers
2016	I.C. DRĂGOI	Prof. dr. ing. **Gheorghe BREZEANU** - Univ. Politehnica B`ucuresti Prof. dr. ing. **Ioan NICOLAESCU** - Academia. Tehnică Militara, Bucuresti
2016	A.CIUBOTARIU	Prof. dr. ing. **Constantin NITU** - Univ. Politehnica Bucuresti Prof. dr. ing. **Rosario TOSCANO** - ENISE, Saint Etienne, Franta
2016	I.UDROIU	Prof. dr. ing. **Radu DOBRESCU** - Univ. Politehnica Bucuresti CP.I dr. ing. **Bogdan CRAMARIUC** - CITSC, Bucuresti
2016	V. GURGU	Prof. dr. ing. **Radu DOBRESCU** - Univ. Politehnica Bucuresti Prof. dr. ing. **Silviu Dan MANDRU** - Universitatea Tehnică Cluj-Napoca
2018	M.G. IONITA	Prof. dr. ing. **Sorin Dan GRIGORESCU** - Univ. Politehnica Bucuresti CP.I dr. ing. **Bogdan CRAMARIUC** - CITSC, Bucuresti

Table of external references for the theses supervised by **prof. Nicolae VASILE**

Year	Thesis	External reviewers
2018	V.MIRON-ALEXE	Prof. dr. ing. **Mihai Octavian POPESCU** - Univ. Politehnica Bucuresti Prof. dr. ing. **Gheorghe MANOLEA -** Univ. din Craiova
2018	B. TENE	Prof. dr. ing. **Mihai Octavian POPESCU** - Univ. Politehnica Bucuresti Prof. dr. ing. **Gheorghe MANOLEA -** Univ. din Craiova
2020	N.FIDEL	Prof. dr. ing. **Mihai IORDACHE** - Univ. Politehnica Bucuresti Prof. dr. ing. **Nicolae VASILIU** - Univ. Politehnica Bucuresti

Table of external references for the theses supervised by **prof. Valentin DOGARU-ULIERU**

Year	Thesis	External reviewers
2020	F.D. ANDREI	Prof. dr. ing. **Costin CEPISCA** - Univ. Politehnica Bucuresti Conf. dr. ing. **Radu PORUMB** - Univ. Politehnica Bucuresti

***B.3.2.2. The ratio between the doctoral theses allocated to one scientific specialist coming from a higher education institution, other than the institution where the defense on the doctoral thesis is organized, and the number of doctoral theses presented in the same doctoral study domain in the doctoral school should not exceed 0.3, considering the past five years. Only those doctoral study domains in which minimum ten doctoral theses have been presented within the past five years should be analyzed.**

The indicator is fulfilled with a ratio of **0.23 <0.3**. The gretest number of participations in PhD commissions is 4, for prof. **Costin CEPISCA,** UPB, that yealds to a ratio of 4/17 = 0.23 <0.3. On the second position is prof. **Sorin Dan GRIGORESCU** from UPB with 3 participations.

C. QUALITY MANAGEMENT

C.1. Existence and periodic implementation of the internal quality assurance system

C.1.1. There are an institutional framework and procedures in place and relevant internal quality assurance policies, applied for monitoring the internal quality assurance.

C.1.1.1. The Doctoral school in the respective university study domain shall demonstrate the continuous development of the evaluation process and its internal quality assurance following a procedure developed and applied at the level of the IOSUD, the following assessed criteria being mandatory:

a) the scientific work of Doctoral advisors;
b) the infrastructure and logistics necessary to carry out the research activity;
c) the procedures and subsequent rules based on which doctoral studies are organized;
d) the scientific activity of doctoral students;
e) the training program based on advanced academic studies of doctoral students;
f) social and academic services (including for participation at different events, publishing papers etc.) and counselling made available to doctoral students.

The indicator is fulfilled. IOSUD and SDSI follow the quality assurance policy implemented at the University of Valahia. The objectives of IOSUD are in line with the objectives of the university, namely, in the field of quality management system, continuing education and training, scientific research and international cooperation. The doctoral schools areyearly audited and the objectives are monitored. We mentioned that IOSUD also has a quality comission whose manager is prof. Mihai MEILA (who is also a CSUD member).

For the monitoring of the scientific activity of doctoral supervisors, point (a) of the indicator, IOSUD introduced the procedure PO-06-14 (Anexa 24.c) which allows a quantification of the annual activity of doctoral supervisors. The procedure takes into account the scores only for the results/activities scored by CNATDCU (according to the Order no. 6129 of December 20, 2016). By normalizing to the minimum score required for habilitation for each field, the procedure allows a unitary evaluation of doctoral supervisors from different fields.

An evaluation questionnaire was completed for the social and academic support services and counseling, as well as for the infrastructure and logistics necessary to carry out the activity. The results for the ongoing doctoral students are presented in Annex 27.2.

C.1.1.2. Mechanisms are implemented during the stage of the doctoral study program to enable feedback from doctoral students allowing to identify their needs, as well as their overall level of satisfaction with the doctoral study program in order to ensure continuous improvement of the academic and administrative processes. Following the analysis of the results, there is evidence that an action plan was drafted and implemented.

The indicator is fulfilled. The SDSI regulation provides the right of doctoral students to freely express their needs and level of satisfaction with the doctoral program in Art. 15.o) and the obligation of SDSI to take into account the feedback of doctoral students in Art. 13.13). In this regard, IOSUD developed a questionnaire to highlight the degree of satisfaction with the advanced study program, the research program, the steering committee and the doctoral supervisor (the questionnaire is presented in Annex 27.1). An online version has been implemented in 2021 (Anexa 27.2). The action plan is presented in Anexa 27.3.

It should also be mentioned that doctoral students have representatives in CSD and CSUD through which they can communicate with the management of the doctoral school or IOSUD or they can address directly, for any problem, to the director of SDSI, CSD or CSUD.

C.2. Transparency of information and accessibility of learning resources

C.2.1. Information of interest to doctoral students, future candidates and public interest information is available for electronic format consultation.

C.2.1.1. The IOSUD publishes on the website of the organizing institution, in compliance with the general regulations on data protection, information such as:

a) the Doctoral School regulation;
b) the admission regulation;
c) the doctoral studies contract;
d) the study completion regulation including the procedure for the public presentation of the thesis;
e) the content of training program based on advanced academic studies;
f) the academic and scientific profile, thematic areas/research themes of the Doctoral advisors within the domain, as well as their institutional contact data;
g) the list of doctoral students within the domain with necessary information (year of registration; advisor);
h) information on the standards for developing the doctoral thesis;
i) links to the doctoral theses' summaries to be publicly presented and the date, time, place where they will be presented; this information will be communicated at least twenty days before the presentation.

The indicator is fulfilled - all information is available on the IOSUD website, https://www.scoaladoctorala.valahia.ro/

C.2.2. The IOSUD/The Doctoral School provides doctoral students with access to the resources needed for conducting doctoral studies.

C.2.2.1. All doctoral students have free access to one platform providing academic databases relevant to the doctoral studies domain of their thesis.

The indicator is fulfilled - SDSI doctoral students have access (ANELIS) to the following databases:

- PROQUEST Central
- ScienceDirect Freedom Collection (Elsevier)
- Scopus (Elsevier)
- Web of Science - Core Collection, InCites Journal Citation Reports, Derwent Innovations Index (Clarivate Analytics)

C.2.2.2. Each doctoral student shall have access, upon request, to an electronic system for verifying the degree of similarity with other existing scientific or artistic works.

The indicator is fulfilled - doctoral students, through doctoral supervisors, have access to the similarity verification platform www.sistemantiplagiat.ro . The platform is described in indicator A.1.2.

C.2.2.3. All doctoral students have access to scientific research laboratories or other facilities depending on the specific domain/domains within the Doctoral School, according to internal order procedures.

The indicator is fulfilled - SDSI-IE doctoral students have free access to CC_IEETI research laboratories, FIEETI laboratories and CITSC facilities (according to the bilateral agreement Annex 25).

C.3. Internationalization

C.3.1. There is a strategy in place and it is applied to enhance the internationalization of doctoral studies.

***C.3.1.1. IOSUD, for every evaluated domain, has concluded mobility agreements with universities abroad, with research institutes, with companies working in the field of study, aimed at the mobility of doctoral students and academic staff (e.g., ERASMUS agreements for the doctoral studies). At least 35% of the doctoral students have completed a training course abroad or other mobility forms such as attending international scientific conferences. IOSUD drafts and applies policies and measures aiming at increasing the number of doctoral students participating at mobility periods abroad, up to at least 20%, which is the target at the level of the European Higher Education Area.**

The mobility indicator is fulfilled with a percentage of **38,1%**. Namely 16 PhD students out of 42 (16 ongoing students and 26 graduates) participated in scientific events abroad (as listed below). Thus, PhD students have attended conferences abroad:

1. **F.D. Andrei**, SGEM, Bulgaria, 2019
2. **I. Craiu,** *8th Workshop on Service Orientation in Holonic and Multi-Agent Manufacturing - SOHOMA* 2018, Bergamo, Italia, 2018
3. **A.C. Badea**, *IEEE International Conference on Environment and Electrical Engineering (EEEIC)* Florenta, 2016;
4. **I.-C. Dragoi**, *23rd European Signal Processing Conference (EUSIPCO2015)*, Nice, France, 2015 and *24th European Signal Processing Conference (EUSIPCO2016)*, Budapesta, Ungaria, 2016;
5. **Gh. Nicolaescu**, *14th IEEE International Conference on Environment and Electrical Engineering* (EEEIC), 10-12 May 2014, Krakow, Polonia, and *IEEE International Conference on Environment and Electrical Engineering (EEEIC)* Roma, 2015
6. **D.A. Ciubotariu**, *2014 IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM)*, Besancon, Franta and *2015 IEEE International Conference on Advanced Intelligent Mechatronics (AIM)*, Busan, Corea de Sud;
7. **I. V. Gurgu**, *IEEE International Conference on Robotics and Automation (ICRA), Mobile Microrobotic Challenge*, ICRA'2015, Seattle, USA, ICRA'2016, Stocholm, Suedia, ICRA'2017, Brisbane, Australia.
8. **E.Diaconu**, *IEEE-EUROCON, International Conference on Computer as a Tool - ConfTele* 2011, 27-29 April, 2011, Lisbon, Portugalia;
9. **L.Nastase**, *IEEE-EUROCON, International Conference on Computer as a Tool - ConfTele* 2011, 27-29 April, 2011, Lisbon, Portugalia;
10. **M. Ghiță**, *IEEE-PowerTech*, Trondheim, Norway, June 19-24, 2011.

Furthermore, 2 PhD students, **I. Căciulă, A. Tudoroiu** have been in a secondement of 4 months with ENSIEG, INP. Grenoble (2012), France, and 6 other PhD students, **E. Diaconu, M. Ghiță, O. Marin, A.C. Gurgu, D. Necula, F. Miriță**, have been visiting in 17-21 Sept. 2012 at University of Sevilla, Spain, Dept of Electronics and Electromagnetism. By eliminating overlaps, one gets a total of 16 mobilities, and consequently, one gets a percentage of **38, 1%**. A policy has been drafted to increase the number of doctoral students participating in training abroad, up to at least 20% (Anexa 22c).

The doctoral supervisors of SDSI-IE have established collaboration relations with universities in France (INP Grenoble, Gipsa Lab, Savoie University, from Grenoble-Alpes University - D. Coltuc, invited professor/associate researcher CNRS), Italy (Politehnico di Torino - prof. H. Andrei, ERASMUS) as well as with other universities (Univ. Jean Monnet, Saint Etienne, Univ. Franche-Comté, etc.). UVT has expressed a constant concern for increasing the degree of internationalization, developing in this regard an operational procedure, PO 07.46 (Annex 24.c), which establishes how to promote UVT abroad, in order to meet the internationalization objectives assumed by the UVT Internationalization Strategy (Annex 22a). UVT implements the Erasmus Charter for Higher Education, awarded by the European Commission (Annex 22b), under the monitoring of the Erasmus + National Agency.

C.3.1.2. In the evaluated doctoral study domain, support is granted, including financial support, to the organization of doctoral studies in international co-tutelage or invitation of leading experts to deliver courses/lectures for doctoral students.

The indicator is fulfilled. A joint supervision thesis of **D.A. Ciubotariu**, ***Design, Modeling, Fabrication and control of PMN-PT Piezoelectric Systems*** with Franche-Comté University, France and FEMTO-ST Institute, large-scale research laboratory has been defended at SDSI-IE. FEMTO-ST Institute has double affiliation: Franche-Comté University and National Research Center Scientific (CNRS - UMR 6174). The thesis was coordinated by Prof. D. Colțuc from UVT and Prof. Philippe Lutz coordinator from UFC, Director of the Doctoral School for Engineering Sciences and Microtechnologies (SPIM) of UFC.

SDSI-IE doctoral students participate in scientific events organized in UVT. For the period subject to evaluation, we mention the lectures given at ICSTM-UVT by:

- Prof. Eng., PhD José Machado, Mech., University of Minho, School of Engineering, Mechanical Engineering Department, PORTUGAL, „Mechatronic System for the Promotion of Physical Activity in People with Motor Limitations”06 septembrie 2018;
- PhD. John Mack - Rhodes University, Grahamstown, South Africa “The rational design of BODIPY dyes for biomedical and optical limiting applications”, 06 octombrie 2017, http://www.icstm.ro/content/Invited-Lecturer-PhD-John-Mack
- PhD Eng. Ion Stiharu- Department of Mechanical and Industrial Engineering, Concordia University, Canada „MEMS Application to Life Science” , ”A New Approach for the Non-Linear Analysis of the Deflection of Beams Using Lie Symmetry Groups” 07 September 2017

C.3.1.3. The internationalization of activities carried out during the doctoral studies is supported by IOSUD through concrete measures (e.g., by participating in educational fairs to attract international doctoral students; by including international experts in guidance committees or doctoral committees etc.).

The indicator is fulfilled. Regarding the participation of international experts in doctoral committees, we report the presence of **prof. Rosario TOSCANO**, of *École Nationale d'Ingénieurs de Saint-Étienne (ENISE)*, France, in the thesis committee of D.A. Ciubotariu.

Internationalization works in the other direction as well. Thus, **Prof. D. Coltuc** was a member of the doctoral committees of the theses "*Reversible watermarking scheme with watermark and signal robustness for audio*", author María Alejandra Menéndez Ortiz, National Institute of Astrophysics, Optics and Electronics, Puebla, Mexico, 2017, *Print quality assessment by image processing and color prediction models*, author David Nébouy, Univ. Jean Monnet, Saint Etienne, France, 2015 and external rapporteur for the doctoral theses "*Capacity Analysis in Reversible Watermarking Schemes*", author Rushikesh Prakash Borse at Indian Institute of Technology, Bombay, 2016 and "*Reversible Watermarking based on Histogram Shifting and Error Expansion*" , author Ayesha Siddiqa, Dept. of Computer and Inf. Sciences, Pakistan Inst. of Eng. and Applied Sciences, Islamabad, Pakistan, 2016.

3. STRATEGIES AND PROCEDURES IMPLEMENTED AT THE DOCTORAL STUDY DOMAIN LEVEL

A fundamental objective of IOSUD and SDSI is the elaboration of doctoral theses of very good scientific level. In support of achieving this goal, IOSUD came to the aid of the guidance commissions by developing *M-21, Methodology for the evaluation of doctoral theses by the guidance commission* (Annex 24.a). The methodology is in accordance with MEN ORDER no. 5.229 of August 17, 2020.

IOSUD and SDSI consider the continuous monitoring of legislation and the development of new methodologies/procedures whenever necessary, as well as the revision of existing ones. Thus, we mention *PO 07.43, Completion of doctoral studies using alternative methods* (Annex 24.c), *PO 07.44- Online abilitation procedure* (Annex 24.c), *M20-Methodology of solving the notifications regarding the non-observance of the quality standards or of professional ethics within the doctoral theses* (Annex 24.a), etc.

4. OTHER ADDITIONAL INFORMATION RELEVANT TO THE DOCTORAL STUDY DOMAIN

In the field of continuous education / training, IOSUD and SDSI aim to open new doctoral fields and consolidate existing ones. For the consolidation of SDSI-IE, the action of *identification, support candidates who meet the habilitation conditions* is considered. At this moment, three habilitation theses are in advanced stage, respectively of prof. Mihai-Florin STAN (Anexa 4.4), assoc. prof. Elena VIRJOGHE, and lecturer Diana ENESCU.

5. CONCLUSIONS

FULFILLING THE INDICATORS

All 6 critical indicators are fulfilled.

All the indicators of the methodology are fully fulfilled, except for *A.1.3.3 that is partially fulfilled. According to the indicator, at least 10% of the total amounts of doctoral grants/taxes obtained by the university must be allocated to the training of doctoral students. The percentage allocated to professional training for doctoral students (participation fees in 6 conferences, Ansys licenses and Microsoft Office M365 EDU A3 licenses and tax waiving) is 7.64%. SDSI-IE has compensated this problem by funding from research contracts, an aspect that can be observed by examining the participation in scientific events (* B.3.1.2) and the financing of doctoral students from other sources (* A.1.3. 2).

6. STRENGTHS, VULNERABILITIES, OPPORTUNITIES, THREATS

The report shows that SDSI-IE satisfies almost all the criteria of the accreditation methodology. At SDSI-IE, 26 theses have been defended so far, 17 in the last 5 years. Three of the 17 theses obtained the grade EXCELLENT, while the other 14 the grade VERY GOOD. During the evaluation period, the doctoral students produced 77 publications, including 48 ISI indexed publications (62%). We also stress the existence of outstanding results (papers published in ISI Q1 and Q2 journals, national and international awards, research projects won in the PNIII-PD call).

SDSI-IE STRENGTHS:

- **Competence of doctoral supervisors**. SDSI-IE PhD supervisors have experience in research and good national and international visibility. Thus, they are members of professional organizations like *Romanian Academy of Technical Sciences, Scientific Council of the Romanian National Committee of the World Energy Council, National Standardization Body, CNATDCU, IEEE* senior members, members of editorial boards of Q1 and Q2 ISI journals, members of conferences organizing committees, project evaluators in national / international competitions, members of doctoral committees in Romania and abroad, authors of recognized publications cited in the literature, principal investigators in research projects, etc.
- **Material base.** SDSI-IE PhD students are affiliated to the ICSTM-UVT research centers together with their doctoral supervisors. In addition to the ICSTM infrastructure, PhD students have access to FIETTI laboratories, the UVT library, etc. Details are given in Section 1.2.

WEAKNESSES:

- **Low number of ongoing research projects** (currently there is only one ongoing research project in PNIII);
- **Lack of international projects and relatively modest level of internationalization**. SDSI has no ongoing international projects - there is an international project, H2020, coordinated by an SDSI doctoral graduate and in which two SDSI-IE doctoral graduates are members. Although the doctoral supervisors have international visibility, at SDSI there was only one co-supervised thesis.

THREATS:

- **Financing.** The number of budget founded seats allocated to UVT is small. In addition, we faced the non-rhythmicity of research project competitions.
- **Relatively high average age of doctoral supervisors (64 years);**
- **Decreasing attractiveness of the doctorate in engineering.**

OPPORTUNITIES:

- **Existence of ICSTM** with the afferent endowment;
- **National / international visibility** of doctoral supervisors;
- **Public-private partnerships with Renault, Arctic and Schneider** existing in UVT that can employ PhD students, offer doctoral assignments at the proposal of economic agents and involve them financially.

The above analysis shows that SDSI-IE has strengths and opportunities that allow it to continue its activity with good results. Efforts must be intensified to eliminate the weaknesses, namely the sustained submission of research projects in national competitions and, in particular, participation in consortia for participation in international competitions. In this sense, the national / international visibility of SDSI-IE thesis directors is a good opportunity that should be exploited more. Regarding threats, special attention must be paid to the rejuvenation of the team of thesis directors. The rejuvenation problem is being solved - there are two candidates from FIETTI-UVT, prof. Mihai Florin STAN, assoc. Prof. Elena Otilia VIRJOGHE and lecturer Diana ENESCU. Diana ENESCU meets the minimum standards and is currently writing the habilitation thesis, Elena Virjoghe and Mihai Florin STAN is very close to meeting the criteria. We conclude the analysis with the conclusion that electrical engineering is a viable area of SDSI.

7. ANNEXES

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