

## Research projects

### **International grants/projects with participation as project director**

1. Flexible medium voltage DC electric railway systems (HVDC-ERS), H2020-S2RJU-2018, director from TUCN: Prof. dr. ing. Dorin Petreus, coordinating institution: THE UNIVERSITY OF BIRMINGHAM UK, 2018-2021.
2. Methods and techniques for water flow measurements – contract with Analog Devices, Ireland, 2002, extended in 2003, 2002-2004.
3. Intelligent charger for batteries and supercapacitors based on solar energy, in collaboration with Anacores Limited Irlanda, 2010-2011.

### **National grants/projects with participation as project director**

4. **Electronic heating catalyst controller - eHCC**, subsequent contract no.4 285751/11.10.2019 at 7705/11.06.2014. director of subsequent contract Prof. dr. ing. Dorin Petreus, 2020.
5. **Generic 3.6kW on board charger for electrical vehicles**, subsequent contract no.3 31313/29.11.2018 at 7705/11.06.2014. director of subsequent contract Prof. dr. ing. Dorin Petreus, 2019.
6. **Techniques and technologies for increasing the power density of electronic converters**, subsidiary contract no. 5 of POC 16/01.02.2016 with the title Micro-inverters with high power density and high efficiency for renewable energies – MICROINV, responsible of the subsidiary contract Prof. dr. ing. Dorin Petreus, 2018-2020.
7. **Bidirectional Charger** subsequent contract no.2 4132/22.02.2018 at 7705/11.06.2014. director of subsequently contract Prof. dr. ing. Dorin Petreus, 2018.
8. **Bidirectional Charger** subsequent contract no.1 22528/25.09.2017 at 7705/11.06.2014. director of subsequent contract Prof. dr. ing. Dorin Petreus, 2017-2018.
9. **Renewable energy management system used for small isolated communities – REMSIS**, director Prof. dr. ing. Dorin Petreus, coordinating institution UTCN Cluj Napoca, project PN-II–PT–PCCA-2013-4, contract No. 53/2013.
10. **Miniaturized Equipment with Capacitively Coupled Plasma Microtorch and Analytical Technologies for Simultaneous Elemental Determination used in Environment and Foods control - MICROCCP** – Contract PN-II–PT–PCCA-2011-3.2-0219, Responsible UTCN Prof. Dr. ing. D. Petreus, coordinating institution UBB Cluj Napoca, 2012-2016.
11. **Four cells galvanic bath**, Innovation Circles contract no. 215CI / 05.12.2013 contract director Prof. dr. ing. Dorin Petreus, coordinating institution UTCN Cluj Napoca, 2013-2014.
12. **Medical equipment for magnetic therapy with low frequency pulsed magnetic field**, (ATM 41), contract no. 20CI/07.06.2012, PN-II-IN-CI-2012-1-0042 director Prof. dr. ing. Dorin Petreus, coordinating institution UTCN Cluj Napoca, 2012-2013.
13. **Intelligent charger for batteries and supercapacitors based on solar energy**, Contract no. 79/1.10.2007, code CNCSIS 1019, director Prof. dr. ing. Dorin Petreus, coordinating institution UTCN Cluj Napoca, 2007-2010.
14. **Optoelectronic Equipment and Innovative Method of High Precision and Sensitivity Based on Non-conventional Fluorescence Spectrometry for Testing and**

**Control of Some Environmental Agents (Fluorospec)**, contract no. 71019/2007, code CNCSIS 641, UTCN Responsible Prof. Dr. ing. D. Petreuş, 2007-2010.

15. **Virtual instrument for the diagnostic of turbine vibrations**, type A research grant no. 33385/2004, no. A30 thematic, code CNCSIS 910, 2004-2005.
16. **Measurement, visualization and diagnostic system of turbine vibrations**, type AT research grant no. 34970/2001, theme no. 7, code CNCSIS 234, continued in 2002 (contract no. 33531/2002), theme no. 5, code CNCSIS 53, 2002-2004.
17. **Virtual instrument for power quality analysis** – type T contract no. 5217/1999, B11 (ANSTI), continued in 2000, A10, 1999-2001.

#### **International grants/research projects with participation as a member**

18. **COST MP1004 program -Hybrid Energy Storage Devices and Systems for Mobile and Stationary Applications**, 2011-2015.
19. **Research on Test Compression and LBIST**, research contract no. 23800/21.12.2005 UTCN-Philips Semiconductors, 2005-2007, Director Daniel Moga, 2005-2007.
20. **Research and development contract with Tetraco International Holland** - Universitatea Tehnica Cluj, no. 1595/31.01.2005 Director: A. Vlaicu, workgroup responsible: D. Petreuş, 2005-2006.
21. **Consultancy in the field of analogue and digital electronics, telecommunications, information technologies and software engineering** – contract with Tetraco International, Holland. Member (Director Aurel Vlaicu), 2004-2006.
22. **Study and optimization of metallic substances magnetic properties, manufacturing of ceramic thick films and superconductors through chemical methods.**, Contract no. 98/32/LEHNO/88/1999 with ENEA (Italia) responsible: conf.dr.ing. Traian Petrişor, 1999-2000.
23. **Development through doctoral and higher study of the electromagnetic compatibility in concordance with European community requirement**, type D contract with CNCSU, responsible prof. dr. ing, Şerban Lungu, 1998-2001.

#### **National grants/projects with participation as a member**

24. **Ecological method for recyclable wastes valorization**, TVA 19249/2020, 2020-2021.
25. **Complex integrated system for technological optimization and superior valorification of the wine by-products – VINIVITIS** contract PCCDI4/2018, director Serban Meza, coordinating institution UTCN Cluj-Napoca.
26. **Intelligent sensors integrated system for strategic importance hydrotehnical constructions monitoring - HydroSens** Contract PN-II-PT-PCCA No.71/2012 contract director Daniel Moga, coordinating institution UTCN Cluj Napoca.
27. **Innovative wind energy conversion micro-system with direct-driven electric generator for residential uses – INNOWECS**, Contract PN-II-PT-PCCA-2011-3.2-1696, director Prof. Dr. Ing. Mircea Radulescu, coordinating institution UTCN Cluj Napoca.
28. **Electrical energy optimized system for terrestrial transportation using batteries and supercapacitors (Trans-supercap)**, contract no. 21-018/14.09.2007, partnership type project (program PN 2), code CNCSIS 94, 2007-2010.
29. **Remote monitoring and control system for intelligent buildings; CEEX – INFOSOC 60/2006 – COMODICI**, 2006-2009.

30. Intelligent monitoring and control system for battery charging using the solar energy as primary resource, type C research grant no. 6113/2000, theme no. C11, continued in 2001 (no. 1/2001), theme no. A11, 2000-2002.
31. Research Concerning Electromagnetic Compatibility in Low Voltage Electrical Network., contract type A no. 33830/1999, theme no. 69, code CNCSIS 651 (CNCSIS – MEN), continued in 2000, theme no. 5, code CNCSIS 641, 1999-2001.
32. Genetics Algorithms. Applications in Power Supply Circuits, contract type A no. 33830/1999, theme 21, 1999, code CNCSIS 652 (CNCSIS – MEN), continued in 2000, theme no. 42, code CNCSIS 619, 1999-2001.
33. Increasing the reliability of a monitoring alarm/protection and tele commands and building the specific equipments, contract 894-2000, beneficiary S.C. ELECTRICA Zalău, responsible conf. dr. ing. Pitică Dan, 2000-2001.
34. Study of temperature and humidity control methods in a closed area, research grant no. 61/2005, for S.C. TehCom S.R.L, 2005-2006.
35. Monitoring alarm, protection and tele commands system contract 110-1999, beneficiary S.C. ELECTRICA Zalău, 1999 (responsible conf. dr. ing. Pitică Dan), 1999-2000.
36. Flexible system for monitoring and analyzing the environmental quality, contract type C with CNCSU, 60.000 USD, 1999-2002 (contract responsible prof. dr. ing. Șerban Lungu), 1999-2002.
37. Modernisation, measurement and telesignaling of departures from Zalau station with Dej connection, contract 71-1998, beneficiary S.C. ELECTRICA Zalău, 1998 (responsible prof. dr. ing. Pitică Dan), 1999-2000.

#### **G. Other research and development work ( etc.)**

1. High efficiency resonant supply for automaton systems (PBF – Holland)
2. Power supply for medical printer (for Codonics USA);
3. Power supply with electronic ballast for voting machines (for Nedap Power Supplies Holland);
4. High voltage power supply for copying machines (for dutch Oce);
5. Power supply for projectors (for Philips);
6. Sinusoidal inverter 12-230V 800VA (dutch Mastervolt);
7. Sinusoidal inverter 24Vcc-230Vca 800VA (dutch Mastervolt);
8. Torque measurement system (Seohowintech South Coreea).
9. High efficiency quasiresonant flyback converter (dutch PBF)
10. Very high efficiency power supply for agriculture applications(Nedap)