Professional Profile
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Teaching

My teaching career started in 1990, when I joined the "Politehnica" University of Timişoara as Assistant Professor at the Hydraulic Machinery Department, after working for two years as mechanical engineer in a thermoelectric power plant. I followed all the steps in a regular academic career, as Lecturer, Associate Professor, full Professor (since 2003) and PhD advisor (since 2007) in mechanical engineering – hydraulic machinery and systems.

The main focus of my teaching activities was on fluid mechanics and its applications. I started with the general course in Fluid Mechanics and Hydraulic Machines, which is part of the core curriculum in mechanical engineering. For the past 8 years I am teaching this course in English, for civil engineering students.

Besides this general course, I developed several courses for bachelor and master degrees, as follows. Since early '90s I focused my specialized teaching activities on numerical simulations for incompressible flows. The basic mathematical models for theoretical hydrodynamics (flow of incompressible and inviscid fluids) and the associated variational formulations leading to the finite element algorithms, were the backbone for both course materials and computer codes development for lab works and project applications. In particular, I was developed a finite element code for flows in hydrofoil cascades (the basic problem for turbomachinery design and analysis), with a graphical interface, which is used for more than ten years in courses such as Numerical Methods in Hydrodynamics, or Design and Optimization of Hydraulic Machines. My textbooks on "Topics in Fluid Mechanics and Numerical Methods" (1991) or "Numerical Fluid Mechanics" (2003) present not only the theoretical issues, but also include details on code development and implementation of various numerical methods, such that the reader can go beyond the user stage into the developer stage. In addition to the in-house codes I am teaching the master students the use of expert codes, such as FLUENT, for real turbulent flow simulations. Nevertheless, teaching only the mathematical models and/or numerical methodologies is definitely not enough for training good engineers. As a result, my teaching is definitely application driven, with a constant focus on relating the course material to the problems in design, analysis and optimization of turbomachines and other hydraulic systems.

The diploma theses or master dissertations (I am conducting on average 5 per year) are an opportunity for my students to put together the knowledge acquired in various disciplines to either generate a design for a turbomachine (turbine or pump) or to perform an in-depth numerical investigation of a particular flow or flow system (e.g. swirling flows, flows with separation, etc.).

Since the doctoral studies are now seen as the third cycle of higher education, with a duration of 3 years, it is essential to identify the students with potential for research activities as early as possible, in order to offer them a specific training during the 2-year master degree in order successfully continue the PhD program. This is the approach I am consistently following for selecting and training the students during the bachelor -> master -> doctoral studies. However, this is not an individual effort. All my

students are included in the research group I am leading, such that they continuously benefit from the expertise of senior professors and researchers in order to accelerate the learning process.

Besides the actual courses content, and learning environment, the attractiveness of learning can be significantly increased by using suitable teaching technologies. Along this line, back in 2009 I participated in developing a project aimed at developing a "Fluids Engineering Information Platform" (PiiF, www.piif.ro) for teaching university courses related to fluid engineering (for mechanical, civil, industrial, chemical engineers, naval architects, etc.). This national project, started in 2010 for a three years duration, brings together six main technical universities in Romania, from Bucharest, Timişoara, Iaşi, Cluj and Galați, and has as a main goal the modernization of the national system for higher education in Fluids Engineering for bachelor and master degrees. The basic paradigm assumed by the project is that the teaching process must account for a simple relationship: "Concepts + Reasoning = Solutions". The building block, called concepts, are presented as e-papers available on-line for both the student and the teacher within the teaching/learning process. The focus of the teacher-student interaction activities is shifted toward developing the reasoning abilities instead of memorizing a large amount of information. Moreover, the reasoning is focused toward finding solutions to real and rather complex problems, rather than solving small numerical applications of various formulae. As a result, the teacher's role is shifted toward explaining the concepts (rather than to transfer the information) and to design learning paths such that the student could navigate through the concepts, in a suitable order, to solve one problem or another. Once again, we do not intend to offer a comprehensive collection of recipes for engineering problems. The student knows that the information is available, and his/her main task is to develop a reasoning process, using the information embedded in the concepts, to provide correct and complete engineering solutions.

Since 2007 I am PhD advisor, and since then seven PhD students obtained the PhD degree under my supervision:

1. Bistrian, Diana Alina, 2011, *Mathematical models and numerical algorithms for stability investigation of swirling hydrodynamic systems*, Universitatea Politehnica Timișoara (co-adviser with George G. Savii)
2. Bosioc, Alin Ilie, 2011, *Swirling flow control in the discharge cone of hydraulic turbines*, Universitatea Politehnica Timișoara.
3. Tănasă, Constantin, 2012, *Flow-feedback for mitigating the pressure fluctuations in the discharge cone of hydraulic turbines*, Universitatea Politehnica Timișoara
4. Moisă, Irina Georgeta, 2013, *Analysis and flow optimization for inverse design of hydraulic turbomachinery*, Universitatea Politehnica Timișoara
5. Ciocan, Tiberiu, 2014, *Swirling flow optimization at the inlet of draft tube of hydraulic turbines*, Universitatea Politehnica Timișoara.
6. Ighișan, Cosmin-Marian, 2015, *Unsteady hydrodynamics of the hydraulic turbines draft tube*, Univesitatea Politehnica Timișoara.
7. Totorean, Alin-Florin, 2016, *Flow in helical tubes. Medical applications for coronary bypass surgery*, Universitatea Politehnica Timișoara.

I embrace for my teaching activities the statement of Charles M. Vest, President Emeritus of MIT, who said that "As we think about the plethora of challenges, it is important to remember that students are driven by passion, curiosity, engagement, and dreams".

Scientific Research

I formally started my scientific research activity back in 1990, when I was admitted in a PhD program at the "Politehnica" University in Timisoara, under the supervision of Prof. Ioan Anton, member of the Romanian Academy. My research program was focused on high-speed water jets, with practical applications for cutting various materials. As a matter of fact, the idea of this subject originated from an ongoing research contract with a design institute for mining equipment, where a new mining technology was developed by using jet-assisted cutting of coal and rock. The research was including both theoretical issues related to the jet hydrodynamics and stability, and experimental investigations. The main theoretical developments included in the thesis are the finite element code for axi-symmetric flows with free surface, which was used for analyzing various nozzle geometries. For the experimental investigations I designed and built a complex test rig which included a very high pressure pump (up to 2000 bars) capable to deliver a jet with a velocity above 600 m/s through a sapphire nozzle with an orifice of 0.2…0.4 mm in diameter. I defended the thesis "High speed jet hydrodynamics and applications" on July 1996, and I obtained the PhD degree in mechanical engineering.

Immediately after completing my PhD thesis, I went to the Notre Dame University, Indiana, U.S.A., as Fulbright fellow at the Aerospace and Mechanical Engineering Department. The project I was involved in from the beginning was concerned with the use of high performance parallel computing of the unsteady pressure fields generated by the interaction of incoming vortical perturbations with isolated airfoils or airfoil cascades. These theoretical studies aimed at significantly reducing the airplane noise level. The main challenge in using domain decomposition techniques for parallel computing algorithms was related to the uniqueness of the subdomain solutions, which in turn was depending on the subdomain boundary conditions. In addition, the pressure waves must be able to leave the truncated computation domain without spurious reflections which dramatically contaminate the solution. When working on these problems I benefited from the supervision of Prof. Hafiz Atassi, as well as from extremely fruitful cooperation with researchers at Argonne National Laboratory, Illinois, and Courant Institute of Mathematics, New York. Within the first year I was able to develop a novel numerical algorithm and the corresponding finite element code, with results included in a Journal of Computational Physics paper. Following these results I was granted a one year Fulbright fellowship extension, and then I was continue to further develop this robust and efficient numerical methodology during shorter stages as Postdoctoral Research Associate and Visiting Associate Professor at the same university. Overall, this research experience in unsteady aerodynamics and aeroacoustics was a boost for my career as scientific researcher, particularly with respect to mathematical modeling and numerical algorithms development for special flows.

Since 2002, the focus of my research activity, as well as of the research group I am coordinating, was related to the turbomachinery hydrodynamics and cavitation, with particular emphasis on swirling flows

in hydraulic turbines. Within the cooperation with the Laboratory for Hydraulic Machines (LMH) from the École Polytechnique Fédérale de Lausanne (EPFL), Switzerland, we have developed a methodology for modeling the swirling flows downstream the hydraulic turbine runner, when the turbine is operated within a range of discharge values. The methodology was validated with experimental data obtained at LMH-EPFL, and allowed further studies on the swirling flow stability. A first important result was that the swirl stability characteristics changes from subcritical to supercritical when the turbine discharge reaches a value corresponding to an abrupt drop in overall efficiency was experimentally observed. Moreover, it was inferred the main cause of the self-induced instability of the decelerated swirling flow, when the steady axisymmetric swirl in the turbine discharge cone becomes unsteady and three-dimensional, with a well-know precessing helical vortex (so-called vortex rope). This phenomenon occurs in hydraulic turbines operated far from the best efficiency point, and it hinders the turbine normal operation through severe pressure fluctuations leading to vibrations, bearing damage, blade rupture, power swing. We have concluded that most of the technical solutions attempted in practice to mitigate the vortex rope were not actually addressing the main cause of the swirling flow instability.

As a result, we have introduced in 2006 a novel swirling flow control technique which uses a water jet injection along the symmetry axis of the conical diffuser. We teamed-up with General Electric Hydro, Canada, (now part of Andritz Hydro) to further develop this novel and promising technology (patent application "Liquid Control Jet During Part Load Operation in a Hydraulic Turbine"). The first set of joint results were presented at the 23rd IAHR Symp. on Hydraulic Machinery and Systems, Yokohama, 2006, followed by joint experimental investigations performed at the Laval University, Quebec, Canada, Dec. 2006, which successfully confirmed the preliminary numerical investigations. A comprehensive experimental investigation was further carried out from 2007 until 2010 by my PhD student Alin Bosioc, who clearly showed the capability of the jet injection approach to successfully mitigate the swirl instabilities in a conical diffuser. His Laser Doppler Velocimetry measurements for the velocity field, coupled with the unsteady pressure measurements at the wall, clarified the physical mechanism for instability mitigation by eliminating the central quasi-stagnant region and the associated vortex sheet at the boundary with the flow confined in an annular section up to the wall. However, we have found that a complete removal of the instability requires the jet discharge to reach a rather large threshold value (about 10% of the main flow discharge). From practical applications, this is an unacceptable large value, particularly when the jet is supplied with water which bypasses the runner, thus introducing a large so-called volumetric loss. As a result, another PhD student under my supervision, Constantin Tanasa, was designing, testing, and thoroughly investigated a novel flow-feedback method for supplying the control jet with water from downstream the runner, thus eliminating the above drawback. Mr. Tanasa successfully defended his PhD thesis in 2012. The mathematical models and stability investigations of the swirling flows was also the topic of my PhD student Diana Bistrian, who defended her thesis in 2011, and this research direction is further approached by a postdoctoral researcher, Ioana Dragomirescu, starting in 2011 under my scientific coordination.

The overall program of scientific research on turbomachinery hydrodynamics is carried out in cooperation with two senior researchers from the Romanian Academy, Dr. Sebastian Muntean and Dr. Sandor Bernad, with whom I was developing a research infrastructure for high performance computing

in fluid dynamics and advanced experimental flow investigations since the year 2000. Besides the basic studies on fluid dynamics, we have approached problems raised by industrial partners such as the Hidroelectrica (Romanian Hydropower company), Alstom Hydro France, Zoppas Industries, etc. It is clear that in order for the engineering research to achieve significant impact, the problems to be addressed must originate from the current practice in companies. As a result, the PhD theses subjects I am proposing are closely related to the fundamental aspects of the complex flow phenomena occurring in practice. Moreover, the my PhD students can interact with the industrial environment, with important benefits for their professional career development.

The research topics I am addressing together with the research team I am coordinating follow the long tradition of the Timişoara School of Hydraulic Machines, established in the early 1930 by Professor Aurel Bărglăzan (1905-1960) and further developed by Professor Ioan Anton (1924-2011), both members of the Romanian Academy. However, the issues we are tackling today are aimed at solving the challenges facing the modern hydraulic turbines. Initially, the hydraulic turbines were designed to operate at or in the neighborhood of the best efficiency regime. As the energy market became less and less structured, with highly fluctuating energy sources (e.g. wind, solar) the hydraulic turbines are now required to operate far from the design operating point. As a result, a plethora of new hydrodynamic phenomena emerge, with unexpected flow instabilities generating severe pressure fluctuations leading to structural damage, which ultimately hinder the turbine operation. It turns out that the empirical and ad-hoc engineering solutions cannot properly address such problems, and basic research on flow stability, followed by novel technical solutions that address the main cause of the unwanted phenomena rather than their effects should be the proper route toward new technologies to be implemented either for new turbines or to be considered when refurbishing the old ones. This is one strategic research direction I am following, together with my research associates and doctoral students in the research group I am coordinating. While focusing on swirling flow hydrodynamics and stability, I am employing the full range of investigation approaches including analytical, numerical and experimental methods.

Management

Research management

I consider that my consistent involvement in managing research activities started back in the year 2000, when I assumed the position of director for a large grant (financed by the World Bank and the Romanian Government) aimed at setting up a top research infrastructure within the framework of “multiple-users research centers” (MURC), with the aim of making operational a National Center for Engineering of Systems with Complex Fluids within the “Politehnica” University of Timisoara. It was an important effort to acquire major research equipments for magnetometry, magneto-rheology, computational fluid dynamics. The project was initiated in 1997 by Dr. L. Vekás, head of the Magnetic Liquids Laboratory, and Prof. V. Ancuşa from the Hydraulic Machinery Department, but it evolved rather slowly due to the difficulties in international acquisition procedures, financial issues, etc. I took the responsibility of finalizing all project activities, with a very large budget at that time, 320,000 USD, and in association with the deputy director Dr. S. Bernad, we managed to complete the project on time by the end of the

year 2001. Although important, the research infrastructure itself is useless without the human resources. Following a long tradition, initiated by Prof. I. Anton more than half a century ago, we have further developed the close cooperation between the "Politehnica" University of Timişoara and the Romanian Academy – Timişoara Branch. As a result, the new research center benefited from a team of senior researchers for its two main research directions: magnetic liquids (preparation, magnetometry, rheology, magnetorheology) and hydrodynamics (computational fluid dynamics, experimental investigations of turbomachines). The research team was traditionally interdisciplinary, including engineers (mechanical, electrical, chemical), physicists and chemists. Moreover, young researchers were continuously joining the research center, either as post-doctoral researchers or doctoral students. Nowadays, the Research Center for Engineering of Systems with Complex Fluids (Centrul de Cercetări pentru Ingineria Sistemelor cu Fluide Complexe - CCISFC) http://mh.mec.upt.ro/ccisfc, within the "Politehnica" University of Timişoara - UPT is a performant and sustainable research unit.

It became clear from my experience in managing a research center, that it is essential to continuously attract young students (selected from the final year of the bachelor cycle, continuing with the master degree and then with a doctoral program), and to immerse them in a well structured research team, with experienced senior researchers. The tandem PhD student – PhD advisor has only limited capabilities to successfully approach complex engineering problems, without the daily interaction with other researchers and PhD students.

Besides the research management activity within the CCISFC-UPT, I was actively involved in research management at the national level, as chairman of the Engineering Science Committee within the National University Research Council (NURC) for the period 2007-2011. In this position I was coordinating the national competitions for research grants within two main programs of the national research plan: Human Resources and IDEAS (basic research). Besides these activities, I organized the grants monitoring activities, in order to increase the quality of the Romanian research with respect to international standards, as well as to increase the visibility and recognition of Romanian researchers within the international research community.

Moreover, I served as advisor to the President of the National Authority for Scientific Research (2012-2015), to shape the national strategy for research-development-innovation (RDI) for the period 2014-2020, within the paradigm of Smart Specialization promoted by the European Union. It became obvious from the ongoing national research plan that focusing the limited resources available on a rather small number of well defined priorities is the key to increase the impact of research, development and innovation activities within the economy and society. However, defining such priorities is an extremely difficult task, since we have to accommodate an existing infrastructure and expertise with the actual needs emerging both at the national and regional levels. I was also the RDI advisor for the ministry of national education and scientific research (Nov. 2015 – Jun. 2016).

With respect to the development of human resource for RDI activities, the doctoral and post-doctoral programs should accommodate the demand for creativity, with new emerging ideas, with the clear requirements to address the challenges facing the modern society. This is a key ingredient for increasing both the visibility and recognition of researchers as one of the main engine for societal and economical development. I consider that this should be a major coordinate for developing and focusing the doctoral

studies in a university. As Director of the Doctoral Studies Council within the Politehnica University of Timișoara (2012 - present) I was constantly pursuing this goal, with good results as reflected in the assessement report for the doctoral studies 2012-2016 available at http://www.upt.ro/img/files/2015-2016/doctorat/raport/IOSUD-UPT-2011-2016_rev10_1.pdf . Therefore, I intend to continue this activity for the period 2016-2020. Although doctoral studies is now considered the third cycle of university study (following batchelor and master), it is obvious that the scientific research is at is core.

Scientific events organization

A confirmation of the visibility and worldwide recognition of our research group in hydraulic machines came at the 25th IAHR Symposium on Hydraulic Machinery and Systems, http://acad-tim.tm.edu.ro/iahr2010/, Timişoara, Sep. 20-24, 2010, where I was the chairman of the organizing committee. This prestigious symposium is held every two years since 1960, and the 25th edition marked its half a century anniversary. The International Association of Hydro-Environment Engineering and Research (IAHR) celebrated its 75th anniversary in 2010. IAHR particularly promotes the advancement and exchange of knowledge through working groups, specialty symposia, congresses, and publications on water resources, river and coastal hydraulics, risk analysis, energy, environment, disaster prevention, industrial processes. The 25th IAHR Symposium on Hydraulic Machinery and Systems brought together 227 scientists and researchers from 24 countries, affiliated with universities , technology centres and industry to debate topics related to advanced technologies for hydraulic machinery and systems, which will enhance the sustainable development of water resources and hydropower production. The Scientific Committee has selected 118 papers, out of 238 abstracts submitted, on the following topics: (i) Hydraulic Turbines and Pumps, (ii) Sustainable hydropower, (iii) Hydraulic Systems, (iv) Advances in Computational and Experimental Techniques, (v) Innovative Technology, presented at the symposium and included in the proceedings published with the IOP Conference Series: Earth and Environmental Science, http://iopscience.iop.org/1755-1315/12/1. More details on the symposium can be found in the post-conference report at http://acad-tim.tm.edu.ro/iahr2010/pdf/IAHR2010PostConfReport.pdf. Since then, all editions of this prestigious symposium (Beijing 2012, Montreal 2014, Grenoble 2016) have published the proceedings as volumes in IOP Conference Series: Earth and Environmental Science, being indexed in Web of Science and as a result providing a significantly improved international visibility.

Three years before the Timișoara symposium, I chaired the organizing committee of the 2nd IAHR International Meeting of the WorkGroup on Cavitation and Dynamic Problems in Hydraulic Machinery and Systems, Timişoara, Oct. 24-26, 2007, http://mh.mec.upt.ro/iahrwg2007. More than 80 participants joined this meeting, with the main focus on unsteadiness of the flow in hydraulic machines and associated hydraulic systems, as well as cavitation inception and development, looking for solutions to mitigate the unwanted and potentially dangerous effects of these special flow phenomena. Since 2014 I was appointed chairman of the IAHR Workgroup on Cavitation and Dynamic Problems.

Another major event where I was directly involved in organization, particularly in papers review and proceeding editing, was the 6th International Conference on Hydraulic Machines and Hydrodynamics,

http://mh.mec.upt.ro/hmh2004/, Timişoara, Oct. 21-22, 2004. This series of conferences was hosted every 4 years by the Hydraulic Machines Department of the "Politehnica" University from Timişoara.

Besides such major events, I initiated back in 2004, the bi-lateral cooperation with the University of Stuttgart, Institute of Fluid Mechanics and Hydraulic Machinery, http://www.ihs.uni-stuttgart.de. Within this academic cooperation initiative, we organize joint meetings called "German-Romanian Workshop on Turbomachinery Hydrodynamics" (GRoWTH), alternatively in Timişoara and Stuttgart, since 2005. This year, we had the GRoWTH8 meeting in Stuttgart. The main focus of these meetings is to allow young researchers from both HIS-Stuttgart and CCISFC-Timişoara to present and discuss their on-going research projects within doctoral and post-doctoral programs, as well as to allow the senior researchers to debate the main research directions and issues of mutual interest. Such semi-formal meetings are an excellent opportunity for the young researchers to interact with their colleagues and exchange ideas as well as expertise in both computational and experimental fluid mechanics and turbomachinery hydrodynamics.

Within the consortium project "Vortex Hydrodynamics and Application", which brought together 9 research teams from Romanian universities in Timisoara, Bucharest, Galati, Iasi, Cluj and Resita, I was organizing every year the project workshops between 2005-2007. These meetings were excellent opportunities to coagulate the Romanian research community on fluids engineering starting with a topic of mutual interest - vortex hydrodynamics – and exploring various applications in turbomachines, wind engineering, naval hydrodynamics, hydraulic power systems, etc.

In conclusion, I consider that the active involvement of senior researchers in organizing a range of scientific events is definitely paying off in terms of motivating the research teams to reach international standards. Moreover, the direct feedback from other experts on either the relevance and potential impact of the research problems, as well as on the quality of the results, as well as the interaction with researchers who share similar topics and/or approaches, bring a strong motivation for young researchers as well as for the research group leaders to continuously enhance their research activities.

My professional profile is also available at
https://www.brainmap.ro/profile/Romeo-Florin-SUSAN-RESIGA

Publications

Books

	Title	Authors	Publisher, year, pages, ISBN	Pages pers. Contrib
1.	VORTEX FLOWS and APPLICATIONS	**SUSAN-RESIGA R.,** BERNAD S., MUNTEAN S., (eds)	Editura Eurostampa, Timişoara, 2007, 492 p. ISBN 978-973-687-659-2	90
2.	MECANICA FLUIDELOR NUMERICĂ	**SUSAN-RESIGA R.**	Editura Orizonturi Universitare, Timişoara, 2003, 223 p. ISBN 973-638-014-9	223
3.	METODE MODERNE de CALCUL PARALEL pentru SIMULAREA CURGERII FLUIDELOR	**SUSAN-RESIGA R.,** MUNTEAN S., BERNAD S., BALINT D., BALINT I.	Editura Orizonturi Universitare, Timişoara, 2003, 290 p. ISBN 973-638-064-5	92
4.	COMPLEMENTE de MECANICA FLUIDELOR şi TEHNICI de SOLUŢIONARE NUMERICĂ	**SUSAN-RESIGA R.**	Editura Orizonturi Universitare, Timişoara, 1999, 290 p. ISBN 973-9400-60-4	246
5.	INTRODUCERE în TEORIA GRAFURILOR. METODA DRUMULUI CRITIC	IZVERCIAN P.N., CREŢU V., IZVERCIAN M., **SUSAN-RESIGA R.**	Editura de Vest, Timişoara, 1994, 234 p. ISBN 973-36-0176-4	58

Course material

	Title	Authors	Publisher, year, pages, ISBN	Pages pers. Contrib
1.	MECANICA FLUIDELOR, MAŞINI HIDRAULICE şi ACŢIONĂRI. APLICAŢII de CALCUL	ANTON L.E., BALINT D., BAYA A., BĂDĂRĂU R., BĂLĂŞOIU V., BEJ A., MILOŞ T., MUNTEAN S., **SUSAN-RESIGA R.**, STUPARU A.	Editura Orizonturi Universitare, Timişoara, 2004, 262 p., ISBN 973-638-0769	14
2.	MECANICA FLUIDELOR EXPERIMENTALĂ. PARTEA I: ELEMENTE FUNDAMENTALE	ANTON L.E., BAYA A., MILOŞ T., **SUSAN-RESIGA R.**	Editura Orizonturi Universitare, Timişoara, 2002, 135 p., ISBN 973-8391-72-5	40
3.	METODE NUMERICE. LUCRĂRI PRACTICE	**SUSAN-RESIGA ROMEO**	Litografia Universităţii Tehnice din Timişoara, 1994, 80 p.	85

Web of Science (core collection) papers

	Title	Authors	Journal / publication
1.	EXPERIMENTAL AND NUMERICAL INVESTIGATION OF THE PRECESSING HELICAL VORTEX IN A CONICAL DIFFUSER, WITH ROTOR-STATOR INTERACTION	JAVADI A., BOSIOC A., NILSSON H., MUNTEAN S., **SUSAN-RESIGA R.**	J. Fluids Engineering – Transactions of the ASME, vol. 138, issue 8, paper 081103 (13 p.), 2016. DOI: 10.1115/1.4033416
2.	A VARIATIONAL MODEL FOR SWIRLING FLOW STATES WITH STAGNANT REGION	**SUSAN-RESIGA R.**, MUNTEAN S., STUPARU A., BOSIOC A., TĂNASĂ C., IGHIȘAN C.	European Journal of Mechanics B/ Fluids, vol. 55, p. 104-115, 2016,DOI: 10.1016/j.euromechflu.2015.09.002
3.	FLUID DYNAMICS IN HELICAL GEOMETRIES WITH APPLICATIONS FOR BY-PASS GRAFTS	TOTOREAN A.F., BERNAD S., **SUSAN-RESIGA R.**	Applied Mathematics and Computation Volume: 272 Pages: 604-613, 2016, DOI: 10.1016/j.amc.2015.05.030
4.	MODELLING AND OPTIMIZATION OF THE VELOCITY PROFILES AT THE DRAFT TUBE INLET OF A FRANCIS TURBINE WITHIN AN OPERATING RANGE	CIOCAN T., **SUSAN-RESIGA R.**, MUNTEAN S.	Journal of Hydraulic Research, vol. 54, issue 1, p. 78-89, 2016, DOI: 10.1080/00221686.2015.1119763
5.	WEIGHTED PROPER ORTHOGONAL DECOMPOSITION OF THE SWIRLING FLOW EXITING THE HYDRAULIC TURBINE RUNNER	BISTRIAN D.A., **SUSAN-RESIGA R.**	Applied Mathematical Modelling Volume: 40 Issue: 5-6 Pages: 4057-4078, 2016, DOI: 10.1016/j.apm.2015.11.015
6.	A HELICAL PIPE INVESTIGATION FROM A CARDIOVASCULAR PERSPECTIVE	TOTOREAN A.F., BERNAD S., **SUSAN-RESIGA R.**	Proceedings of the International Conference of Numerical Analysis and Applied Mathematics 2014 (ICNAAM 2014) Volume: 1648, Article number 030033, 2015, DOI: 10.1063/1.4912350
7.	A MATHEMATICAL MODEL FOR THE SWIRLING FLOW INGESTED BY THE DRAFT TUBE OF FRANCIS TURBINES	**SUSAN-RESIGA R.,** IGHIȘAN C., MUNTEAN S.	WasserWirtschaft Volume: 105 Issue: 1 Pages: 23-27, 2015.
8.	CRITICAL FLOW REGIONS IN THE CORONARY BY-PASS GRAFT ANASTOMOSIS	TOTOREAN A.F., BOSIOC A., BERNAD S., **SUSAN-RESIGA R.**	Proceedings of the Romanian Academy Series A-Mathematics Physics Technical Sciences Information Science Volume: 16 Issue: 2 Pages: 201-208, 2015.
9.	NUMERICAL ANALYSIS OF THE TEMPERATURE FIELD IN A MAGNETO-RHEOLOGICAL BRAKE	BOSIOC A., MUNTEAN S., **SUSAN-RESIGA R.**	International Conference of Computational Methods in Sciences and Engineering 2015, AIP Conf. Proc. Volume: 1702 paper 080002, 2015, DOI: 10.1063/1.4938797
10.	NUMERICAL ASSESSMENT OF A NOVEL CONCEPT FOR MITIGATING THE UNSTEADY PRESSURE PULSATIONS ASSOCIATED TO DECELERATING SWIRLING FLOW WITH PRECESSING	TĂNASĂ C., **SUSAN-RESIGA R.**, MUNTEAN S.	International Conference of Computational Methods in Sciences and Engineering 2015, AIP Conf. Proc. Volume: 1702 paper 080003, 2015, DOI: 10.1063/1.4938798

	HELICAL VORTEX		
11.	THE INFLUENCE OF NUMBER OF TURNS TO HELICITY VARIATIONS AT THE OUTLET SECTIONS IN HELICAL GEOMETRIES WITH APPLICATIONS FOR BY-PASS GRAFT	TOTOREAN, A. F.; BERNAD, S. I.; BOSIOC, A.; HUDREA, I. C.; BERNAD, E. S.; **SUSAN-RESIGA R.**	International Conference of Computational Methods in Sciences and Engineering 2015, AIP Conf. Proc. Volume: 1702 paper 080007, 2015, DOI: 10.1063/1.4938802
12.	A MODEL FOR PRECESSING HELICAL VORTEX IN THE TURBINE DISCHARGE CONE	KUIBIN P. A., **SUSAN-RESIGA R.**, MUNTEAN S.	27th IAHR Symposium on Hydraulic Machinery and Systems, IOP Conf. Series: Earth and Environmental Science vol. 22, paper 022024, 2014, DOI: 10.1088/1755-1315/22/2/022024
13.	SURROGATE RUNNER MODEL FOR DRAFT TUBE LOSSES COMPUTATION WITHIN A WIDE RANGE OF OPERATING POINTS	**SUSAN-RESIGA R.,** MUNTEAN S., CIOCAN, T.	27th IAHR Symposium on Hydraulic Machinery and Systems, IOP Conf. Series: Earth and Environmental Science Volume: 22 paper 012022, 2014, DOI: 10.1088/1755-1315/22/1/012022
14.	UNSTEADY PRESSURE MEASUREMENTS OF DECELERATED SWIRLING FLOW IN A DISCHARGE CONE AT LOWER RUNNER SPEEDS	BOSIOC, A. I.; MUNTEAN, S.; TANASA, C.; **SUSAN-RESIGA, R.**; VEKAS, L.	27th IAHR Symposium on Hydraulic Machinery and Systems, IOP Conf. Series: Earth and Environmental Science Volume: 22 paper 032008, 2014, DOI: 10.1088/1755-1315/22/3/032008
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16.	MIXING INTERFACE METHOD APPLIED TO THREEDIMENSIONAL FLOW THROUGH FRANCIS TURBINE	MUNTEAN S., SUSAN-RESIGA R., ANTON I., ANCUŞA V.	Anton I., Ancuşa V., Susan-Resiga R. (Eds.), Proceedings of the Workshop on Numerical Simulation for Fluid Mechanics and Magnetic Liquids, Ed. Orizonturi Universitare, Timişoara 2001, pp. 25-44.
17.	DESIGN OPTIMIZATION OF THE SYNCHRONIZATION SYSTEM FOR HIGH PRESSURE INTENSIFIER, USING THE FINITE ELEMENT METHOD	SUSAN-RESIGA R., RAICOV P.C.	Proceedings of the 2nd Conference on Boundary and Finite Elements, Sibiu, Section 2.1, pp. 100-105, 1993.
18.	STUDY OF THE FLOW IN A CYCLONE EXTENSION FURNACE BY USING THE FINITE ELEMENT METHOD	SUSAN-RESIGA R., OPRIŞA P.D.	Proceedings of the 2nd Conference on Boundary and Finite Elements, Sibiu, Section 3, pp. 150-155, 1993.
19.	FINITE ELEMENT ANALYSIS OF FREE-SURFACE AXISYMMETRIC FLOWS, USING THE STREAM FUNCTION FORMULATION	SUSAN-RESIGA R.	Proceedings of the 4th Conference on Hydraulic Machinery and Hydrodynamics, Timişoara, Vol. I, pp. 91-98, 1994.
20.	FINITE ELEMENT ANALYSIS OF FREE-SURFACE AXISYMMETRIC FLOWS, USING THE VELOCITY POTENTIAL FORMULATION	SUSAN-RESIGA R.	Proceedings of the 4th Conference on Hydraulic Machinery and Hydrodynamics, Timişoara, Vol. I, pp. 83-90, 1994.
21.	DETERMINATION OF AXISYMMETRIC JET SURFACE BY USING F.E.M.	SUSAN-RESIGA R.	Proceedings of the Workshop on Computational Fluid Dynamics, Galaţi, pp. 77-85, 1993.

National Conference papers, in Romanian

	Title	Authors	Conference / publication
1.	ANALIZA NUMERICĂ A CURGERII ÎN DISTRIBUITORUL TURBINELOR HIDRAULICE	SUSAN-RESIGA R., MUNTEAN S.	Lucrările Primei Conferinţe a Hidroenergeticienilor din România, Bucureşti, 2000, pag. 469-478.
2.	STUDIUL NUMERIC AL CURGERII îN FANTELE DISTRIBUITOARELOR CU SERTAR CILINDRIC	SUSAN-RESIGA R., MUNTEAN S.	Conferinţa Internaţională de Sisteme Hidropneumatice de Acţionare, Timişoara, 1995, Vol. II, pg. 208-218.
3.	INFLUENŢA CARACTERISTICII ROBINETULUI ŞI A TIMPULUI DE ÎNCHIDERE ASUPRA SUPRAPRESIUNII DIN CONDUCTA DE GOLIRE A UNUI REZERVOR	SUSAN-RESIGA R.	A II-a Sesiune de Comunicări Ştiinţifice a Universităţii "Aurel Vlaicu" Arad, 1994, Vol. "Tehnologii de Prelucrare", pg. 63-70.
4.	ANALIZA CU ELEMENTE FINITE A CURGERII ROTAŢIONALE ÎN SEMIPLANUL MERIDIAN AL UNUI ANTEFOCAR CICLON	SUSAN-RESIGA R., OPRIŞA P.D	Conferinţa Naţională de Termotehnică, Timişoara, 1994, Vol. IV, pg. 161-166
5.	STUDIUL NUMERIC AL CURGERII PRIN CAMERELE DE LUCRU ALE DISTRIBUITORULUI CU SERTAR CILINDRIC LINIAR	SUSAN-RESIGA R., RASZGA C.	Sesiunea de comunicări ştiinţifice, Universitatea "Transilvania" Braşov, 1993, Vol. VI, pg. 61-68.
6.	MODELAREA PRIN METODA ELEMENTULUI FINIT A CAMPULUI TERMIC ÎNTR-UN ANTEFOCAR	OPRIŞA P.D., SUSAN-RESIGA R.	A III-a Conferinţă Naţională de Termotehnică, Bucureşti, 1993, Vol. II, pg. 331-334
7.	INFLUENŢA SPAŢIULUI MORT ŞI A INTERSTIŢIULUI ETANŞĂRII ASUPRA FUNCŢIONĂRII UNEI INSTALAŢII DE TĂIERE CU JET DE LICHID	SUSAN-RESIGA R.	Sesiunea de comunicări ştiinţifice "Concepţie, Tehnologie şi Management în Construcţia de Maşini", Iaşi, 1992, pg. 155-160.
8.	INFLUENTA UNDELOR DE PRESIUNE DIN CONDUCTA DE ASPIRATIE ASUPRA UMPLERII UNUI CILINDRU IN REGIM NESTATIONAR	SUSAN-RESIGA R.	Conferinţa de Maşini Hidraulice şi Hidrodinamică, Timişoara, 1990, Vol. I, pp. 213-218
9.	COMPARAŢIE ÎNTRE REZULTATELE TEORETICE ŞI EXPERIMENTALE LA CURGEREA NESTAŢIONARĂ A UNUI FLUID COMPRESIBIL PRINTR-O	SUSAN-RESIGA R.	Conferinţa de Maşini Hidraulice şi Hidrodinamică, Timişoara, 1990, Vol. I, pp. 207-212.

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10.	UTILIZAREA PRINCIPIULUI MINIMEI DISIPAŢII LA DETERMINAREA PROFILULUI DE VITEZE PENTRU UN FLUID NEWTONIAN	SUSAN-RESIGA R.	Conferinţa de Maşini Hidraulice şi Hidrodinamică, Timişoara, 1990, Vol. I, pp. 201-206.
11.	STUDIUL RELAŢIILOR CRITERIALE PENTRU CALCULUL SCHIMBULUI DE CĂLDURĂ LA CURGEREA FLUIDELOR ÎN INTERIORUL ŢEVILOR	THEIL H., LAZA I., NAGI M., SUSAN-RESIGA R.	Simpozion de Termotehnică şi Maşini Termice, Timişoara, 1988, Vol. I, pp. 63-70.
12.	STABILIREA SOLUŢIEI OPTIME DIN PUNCT DE VEDERE ENERGETIC ŞI AL GABARITULUI UNUI SCHIMBĂTOR DE CĂLDURĂ CU FASCICOL DE ŢEVI ÎN MANTA	LAZA I., SUSAN-RESIGA R., THEIL H., NAGI M.	Simpozion de Termotehnică şi Maşini Termice, Timişoara, 1988, Vol. I, pp. 59-62.
13.	PROIECTAREA ASISTATĂ DE CALCULATOR A SCHIMBĂTOARELOR DE CĂLDURĂ CU FASCICOL DE ŢEVI ÎN MANTA	SUSAN-RESIGA R., THEIL H., LAZA I.	Simpozion de Termotehnică şi Maşini Termice, Timişoara, 1988, Vol. I, pp. 75-82

Research Grants/ Contracts

International Projects

	Number / year	Title	Beneficiary
1.	BCI 4/22.10.2012	MODELLING THE TWO-DIMENSIONAL SWIRLING FLOW IN FRANCIS TURBINES FOR OPTIMIZATION OF DRAFT TUBE PERFORMANCES WITHIN AND OPERATING RANGE. PART I: TWO-DIMENSIONAL STEADY AXISYMMETRIC SWIRLING FLOW COMPUTATION DOWNSTREAM THE FRANCIS RUNNER	ALSTOM Power Hydro France
2.	Ctr. 1/2011	MODELLING AND OPTIMIZATION OF THE SWIRLING FLOW INGESTED BY THE DRAFT TUBE OF A FRANCIS TURBINE WITHIN AN OPERATING RANGE	ALSTOM Power Hydro, France
3.	Ctr. 5214/19.04.2007	TAMING THE VORTEX ROPE -TAVORO	General Electric, Canada
4.	Grant Swiss National Science Foundation SCOPES Joint Research Project IB7320-110942, 2005-2008 UPT 6/23.11.2005	TURBOMACHINERY SWIRLING FLOW OPTIMIZATION AND CONTROL WITH TECHNOLOGY OF MAGNETORHEOLOGICAL SYSTEMS	Swiss National Science Foundation, EPFL
5.	UPT 16126/ 21.12.2005, SIEMENS VDO 1521266/17.11.2005	THERMO-HYDRODYNAMIC OPTIMIZATION OF A COOLING CELL WITH PARTIAL CROSS WALLS	SIEMENS VDO Automotive Germany
6.	UPT 16126/ 21.12.2005, SIEMENS VDO 1510787/01.09.2005	NUMERICAL ANALYSIS OF A COOLING CELL HYDRODYNAMICS	SIEMENS VDO Automotive Germany
7.	UPT Nr. 1/01.03.05	RHEOLOGICAL INVESTIGATIONS OF POLYMER SAMPLES UNDER CONTROLLED INERT ATMOSPHERE	EZUS Lyon, France

National Grants

	Number / year	Title	Beneficiary
1.	PN-II-ID-PCE-2012-4-0634 (2013-2016)	INSTABILITĂȚI AUTO-INDUSE ALE CURGERII CU ROTAȚIE ÎN TURBINE HIDRAULICE LA REGIMURI	CNCS-UEFISCDI

	Ctr. 17/02.09.2013	DEPARTE DE REGIMUL OPTIM	
2.	PROIECT PN2, CTR. 21/2007, 2007-2009	CERCETARI DE REALIZARE SOFT CFD SI MODEL FUNCTIONAL ORIGINAL SISTEM POSTCOMBUSTIE, CU VALIDAREA REZULTATELOR - POSTCOMB	CNMP
3.	PROIECT CEEX-X2C16/2006. 2006-2008	MODELE SI METODE NUMERICE AVANSATE IN INGINERIA NAVELOR DE TRANSPORT GAZE LICHEFIATE - MARGAS	IPA
4.	PROIECT CEEX C_X2C05/3, 2006-2008	HIDRODINAMICA SI TRANSFERUL DE MASA LA COLOANE DE BULE FINE CU APLICARE IN TEHNOLOGII AVANSATE DE MEDIU - TEHNOMED	IPA
5.	PROIECT CEEX, CTR. 192/2006, 2006-2008	INTERINFLUENŢA TURBINELOR HIDRAULICE STABILIZATE CU AX DE ROTATŢE VERTICAL DE TIP ACHARD - THARVEST	AMCSIT
6.	PROIECT CEEX-M1-C2-1185, Contract 9223/24.07.2006, 2006-2008	INTEGRAREA TEHNOLOGIILOR MAGNETO-REOLOGICE SPECIALE ŞI AL CONTROLULUI AVANSAT AL CURGERII IN APLICATII INDUSTRIALE - ISMART-FLOW	MAHNANTECH
7.	PROIECT CEEX-M1-C2-1180, CTR 81/2006, 2006-2008	OPTIMIZAREA COMPUTERIZATĂ A PROCESULUI DE DIAGNOSTIC INTERVENŢIE TERAPEUTICĂ ŞI PROGNOSTIC A BOLILOR CARDIOVASCULARE - CARDIOCOMP	VIASAN
8.	Grant CNCSIS tip A, COD CNCSIS 730, 2005-2007	DEZVOLTAREA DE MODELE MATEMATICE ŞI NUMERICE PENTRU CURGEREA CAVITAŢIONALĂ BIFAZICĂ CU APLICAŢII INDUSTRIALE ŞI BIOMEDICALE	CNCSIS
9.	GRANT CNCSIS A-CONSORŢIU, COD CNCSIS 33, 2005-2007	HIDRODINAMICA VÂRTEJURILOR ŞI APLICAŢII	CNCSIS
10.	GRANT CNCSIS A COD CNCSIS 109/2002, 29/2003, 24/2004	METODE MODERNE DE CALCUL PARALEL PENTRU SIMULAREA NUMERICĂ A CURGERII FLUIDELOR ŞI APLICAŢII LA MAŞINI ŞI SISTEME HIDROPNEUMATICE	CNCSIS
11.	GRANTUL ACADEMIEI ROMÂNE GAR 362/2003, 103/2004	MODELAREA NUMERICĂ ŞI ANALIZA CURGERILOR CAVITAŢIONALE BIFAZICE ÎN TURBINELE HIDRAULICE	Academia Română
12.	GRANT CNCSIS A COD CNCSIS 730/2005	DEZVOLTAREA DE MODELE MATEMATICE SI NUMERICE PENTRU CURGEREA CAVITATIONALA BIFAZICA CU APLICATII INDUSTRIALE SI BIOMEDICALE	CNCSIS
13.	PROIECT CEEX PC-D03-PT00-641, 2005	MEDIOGRID – PRELUCRAREA GRAFICĂ PARALELĂ ŞI DISTRIBUITĂ PE STRUCTURA GRID A DATELOR GEOGRAFICE ŞI DE MEDIU	MCT
14.	GRANT MEN 32221/2000 COD C.N.C.S.I.S. 11	BCUM : CENTRUL NAŢIONAL PENTRU INGINERIA SISTEMELOR CU FLUIDE COMPLEXE	C.N.C.S.I.S.
15.	C.N.F.I.S. COD 145	MODERNIZAREA ŞI DEZVOLTAREA ÎNVĂŢĂRII MECANICII FLUIDELOR ŞI HIDRAULICII	C.N.F.I.S
16.	GAR NR. 81/2001	ANALIZA NUMERICĂ A CURGERII CUPLATE TRIDIMENSIONALE ÎN DISTRIBUITORUL ŞI ROTORUL TURBINELOR FRANCIS	Academia Română

17.	GRANT ANSTI-S, CONTRACT 6153/2000, TEMA B-22	ANALIZA NUMERICĂ CU METODA ELEMENTULUI FINIT A CURGERII POTENŢIALE TRIDIMENSIONALE IN TURBOMASINILE AXIALE	A.N.S.T.I.
18.	GRANT ANSTI-S, CONTRACT 6153/2000, TEMA B-39	DEZVOLTAREA DE SOFTWARE INTERACTIV PT. SIMULAREA NUMERICĂ ŞI ANALIZA CURGERILOR INCOMPRESIBILE PESTE PROFILE AERO/HIDRODINAMICE SINGULARE SAU ÎN REŢEA	A.N.S.T.I.
19.	GRANT ANSTI-C, NR. 6142/19.10.2000	ANALIZA NUMERICĂ A CURGERII ÎN REŢELE RADIALE DE PROFILE DISPUSE ÎN TANDEM	A.N.S.T.I.
20.	GAR NR. 120/1999	ANALIZA NUMERICĂ A CURGERII CU DESPRINDERI ÎN REŢELE PLANE DE PROFILE	Academia Română
21.	CONTRACT NR. 91/1996, ACT ADIŢIONAL NR. 128 DIN 10.05.1999	STUDII TEORETICE ŞI CERCETĂRI EXPERIMENTALE ASUPRA COMPORTĂRII UNOR FLUIDE COMPLEXE ÎN CONDIŢII DE MICROGRAVITAŢIE. PROPUNERE DE EXPERIMENT PE STAŢIA SPAŢIALĂ INTERNAŢIONALĂ, FAZA B1.2	A.N.S.T.I.

National Contracts

	Number / year	Title	Beneficiary
1.	Ctr. BC 33/03.2016	SISTEM DE UNIFORMIZARE A CURGERII GAZELOR DE ARDERE ÎN CARCASA INFERIOARĂ DE GAZE	Mecanoenergetica Tr. Severin
2.	UPT NR. 147/15.10.2008	NUMERICAL SIMULATION OF THE PUMP HYDRODYNAMICS WITH HEAT TRANSFER	S.C. ZOPPAS Industries Romania
3.	UPT NR.152/23.10.2008	CERCETARI SI EXPERIMENTARI PRIVIND IMBUNATATIREA PERFORMANTELOR ENERGETICE SI CAVITATIONALE ALE POMPELOR PRO 10-195 DE LA STATIA DE POMPE JIDOAIA	S.C. Hidroelectrica S.A, Ramnicu Valcea
4.	UPT NR.151/23.10.2008	CERCETARI SI EXPERIMENTARI PRIVIND CRESTEREA PERFORMANTELOR TURBINELOR FRANCIS 57.5-128.5 CHE BRADISOR	S.C. Hidroelectrica S.A, Ramnicu Valcea
5.	UPT NR. 771/23.10.2007	SIMULARE SI ANALIZA POMPA MP3X	S.C.Hella Electronics S.R.L.
6.	AR NR. 5007/27.06.2007	MĂSURAREA PULSAŢIILOR DE PRESIUNE ÎN CONUL TUBULUI DE ASPIRAŢIE, ÎN REGIMURI DE FUNCŢIONARE ALE TURBINEI DE LA CHE MUNTENI	S.C Hidroelectrica S.A. Sucursala Cluj
7.	AR NR. 58/04.10.2007.	MĂSURAREA PULSAŢIILOR DE PRESIUNE ÎN CONUL TUBULUI DE ASPIRAŢIE, ÎN REGIMURI DE FUNCŢIONARE ALE TURBINEI DE LA CHE TURNU RUENI	S.C Hidroelectrica S.A. Sucursala Caransebeş

8.	AR NR. 423/13.06.2007	SIMULAREA ŞI ANALIZA CURGERII 3D PRIN ROTORUL RELAŢIONIST DE MARE CAPACITATE	S.C. TehnoVil-Erudit, Ramnicu Valcea
9.	AR NR. 9875/30.11.2007	STUDII PRIVIND ANALIZA NUMERICĂ A CURGERII ÎN TRASEUL HIDRAULIC AL CHF MUNTENI CE URMĂREŞTE DETERMINAREA ÎNCĂRCĂRII PE PALETELE ROTORICE ÎN PUNCTELE DE FUNCŢIONARE ÎN CARE TURBINA OPEREAZĂ CEL MAI FRECVENT	S.C Hidroelectrica S.A. Sucursala Cluj
10.	UPT NR. 7380309/2007	STUDII PRIVIND COMPORTAREA ŞI EXPLOATAREA ECHIPAMENTELOR HIDROENERGETICE	S.C. Hidroelectrica S.A. Ramnicu --Valcea
11.	UPT 462/25.05.2006	NUMERICAL SIMULATION OF HEAT CONVECTION AND RADIATION FOR A DRYER HEATING SYSTEM IN DIFFERENT CONFIGURATIONS	S.C. ZOPPAS INDUSTRIES
12.	UPT NR. 380/20.12.2005	SIMULAREA NUMERICĂ A CURGERII APEI PRIN ROTORUL TURBINEI RETEHNOLOGIZATE DE LA CHE PORŢILE DE FIER I ŞI DETERMINAREA DISTRIBUŢIEI DE PRESIUNI PE PALETĂ	Centrul de Cercetări în Hidraulică, Automatizări şi Procese Termice, CCHAPT Reşiţa
13.	UPT NR.343/ 27.10.2005	ASPECTE ALE COMPORTĂRII PLASTICE ŞI ELASTICE ALE SOLURILOR ALCOXIDICE ÎN TIMPUL TRANZIŢIEI DE LA SOL LA GEL	Institutul de Chimie al Academiei Române – Filiala Timişoara
14.	UPT NR.325/ 27.09.2005	CONSULTANŢA ŞI EXPERTIZA TEHNICĂ PENTRU SIMULARE NUMERICĂ ŞI ANALIZA CURGERII CU TRANSFER TERMIC ÎN ECHIPAMENTE DE USCARE PET	S.C. ZOPPAS Industries Romania
15.	UPT NR. 320/19.09.2005	NUMERICAL SIMULATION OF FLOW WITH HEAT CONVECTION AND RADIATION FOR A DRYER HEATING SYSTEM	S.C. ZOPPAS Industries Romania
16.	UPT NR. 213/20.01.2005	ANALIZA NUMERICĂ ÎN AFARA PUNCTULUI OPTIM DE FUNCŢIONARE A TURBINEI FRANCIS RECONT $n_s^{kW}=285$.	Recont S.A.
17.	UPT 212/20.01.2005	ANALIZA SOLUŢIEI TEHNICE EXISTENTĂ PENTRU MOTORUL ELECTRIC DE CURENT CONTINUU TIP C990/440-6-2 DE 1600 KW, 750 V, 1000 RPM CU EVALUAREA SOLICITĂRILOR TERMO-MECANICE DIN COLLECTOR RESPECTIVE AL FUNCŢIONĂRII SISTEMULUI DE VENTILAŢIE ŞI RĂCIRE.	U.C.M. Reşiţa S.A.
18.	AR NR. 164-12.02/ 05.08.2004	DETERMINAREA DEBITULUI TURBINAT PRIN TRASEUL HIDRAULIC AL HIDROAGREGATELOR DE LA CHE GURA LOTRULUI, TURNU ŞI DĂIEŞTI	Hidroelectrica S.A., Sucursala Rm. Vâlcea

19.	UPT NR. 76/19.05.2004	DETERMINAREA CARACTERISTICILOR REALE DE FUNCŢIONARE ALE HIDRO-AGREGATELOR DE LA STAŢIILE DE POMPARE PETRIMANU, JIDOAIA ŞI LOTRU AVAL	Hidroelectrica S.A., Sucursala Rm. Vâlcea
20.	AR NR. 90-12.02/05.05.2004	STABILIREA POZIŢIEI PALETELOR LA STATORUL TURBINEI HIDRO-AGREGATULUI ZĂVIDENI ÎN OPTIMIZĂRII CURGERII APEI PRIN ACESTA	Hidroelectrica S.A., Sucursala Rm. Vâlcea
21.	UPT NR. 165/27.10.2004	DETERMINĂRI MAGNETICE ŞI REOLOGICE	Institutul de Chimie al Academiei Române – Filiala Timişoara
22.	UPT NR. 164/27.10.2004	DETERMINĂRI REOLOGICE	Institutul de Chimie al Academiei Române – Filiala Timişoara
23.	UPT NR. 155/29.09.2004	SIMULAREA NUMERICĂ ŞI ANALIZA FENOMENULUI CURGERII CU TRANSFER TERMIC PRIN CONVECŢIE ŞI RADIAŢIE PENTRU REZISTENŢA ELECTRICĂ A MAŞINII DE SPĂLAT	ZOPPAS Industries Romania
24.	UPT NR. 54/16.04.2004	ANALIZA CFD ÎN PUNCTUAL OPTIM DE FUNCŢIONARE A TURBINEI FRANCIS CU RAPIDITATE $n_s^{kW}=285$.	Recont S.A.
25.	UPT NR. 44/30.03.2004	SIMULAREA NUMERICĂ ŞI ANALIZA FENOMENULUI CURGERII 3D CU RADIAŢIE ŞI CONVECŢIE NATURALĂ PENTRU A REZISTENŢĂ ELECTRICĂ DATĂ	ZOPPAS Industries Romania
26.	UPT NR. 10/21.01.2004	ANALIZA CURGERII ŞI OPTIMIZAREA RĂCIRII ÎN CIRCUITUL INTERIOR DE VENTILAŢIE AL MOTORULUI ASINCRON CU ROTORUL ÎN SCURT-CIRCUIT TIP TIS 1350/430-6 DE 420 KW, 690 V, 215-430 RPM.	U.C.M. Reşiţa S.A.
27.	UPT NR. 1228/ 16.12.2003	SIMULAREA NUMERICĂ ŞI ANALIZA FENOMENULUI CURGERII 3D CU CONVECŢIE NATURALĂ PRIN CUTIA TERMOSTATULUI CE ECHIPEAZĂ RADIATOARELE ELECTRICE	ZOPPAS Industries Romania
28.	UPT NR. 1221/ 13.11.2003	ASPECTE ALE COMPORTĂRII REOLOGICE ALE GELURILOR POLIMERICE	Institutul de Chimie al Academiei Române – Filiala Timişoara
29.	UPT NR. 1204/ 23.10.2003	SIMULAREA NUMERICĂ ŞI ANALIZA FENOMENULUI CURGERII COMPRESIBILE TURBULENTE PENTRU VARIANTA 2D AXIAL-SIMETRICĂ CU SCHIMB DE CĂLDURĂ PENTRU STICLELE TIP PET, AVÂND TIJA DE DISTRIBUŢIE A AERULUI DE RĂCIRE DE Ø12MM.	ZOPPAS Industries Romania
30.	AR NR. 23-77.03-146/	ANALIZA COMPARATIVĂ A DOUĂ POZIŢII ALE	Hidroelectrica S.A.,

	09.04.2003	COLOANELOR STATORICE ŞI INFLUENŢA ASUPRA CÂMPULUI HIDRODINAMIC DIN ROTORUL TURBINEI KAPLAN DE LA CHE DRĂGĂŞANI	Sucursala Rm. Vâlcea
31.	UPT NR. 1182/ 20.10.2003	DETERMINAREA PROPRIETĂŢILOR REOLOGICE ALE ŢIŢEIURILOR ADITIVATE CU POLIMERI	U.P.B., Centrul de Cercetări Energetice şi de Protecţia Mediului
32.	UPT NR. 1164/ 07.08.2003	SIMULAREA NUMERICĂ ŞI ANALIZA FENOMENULUI CURGERII TURBULENTE PENTRU VARIANTA 2D AXIAL-SIMETRICĂ CU SCHIMB DE CĂLDURĂ PENTRU STICLELE DE TIP PET	ZOPPAS Industries Romania
33.	UPT Nr. 991/04.11.2002	DETERMINAREA PROPRIETATILOR REOLOGICE DE CURGERE ALE FLUIDULUI DE FORAJ CU MICROBULE	I.C.P.T. Câmpina
34.	UPT Nr. 958/05.09.2002	NUMERICAL SIMULATION AND ANALYSIS OF THE POLYETHYLENE TEREPHTALATE FLOW IN 72 CAVITIES HOT-RUNNER CONFIGURATION TAKING INTO ACCOUNT THE VARIABLE PET VISCOSITY	ZOPPAS Industries – Romania
35.	UPT Nr. 942/17.07.2002	NUMERICAL SIMULATION AND ANALYSIS OF THE POLYETHYLENE TEREPHTALATE FLOW IN NEW HOT RUNNER CONFIGURATION TAKING INTO ACCOUNT THE VARIABLE PET VISCOSITY	ZOPPAS Industries – Romania
36.	UPT Nr. 750/24.10.2001	STUDII NUMERICE ALE PROCEDEELOR RESTAURATIVE DIRECTE ŞI INDIRECTE ALE APARATULUI DENTO-MAXILAR CU MATERIALE HETEROGENE	Universitatea de Medicină şi Farmacie Timişoara
37.	UPT Nr. 439/1999	MĂSURAREA VITEZEI DE CIRCULAŢIE A AERULUI INDUSĂ DE INSTALAŢIA DE CLIMATIZARE	SOLECTRON Timişoara
38.	UPT Nr. 91/1991	SOLUŢII CONSTRUCTIVE PENTRU MULTIPLICATORUL DE PRESIUNE APARŢINAND INSTALAŢIEI DE TĂIERE CU JET DE LICHID	I.C.P.M. Deva
39.	UPT nr. 77/1990	CERCETĂRI TEORETICE ŞI FUNDAMENTAREA CERCETĂRILOR DE LABORATOR, PRIVIND TĂIEREA CU JET DE LICHID	I.C.I.T.P.L.C.I.M. Deva