"LUCIAN BLAGA" UNIVERSITY OF SIBIU
&
"POLITEHNICA" UNIVERSITY OF BUCHAREST
CENTER FOR TECHNOLOGICAL ELECTRONICS AND INTERCONNECTION TECHNIQUES

INTERCONNECTION TECHNIQUES IN ELECTRONICS

International Student Professional Contest

The 21st Edition, Sibiu, 25-28 April 2012

TIE

DESIGN OF ELECTRONIC
MODULES & ASSEMBLIES

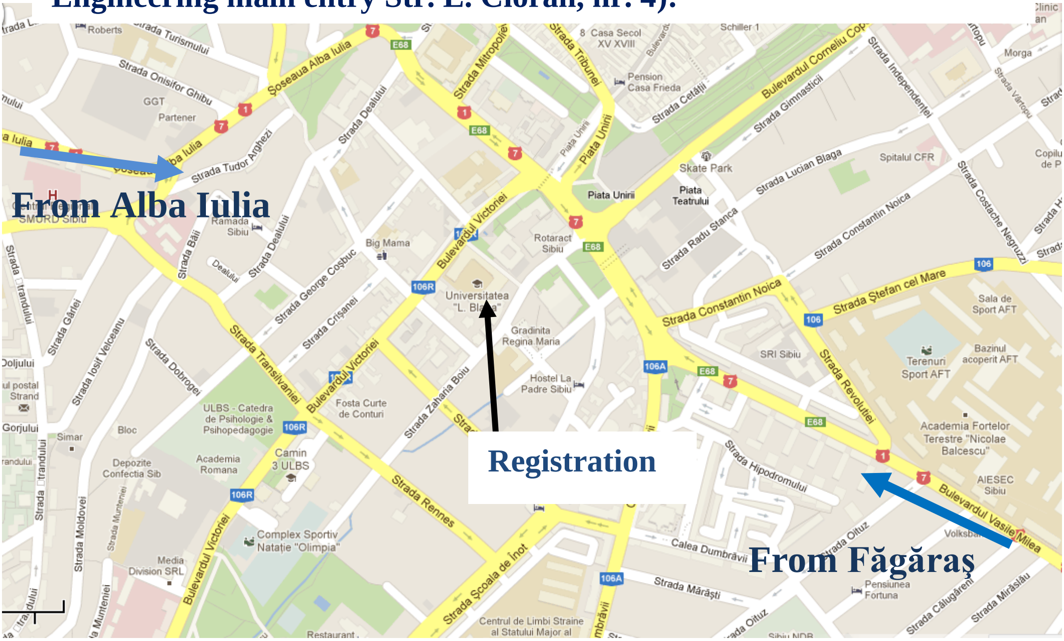
www.tie.ro

The 21st
Edition

Advance Program

Promoted by IEEE CPMT HU&RO Joint Chapter

How to get to the registration point (Main Hall - Faculty of Engineering main entry Str. E. Cioran, nr. 4):



How to get to the registration (detail):

Advanced Program

Editors

Prof. Paul SVASTA, Ph. D.
Eng. Cristina MARGHESCU, Ph. D.

DESIGN OF ELECTRONIC MODULES & ASSEMBLIES

www.tie.ro

Student professional contest

The 21st Edition, Sibiu, April 25 - 28, 2012

Organized by:

“LUCIAN BLAGA” UNIVERSITY OF SIBIU

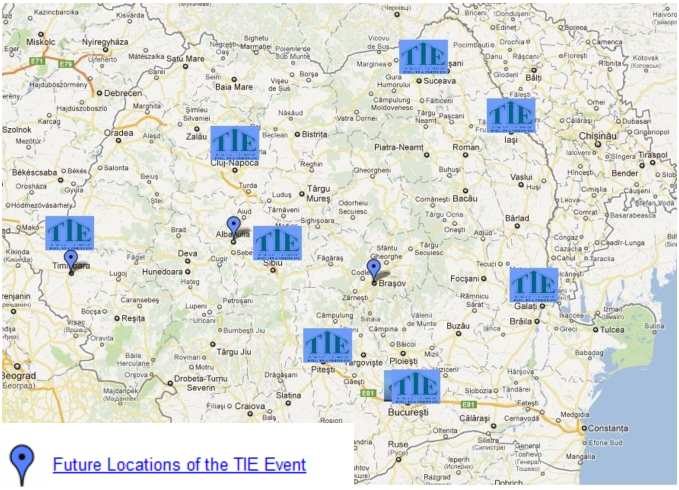
“POLITEHNICA” UNIVERSITY OF BUCHAREST

Center for Technological Electronics and Interconnection Techniques
http://www.cetti.ro

and supported by

EPETRUN (Electronic Packaging Education Training and research Network)

TIE Past Editions



1992-2002	“Politehnica” University of Bucharest
2003	“Politehnica” University of Timişoara
2004	Technical University of Cluj-Napoca
2005	“Gh. Asachi” Technical University, Iaşi
2006	“Politehnica” University of Bucharest
2007	“Ştefan cel Mare” University of Suceava
2008	University of Piteşti
2009	University of “Dunărea de Jos” Galaţi
2010	Technical University of Cluj-Napoca
2011	“Politehnica” University of Bucharest

Dear participants and guests,

On behalf of the TIE event organizers, I welcome all of you to the beautiful city of Sibiu, the European capital of culture in 2007. The citadel of Sibiu was permanently motivated by the desire to see its residents improve their knowledge, as knowledge has always meant power. Last, but not least, I also welcome you to "Lucian Blaga" University which is a center of academic excellence and social renewal.
I would also like to wish you a very pleasant and fruitful stay!

"After we have realized that life has no sense, there is nothing else we can do but give it a sense" told us the well known philosopher Lucian Blaga.

We should follow the thoughts of Lucian Blaga!

Prof. **Ioan P. Mihu** Ph. D.,
"Lucian Blaga" University of Sibiu, Romania

Welcome to the 21st Edition of the Student Professional Contest TIE – Design of Electronic Modules & Assemblies

The traditional event on Interconnection Techniques in Electronics, spanning over two decades, invites academia and industry alike to its 21st edition. The first editions started at the “Politehnica” University of Bucharest, Faculty of Electronics and Telecommunications, Electronics Technology and Reliability Department. Each year, more and more universities joined the TIE challenge of testing their students’ skills in the area of electronic packaging. Today, TIE is an established event for the Central and Eastern Europe and also for the IEEE-CPMT Society, Hu & Ro Joint Chapter. Based on the solid concept of training engineering students in accordance to the actual requirements of the industry, TIE answered a long-awaited issue of the purely theoretical approach to engineering, taught in universities. Adhering to this concept and to the aim of TIE, the number of participants increased each year, currently more than 10 universities being involved in this event. The use of English as the official TIE language paved the way for this event to grow truly international. This came naturally, given the excellent partnership with the IEEE-CPMT Society, Hu & Ro Joint Chapter and it created an open window to Europe and even worldwide. TIE offers a good opportunity for students to compete, to evaluate themselves and stand out in view of their career as proficient engineers. In fact, many were the cases when the good results obtained at TIE represented a great asset for starting and leading a promising career in engineering. Participants with good results are granted the professional designer status in the field of PCB. This recognition is today certified by the decision of the TIE Industrial Advisor Committee (IAC), composed by high level professionals coming from the industry. It is a valuable reward, obtained through a fair-play and challenging competition against the best PCB future designers of each generation. Certainly, the path to

the present edition was long and laborious, but with the involvement of more and more participating universities, each new TIE Event meant a step forward. TIE is a result of this joint involvement, a true "property logo" of technical academia involved in promoting electronic packaging issues in the education and research of Central and Eastern Europe. All the universities who joined "Politehnica" University of Bucharest in this endeavor since 1992, have helped shape TIE in the form it takes today and left an imprint on all future editions. Indeed, TIE has become self-standing and no longer represents a single academic entity. Each year TIE extends and draws more attention of industry and academia, at both national as well as international level. The fruitful partnership between the universities participating at TIE lead to the development of a true academic network in the area of electronic packaging: EPETRUN (Electronic Packaging Education Training and Research University Network).
To round up, one must attempt to envision the enormous contribution of the numerous volunteers, teaching staff from partner universities, involved in the TIE Steering Committee, TIE Technical Committee, together with the Advertising Committee. It is very difficult to imagine the current level reached by TIE, without taking into account this valuable input of all participants. For their effort and enthusiasm invested in TIE, I am deeply grateful and wish to kindly thank all.

I would like to thank "Lucian Blaga" University of Sibiu for the excellent conditions offered in organizing the 21st edition.

May all participants to TIE 2012 have a successful attendance!

Bucharest April, 20th 2012

Professor Paul M. Svasta, Ph.D., D.H.C.
Head of Center and TIE Initiator
Center for Technological Electronics and
Interconnection Techniques
"Politehnica" University of Bucharest

TIE – a Real Experience in Engineering

The Computer and Electric Engineering Department of the University "Lucian Blaga" are the organizers of the 21st edition of the TIE student contest in Sibiu, between 26-27April. The manifestation is already well established not only in Romania, but also in the professional European and global environment, being focused on electronic packaging.

The unfolding of the latest editions has demonstrated that TIE is a manifestation through which, during the two days dedicated, the students go through an interesting real life engineering experience. In support of this statement, I bring the following arguments, arguments that have the premise to fulfill during the current edition.

For a good practice engineering must be thought

The training of the contestants has as its foundation an annually updated bibliography in sync with the newest approaches in the field and consecrated specifications through specific standards. The proposed subjects in the recent years at the local phases as well as in the finals have considerably surpassed only evaluating simple skills in working with CAD instruments and accentuated more the capability to propose technical solutions.

Moreover, during the first day of the finals, the students have the opportunity to take part in workshops in which well-established personalities from the field of electronic packaging bring in front of the audience subjects that are of a very strict actuality. Going through the topics presented in previous years and taking a look at those proposed this year in Sibiu, we can realize that the TIE event is a challenge to open new horizons in the field of electronic packaging.

A good engineer has to compete against itself

The proposed subjects at the finals in the recent years represented in the first place a challenge for the students to compete with themselves in finding solutions, to implement and then defend them. I have seen competitors that have continued solving the problems even after the competition has finished in order to prove to themselves that they were capable in finding solutions to the encountered problems.

For good engineering – good technical communication

The competing student, a future engineer, has to have the ability to present the obtained results. There are two moments in the unfolding of the event that these abilities come into play. The first is when the subjects of the previous edition are presented by former participants in front of the new contestants, the debates resulting being extremely fruitful. The second opportunity is when each competitor has to present and defend its project not only in front of the evaluating committee, but also in front of an open audience, formedfrom other competitors and representatives of firms involved in the field.

With the firm belief that the current edition will represent a special opportunity for each participating student through which they can connect with real engineering practices, I wish good luck to all.

Professor Dan Pitică, Ph.D.
Head of Department: Prof. Dan PITICA, PhD.
Department of Applied Electronics, and
Chair of IEEE-CPMT Hu&Ro Chapter

Electronic Technology Workshop at TIE

The innovative **Electronics Interconnection Technology Design (TIE)** contest provides a unique opportunity for the best PCB CAD designer students from the area of the Central European Hu&Ro IEEE-CPMT Chapter get together to match their skills against each other, as well as, with the rapidly developing computer aided design techniques. Every year the event comprises a day of workshops and another day of hands-on real-time competition in the organization of CETTI of Politehnica University of Bucharest, the IEEE-CPMT Romanian Student Branch and the Hu&Ro Chapters, as well as, lots of sponsors who are interested in skilled designers for the European industry.

The 21st TIE of 2012, organized in Sibiu is the forth opportunity for a Hungarian group to attend this unique event. In the first occasion, the 28th TIE 2009 was organized in Galati, Romania, where – in addition to the interesting workshops and the exciting competition – we enjoyed the warm hospitality of the professors and students of the Universitatea Dunărea de Jos, as well as, the nice panorama of the city along the bank of the unthinkably wide Danube. In 2010, it was our pleasure to visit the beautiful cultural capital of Transylvania, where our old friends, the team of Professor Dan Pitica from the Technical University of Cluj-Napoca hosted the competition. In 2011 the jubilee 20th anniversary competition of TIE was held in Bucharest, where we had the opportunity to meet our best friends and colleagues from CETTI of Politehnica University of Bucharest, headed by Professor Paul Svasta, the ever enthusiastic researcher and educator in the field of electronics design and packaging technology.

This year we are looking forward to participating in an exceptionally interesting workshop and contest in Sibiu, hosted by Professor Dr. Ioan Mihu from Universitatea Lucian Blaga. As in every year, the workshop includes lectures and discussions by professionals with the intention to give students insight into the practical life and activities of the outside world. Not only the competitors but other industrial engineers, scientists and professors attend the workshops.

The Department of Electronics Technology (ETT) has been amongst the leading research and teaching institutions in Hungary for decades in the areas of electronics materials, components and technologies, circuit module substrates and parts, electronics assembling technologies, electronics production management, quality and reliability, production informatics and enterprise information systems. Throughout it's more than 45 years history the Department has participated in Hungarian and international research cooperation and has led the efforts in developing R&D relationships between university and industrial production. In the education field, ETT has always devoted its energy to the teaching and development of basic technologies used in manufacturing of electronic components, parts, devices and systems. At the same time, it is a basic principle of the Department to include the ever changing highest level technologies, quality management and production informatics into its curriculum.

According to its profile, the Department contributes to the this year Workshop of „Up to Date Issues in Electronic Assembling Technologies" by two presentations, namely by the "Analysis of the Temperature, the Pressure and the Vapour Density in a VPS Chamber to Optimize the Conditions for Soldering" and the "Application of Safety Bonding Methods to Gold Wire Bonding to Improve Yield and Reliability".

We are looking forward to meeting you in Sibiu.

On behalf of all members and students of BME-ETT,

Zsolt Illyefalvi-Vitéz
dr.techn (BME), CSc/PhD (MTA/BME),
DHC (UPB)
E-mail: illye@ett.bme.hu

TIE the Lasting Contest for European Innovation

At its 21st edition, the student contest for Interconnection Techniques for Electronics is now a reference annual event at European level. The majority of the Romanian technical universities, training interconnection techniques in electronics for their students, and foreign universities from European countries, are joining to define by this contest the level of knowledge and reference competences in accordance with the recent technological developments of electronics interconnections. Foreign big multinationals and domestic SMEs are joining too at this event for its support, but especially to identify among the contesters their future human resources.

TIE enjoy not only an international reputation by its very high level testing standards of the knowledge and professional skills of the students, but also an extraordinary trust of the employers which regularly select its future professionals among the students participating to this contest. Multinationals like Continental, Siemens, Microchip, Kunke, Solectron etc., and domestic SMEs, are looking with great interest to this contest as main source to support their competitiveness by first class human resources. In the same time the contest is highly trusted also by the students, because the participation and attesting diplomas of their competences are assuring not only a career start, but the trust base for the development of a successful professional career. After graduation, these students proved their competences and competitiveness not only in Romania but also successfully abroad, and those which gained self confidence in their capabilities, founded their own companies and became new employers which are rejoining the contest by the clear goal to benefit from the competences of the new graduating generations.

TIE enjoys reputation and trust because it's an open contest. All interested universities and their students from Romania and abroad are welcomed. Any type of company, not matter of size or origin, are welcomed to support the event and to solicit reference parameters of the contest, according to their own needs. During the year, between two contests, all traditional and new partners are intensively cooperating, enabling continuously a vibrant innovative environment. Benefiting from the best practice sharing between universities and companies, almost all faculties involved in the TIE contest developed own research and prototyping facilities to support technology transfer, technology base and innovation among the interested stakeholders, creating new knowledge, skills and new innovative products, services and processes. This continuous activity involves all time students to support their practical and professional skills, to be able to participate successfully at the TIE contest, to rise year by year the testing standards and, last but not least, to enable the high level confidence and trust of all type of employers in the university competences and readiness to be support of their actual and future competitiveness challenges. The entire TIE environment, which includes the SIITME conference and other national and international events proved to be not only a seed bed for professional competences and skills, but also an incubator for innovation and new companies, many of them founded through spin off or spin out of these vibrant environment.

But TIE is not only a reference for the students and teaching staff to verify their competences, knowledge and competitiveness, and is not only a place for the companies to search their future human resources according to their needs. TIE is much more; it's a professional community which joins competences, professional skills, enthusiasm, and what's most important, an unprecedented trust to each other which consolidate extraordinary friendships and lasting professional co operations. TIE is an event which responds to the ultimate direct and concrete needs of the market. **But TIE is much more; it's a school and a unique professional emulation environment**.

Alexandru Borcea
President of ARIES
(Romanian Association for Electronic
Industry and Software)

Recognition of Competence

"Lucian Blaga" University of Sibiu
&
"Politehnica" University of Bucharest
Center for Technological Electronics and Interconnection Techniques

DIPLOMA

Certificate of Competence
awarded to

……………………………………………………………………

is certified in PCB Design as recognition of her/his high level of knowledge in the field of CAD for development of electronic modules and assemblies

The International Student Contest
"Interconnection Techniques in Electronics, TIE2012"
21th edition

DESIGN OF ELECTRONIC MODULES & ASSEMBLIES

supported by

TIE Steering Committee Chair,
Prof. Dr.H.C Paul Svasta, Ph.D.

TIE Industrial Advisor Committee Chair,
Dipl. Ing. Cosmin Moisă

IEEE CPMT Hu&Ro Joint Chapter Chair,
Prof. Dan Pitică, Ph.D.

Romanian Association for Electronic and Software Industry (ARIES)
Alexandru Borcea, MBA

Sibiu, România, 25-28 April 2012

TIE 2012 Certificate of Competence

The „PCB Designer" certificate is awarded by the IAC (Industrial Advisor Committee) to selected participants as recognition of the high level of knowledge in the field of CAD for development of electronic modules and assemblies. The certificate is offer under "umbrella" of Romanian Association for Electronic and Software Industry, ARIES.

The TIE Industrial Advisor Committee Chair Opinion

“TIE offers the students the chance to get in touch with one of the important jobs in the electronics industry, often unfairly ignored: the layout engineer job. Increased integration and frequency in electronic PCB turn a physical support into a critical component in the functioning of electronic and telecommunications equipment. The layout engineer becomes the designer for the new electronic component. I would like that in the future the quick development time that comes with using CAD programs is counterbalanced by the knowledge of electronic highlighting and addressing areas of high-speed design”.

These are the words of Eng. Alexandru Trifan, a former TIE winner and a colleague of mine, and they represent in general the opinion of our department at Continental. We currently benefit from the past twenty editions that have prepared over twenty five engineers and we also expect this from the future editions. This is one of the major reasons for Continental’s involvement in the contest; but thus comes also the duty of active involvement. With our membership in the Industrial Advisor Committee (IAC), we can actively prepare together with the universities the future. Last year the criteria used by IAC for selecting the “ready for industry” participants had the following two basis: one objective, using the evaluation form of TIE and measuring the processing of the entire project data, including completion of functionality and production files (varies with complexity of the subject proposed, score limit of each year and the quality of work) and one subjective, by observing the competitors engineering approaches during the competition (with the support of IAC members). As our team leader for the layout department, Eng. Mihai Petric, IAC 2009, mentioned: “The direction is good; what I expect is the encouragement of engineering, focusing on analysis and syntheses, analytic calculation, design management for hazardous factors (i.e. Thermal, Electromagnetic compatibility, Humidity, Signal and Power integrity)"

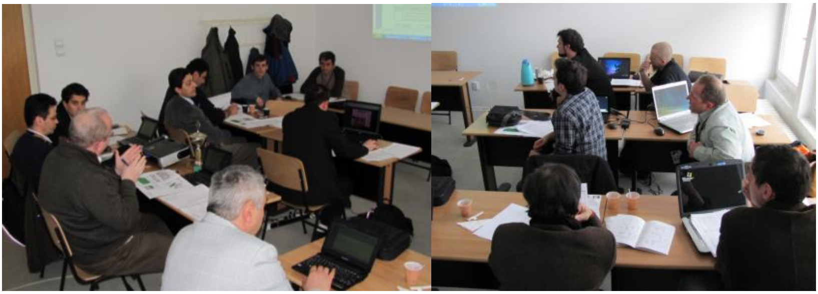
Regarding the local stages of TIE, in Timisoara the evolution of all the participants has been already traced and, except for the ones who qualified and are in training for the national stage, all of them were invited for an interview at the company. The students involved in TIE are those that "stepped forward", they are those who want to build on the passion for the field in which we operate. A good example here is our fresh colleague, Dusan Gruici, who passed the threshold and activates already in the role of Electronics Engineer.

Right now, the universities bare mainly by themselves the preparation of the students, but for the future, there is a strong need for getting more and more the involvement of the industry in the local stages, thus encouraging also the students, hired or not, to challenge themselves, but also to challenge the universities and local industries in order to create local know-how communities and bring to the national stages the best participants. As a working model, in the Timisoara stage, there is a strong coordination done from the university side by Lect. Dr. Eng. Marius Rangu and from Continental side, Eng. Cătălin Negrea. I know that also Sibiu is sustaining a similar program and other companies will have to do the same in order to benefit from the outcome of the TIE environment.

The environment of the national contest offers the right place for getting the universities, professors and students together with the industry. Also, there is support provided by the representatives of CAD platforms. This represents the seedling for perceiving trends in Electronic Packaging CAD integration, since it covers all the needed parties.

With high hopes for the future of TIE I wish all the candidates success for the Sibiu 21st edition!

Cosmin Moisă
Group Leader in Electrical Engineering,
Continental Automotive
and TIE Industrial Advisor Committee Chair



The TIE Technical Committee preparing the contest subjects

The First Edition of the Third Decade of TIE

It is difficult for me, as a person so deeply involved in TIE and being present at all the past editions as organizer and head of the technical committee, to speak without any "polarisation" about the TIE event. It was born due to the high energy and broad vision of Prof. Paul Svasta and was developed firstly by CETTI (in the first decade of TIE) and afterwards by all the universities involved in this spectacular university event (in the second decade).

After 20 editions, I can declare, without the risk of wrong, that TIE is now a big family, containing students, teaching staffs including professors and specialists from practically all the Romanian universities and being strongly connected to the electronics industry. The opening to Europe from 2009, with the first participation of an international team (from Budapest University of Technology and Economics, Hungary) has enlarged the TIE network, transforming the event into an international one, with a positive impact to other European universities, which have declared the solid intention to participate in the future editions.

This year, in Sibiu, will take place the first edition… of the third decade, an important moment in the life of TIE, which has to represent the background for the next 10 editions and for the future development of the student contest and TIE network.

At the end, I really hope that TIE has reached the “critical mass”, being a self-sustaining contest and event without the support of a person or a group and having the power to attract more and more students and universities interesting in the computer aided design of printed circuit boards and electronic modules. The new sparkling students who participate year by year for the first time have encouraged me to believe in this.

I wish to all participants to have a lot of success and, why not, to have fun and nice time in Sibiu, at TIE 2012!

Norocel Codreanu
Associate Professor, Ph.D.
POLITEHNICA University of Bucharest
Center for Technological Electronics and
Interconnection Techniques (UPB-CETTI),
TIE Technical Committee Chair

TIE Past Editions Winners

Year	Name	University
2011	Precup Călin	“Politehnica” University of Timişoara
2010	Dungă Tudor Dan	“Politehnica” University of Timişoara
2009	Răducanu Bogdan	“Politehnica” University of Bucharest
2008	Oşan Adrian	“Politehnica” University of Timişoara
2007	Tamaş Cosmin Andrei	“Politehnica” University of Bucharest
2006	Moscalu Dragoş	“Gh.Asachi” Technical University Iaşi
2005	Andreiciuc Adrian	“Politehnica” University of Timişoara
2004	Berceanu Cristian	“Politehnica” University of Timişoara
2003	Munteanu George	“Politehnica” University of Bucharest
2002	Rangu Marius	“Politehnica” University of Timişoara
2001	Toma Corneliu	“Politehnica” University of Bucharest
2000	Vlad Andrei	“Politehnica” University of Bucharest
1999	Savu Mihai	“Politehnica” University of Bucharest
1998	Alexandrescu Dan	“Politehnica” University of Bucharest
1997	Gavrilaş Cristian	“Politehnica” University of Bucharest
1996	Vintilă Mihai	“Politehnica” University of Bucharest
1995	Ştefan Marius Sorin	“Politehnica” University of Bucharest
1994	Bucioc Mihai	“Politehnica” University of Bucharest
1993	Teodorescu Tudor	“Politehnica” University of Bucharest
1992	Teodorescu Tudor	“Politehnica” University of Bucharest

Event Committees 2012

Steering Committee

Chairman:

Prof. Paul Svasta, Ph.D., “Politehnica” University of Bucharest, Romania

Co-Chairman:

Prof. Dan Pitică, Ph.D., Technical University of Cluj-Napoca, Romania

Members:

Prof. Dorel Aiordăchioaie, Ph.D., University of “Dunărea de Jos” Galaţi, Romania
Alexandru Borcea, MBA, Romanian Association for Electronic and Software Industry
Assoc. Prof. Attila Buchman, Ph.D., University of Baia Mare, Romania
Prof. Vlad Cehan, , Ph.D., “Gh. Asachi” Technical University, Iaşi, Romania
Prof. Laurenţiu Frângu, Ph.D., University of “Dunărea de Jos” Galaţi, Romania
Rosemari Fuica, Ph.D. Association for Promoting Electronic Technology, Romania
Prof. Aurel Gontean, Ph.D., “Politehnica” University of Timişoara, Romania
Prof. Ioan Liţă, Ph.D., University of Piteşti, Romania
Prof. Ioan P. Mihu, Ph.D., “Lucian Blaga” University of Sibiu, Romania
Assoc. Prof. Gheorghe Pană, Ph.D., “Transilvania“ University of Braşov, Romania
Prof. Valentin Popa, Ph.D., “Ştefan cel Mare” University of Suceava, Romania
Prof. Dorina Purcaru, University of Craiova, Romania
Prof. Paul Şchiopu, Ph.D. “Politehnica” University of Bucharest, Romania
Assoc. Prof. Adrian Tulbure, Ph.D., “1 Decembrie 1918” University of Alba Iulia, Romania
Gabriel Vlăduţ, Ph.D., Romanian Association for Technological Transfer and Innovation

Technical Committee

Chairman:

Assoc. Prof. Norocel Codreanu, Ph.D., “Politehnica” University of Bucharest, Romania

Co-Chairman:

Assist. Eng. Emanoil Toma, “Lucian Blaga” University of Sibiu, Romania

Members:

Eng. Constantin Barabaşa, Ph.D., “Gh. Asachi” Technical University of Iaşi, Romania

Eng. Marius Carp, Ph.D., “Transilvania” University of Braşov, Romania

Assoc. Prof. Emilian Ceuca, Ph.D., “1 Decembrie 1918” University of Alba Iulia, Romania

Assist. Eng. Bogdan Cioc, University of Piteşti, Romania

Assoc. Prof. Eugen Coca, Ph.D., “Ştefan cel Mare” University of Suceava, Romania

Assist. Eng. Cristinel Crăciun, University of “Dunărea de Jos” Galaţi, Romania

Assist. Eng. Silviu Epure, University of “Dunărea de Jos” Galaţi, Romania

Assoc. Prof. Tecla Goraş, Ph.D., “Gh. Asachi” Technical University of Iaşi, Romania

Assist. Eng. Claudiu Lung, University of Baia Mare, Romania

Lect. Eng. Alin Mazăre, Ph.D., University of Piteşti, Romania

Eng. Cătălin Negrea, “Politehnica” University of Timişoara, Romania

Lect. Maximilian Nicolae, Ph.D, “Politehnica” University of Bucharest, Romania

Lect. Eng. Marius Rangu, Ph.D., “Politehnica” University of Timişoara, Romania

Assist. Eng. Liviu Viman, Ph.D., Technical University of Cluj-Napoca, Romania

European Consultants:

Prof. Zsolt Illyefalvi-Vitez, Ph.D, University of Technology and Economics, Budapest, Hungary

Prof. Pavel Mach, Ph.D., Czech Technical University in Prague, Czech Republic

Prof. Alena Pietrikova, Ph.D. Technological University of Kosice, Slovak Republic

Prof. Jerzy Potencki Ph.D., Rzeszow University of Technology, Poland

Prof. Nihal Sinnadurai, Ph.D., IMAPS Europe, ELC President

Habil Heinz Wohlrabe, Ph.D., Technical University of Dresden

Industrial Advisor Committee

Chairman:

Cosmin Moisa, Continental Automotive, Timişoara

Co- Chairman:

Assoc. Prof. Gabriel Chindriş, Ph.D., Technical University of Cluj-Napoca, Romania

Members:

Cristian Codreanu, Kromberg & Schubert Romania Me SRL, Sibiu

Cosmin Frecia, Kuhnke Production Romania SRL, Romania

Jan Galcescu, Epsicom SRL, Craiova

Florin Hurgoi, National Instruments Romania, Cluj-Napoca

Zsolt Mathe, Tehnologistic SRL, Cluj-Napoca

Gabriel Neagu, Electronica Azi, Bucharest

Mugurel Niculescu, Sytron Technologies Overseas, Bucharest

Flaviu Nistor, Continental Automotive System SRL, Sibiu

Mihai Petculescu, Maquardt Schaltsystems SCS, Sibiu

Emil Popa, Wenglor Electronic SRL, Sibiu

Mariana Poparlan, Simea, Sibiu

Mihai Savu, Samway, Bucharest

Emilian Stoica, Simea, Sibiu

Advertising Committee

Chairman:

Marian Vladescu, “Politehnica” University of Bucureşti

Co-Chairman:

Alin Mazăre, University of Pitesti

Members:

Andreea Bonea, “Politehnica” University of Bucureşti

George Craciunas, Technical University “Gh. Asachi” of Iaşi

Bianca Deordica, „Transilvania” University of Braşov

Anisia Florescu, “Dunarea de Jos” Galati University

Rajmond Jano, Technical University of Cluj-Napoca

Cristina Marghescu, “Politehnica” University of Bucureşti

Adrian Petrariu, “Stefan cel Mare” University of Suceava

Silvana Popescu, Politehnica University of Timisoara

Student Committee

Chairman:

Andreea Bonea, IEEE-CPMT “Politehnica” University of Bucharest SBC Chair

Members:

Bogdan Anton

Andreea Brodeală

Cristina Marghescu

Bogdan Mihăilescu

Mihaela Pantazică

Local Organizing Committee

Chairman:

Prof. Liviu Rosca Ph.D., Dean of Engineering Faculty, “Lucian Blaga” University of Sibiu, Romania

Co-Chairman:

Prof. Daniel Volovici Ph.D., Head of Computer and Electric Engineering Department, “Lucian Blaga” University of Sibiu, Romania

Prof. Ioan P. Mihu Ph.D., “Lucian Blaga” University of Sibiu, Romania

Members:

Dorin Cismasiu Ph.D.

Tudor Dachin

Mariana Fleaca

Beriliu Ilie Ph.D.

Ciprian Ionescu, Ph.D.

Delia Lepădatu

Mariana Pătuleanu

Ioan Plotog, Ph.D.

Florentina Răduţă

Adina Nica

TIE 2012 Program

April 26, 2012			
	"Students" Track	*"Steering Committee" Track*	*"Technical Committee" Track*
08:00-10:00			
10:00-12:00			**Technical meeting** **IM323 Room***
12:00-14:00		**Steering committee meeting** **IM301 Room***	
13:30- 14:45	**Registration of the participants** **Main Hall** **Faculty of Engineering main entry Str. E. Cioran, nr. 4**		**Advertising Committee meeting** **IM323 Room***
15:00-18:30	**International Workshop „UP TO DATE ISSUES IN ELECTRONIC ASSEMBLING TECHNOLOGIES"** **IE102 Amphitheatre***	**International Workshop „UP TO DATE ISSUES IN ELECTRONIC ASSEMBLING TECHNOLOGIES"** **IE102 Amphitheatre***	**Technical session 1** **IM323 Room***
18:30-19:45	**Student Technical Session** **Presentation of TIE 2011 subjects, IE102 Amphitheatre*** **Set-up and checking of contest computers and CAD environments, IE102 Amphitheatre***		
20:00-20:45	**Dinner Student Restaurant (cantina)**		
21:00-22:30		**Steering committee meeting,** **IE102 Amphitheatre***	**Technical session 2,** **IM 323 Room***

April 27, 2012			
07:00-07:30			**Technical preparation** **ULBS Library Council Hall**
07:30-08:00	**Contest preliminary activities ULBS Library Main Room, IIIrd floor**		

April 27, 2012- continued-			
08:00-12:00	**CONTEST** **ULBS Library Main Room, IIIrd floor**		**Technical session 3** **ULBS Library Council Hall**
12:00-13:00	**Lunch ULBS Library Hall (basement)**		
13:00-18:00	**Assessment of the projects** **ULBS Library Main Room, IIIrd floor**		
18:00-18.30		**Steering committee meeting ,** **ULBS Library Council Hall**	
18.30-20.00	**TIE 2012 Awarding ceremony** **IE102 Amphitheatre***	**TIE 2012 Awarding ceremony** **IE102 Amphitheatre***	**TIE 2012 Awarding ceremony** **IE102 Amphitheatre***
20:00-22:00	**Gala dinner TIE 2012 Student Restaurant (cantina)**		

April 28, 2012	
07:30-08:30	**Breakfast**
09:00-12:00	**Ending session / Final remarks** **IE102 Amphitheatre***

***Str. Emil Cioran, Nr.4**

TIE Future Editions

2013 – “Transilvania” University of Braşov

2014 – “1 Decembrie 1918” University Alba Iulia

2015 - "Politehnica" University of Timişoara

We are looking forward to seeing you at the next TIE editions!

Workshop
„UP TO DATE ISSUES IN ELECTRONIC ASSEMBLING TECHNOLOGIES”
26 April 2012

13.30–14.45 *Registration*

14.45-15.00 **Welcome**
Prof. Ioan P Mihu, “Lucian Blaga” University of Sibiu,
Prof. Paul Svasta, Politehnica University of Bucharest

15.00-16.30 **First Session: Soldering Processes in Electronic Assembling**

Session chair: **Prof. Zsolt Illyefalvi-Vitéz**

15.00-15.30 **Leadless Components Rework Processes - A bottle Neck in Electronic Assembling**

Franz Leitenstern, Head of Sales, Martin GmbH - a Finetech company, Germany

15.30-16.00 **Enhancement of the Process Capability of Solder Paste Printing**
Heinz Wohlrabe, PhD, Dresden University of Technology, Germany

16.00-16.30 **Analysis of the temperature, the pressure and the vapour density in a VPS chamber to optimize the conditions for soldering**
Attila Géczy, Ph.D, Electronic Technology Department, Budapest University of Technology, Hungary

16.30-17.00 *Networking Break*

17.00-18.30	**Second Session: Hetero-technologies in Electronic Packaging** **Session chair Prof. Dan Pitica, Technical University of Cluj Napoca**
17.00-17.30	**Application of Safety Bonding Methods to Gold Wire Bonding to Improve Yield and Reliability** **Prof. Zsolt Illyefalvi-Vitéz, Electronic Technology Department, Budapest University of Technology**
17.30-18.00	**Organic Electronics - Materials, Devices and Technologies,** **Norocel Dragos Codreanu, Ph.D., CETTI, Politehnica University of Bucharest**
18.00-18.30	**Cost Optimizing vs. Reliability in EMS Assembling Activities** **Ioan Plotog, Ph.D., CETTI, Politehnica University of Bucharest**

TIE 2012 Workshop Summary

First Session: Soldering Processes in Electronic Assembling

Session Chair: Prof. Zsolt Illyefalvi-Vitéz

1. Leadless Components Rework Processes – A bottle Neck in Electronic Assembling

Franz Leitenstern, Head of Sales, Martin GmbH

The presentations takes into consideration the most important topics in assembling and rework processes trying to complete the deficit about such information regarding non lead components, especially for QFN and LED components. It will be presented rework process and tooling for LED components. The presentation shows a complete rework procedure and each single process steps, information about the advantage of the Hybrid under heater, solder past handling and apply for non lead components in different ways (Squeegee/stencil, Dispenser, Transfer process).

2. Enhancement of the Process Capability of Solder Paste Printing

Heinz Wohlrabe, PhD, Dresden University of Technology, Germany

The solder paste printing is one important part of the manufacturing process. More than 50% of all defects of SMT-boards are caused by the printing process. Six-sigma-quality is one common important goal of manufacturing processes. Another criterions or such a quality are a defect rate of about 3, 4 DPM (defects per million) or a process capability Cpk>1,5. The printed solder paste volume, the printed area; the height and the deviations (x/y) are the most important quality characteristics, to evaluate the printing quality. The paper shows some practical experiments and the associated results, .to optimize the printing process.

3. Analysis of the temperature, the pressure and the vapour density in a VPS chamber to optimize the conditions for soldering

Attila Géczy, Ph.D, Electronic Technology Department, Budapest University of Technology

Vapour Phase Soldering process control and the heat transfer driven by condensation raise new challenges in the field of applications. New approaches are important for the characterization and identification of the vapour inside the processing zone of the vapour chamber. The optimization of proper temperature profiles and the quality requirements of the solder joints also emphasize the need for a novel approach. The presentation highlights the experiments of the VPS technology with the discussion of an experimental, batch-type VPS oven developed at BME, Department of Electronics Technology. Its flexible process zone enables validation of multi-physics simulations, which are important both from the view of oven development and reflow processes.

Second Session: Hetero-technologies in Electronic Packaging

Session Chair Prof. Dan Pitica

1. Application of Safety Bonding Methods to Gold Wire Bonding to Improve Yield and Reliability

Prof. Zsolt Illyefalvi-Vitéz, Electronic Technology Department, Budapest University of Technology

Making strong wire bond interconnects is needed to improve the reliability of the bonds and the electronics assembly. This is especially important for industries with high reliability requirements, e.g. for implantable medical device manufacturers, automotive, telecommunications, aerospace and defense. Reliable wire bonds can make the difference between success or failure, profits or loss, and even life or death. Stand-Off-Stitch (SOS) technique is the most common method to increase bond strength. Its essence is a stitch bond on a bump made by ball bonding. Other safety bonding techniques, like ‘security wire’ and ‘reverse bonding’, as well as, their benefits and layout design considerations are discussed in the presentation.

2. Organic Electronics – Materials, Devices and Technologies,

Norocel Dragos Codreanu, Ph.D., CETTI, Politehnica University of Bucharest

Organic Electronics (OE), named also FOLAE (Flexible, Organic & Large Area Electronics), is a new branch of electronics, dealing with polymers and plastics, in contrast with traditional electronics, which is based on silicon, copper, oxides, etc. OE acts as a catalyst for the cost effectiveness on the market, being an emerging and fast growing field with high potential in industry. Some OE products (as OLED displays) are already on the market and others (as solar cells, lighting, transistors, etc.) are ready for it, being in the small volume manufacturing stage. Europe has a leading position in OE, mainly due to R&D collaboration, and various European projects try to strengthen this position. On these terms, the presentation wants to offer an overview in the field of OE and in use of OE for current and future electronic systems, being destined not only to academia, but also to SMEs, professional associations, and research institutes for exploiting the synergies and complementarities of traditional electronics and OE.

3. Cost Optimizing vs. Reliability in EMS Assembling Activities

Ioan Plotog, Ph.D., CETTI,Politehnica University of Bucharest

The presentation takes into consideration the pressure weighing on electronic original equipment manufacturers (OEMs) and particularly of those that are contract-based (EMS) regarding constrains to finalize a product in minimum time at high quality and low production cost in order to ensure the profit margin in market conditions and therefore aiming to streamline assembly technologies required for achieving the time - cost - quality criteria objectives. The main types of SMT specific defects and their classification in correlation with the origin of the critical phases of product life cycle as result of a macrostructure level analysis are continued with microstructural level analysis of IMC layers formation and concluded with presentation of 4P Soldering Model concept. Finally is presented PIN-IN-PASTE technology integrated in DFM concept as solution for cost reductions.

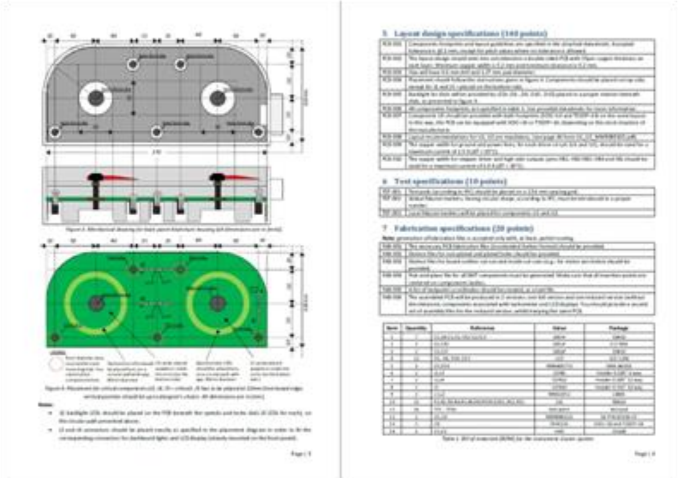
Top TIE 2011 - Recommended by the IAC* as PCB designer

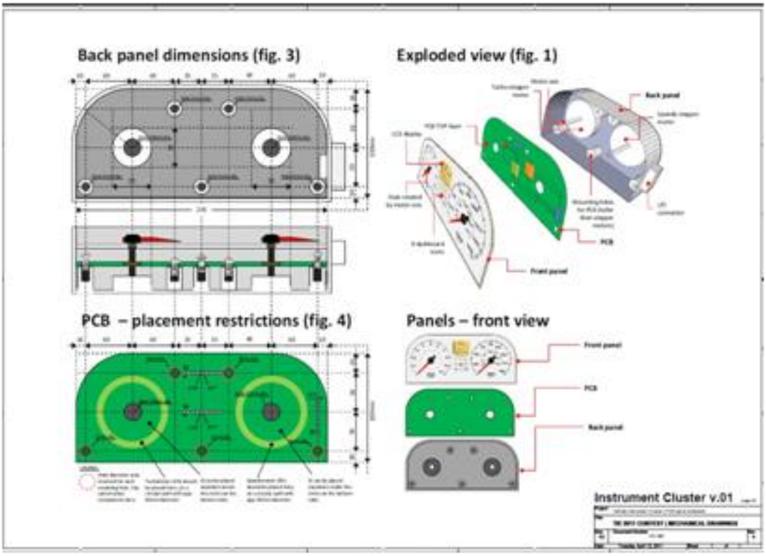
Name	**University**
Precup Calin	“Politehnica” University of Timişoara
Antonovici Dorin	“Stefan cel Mare” University of Suceava
Mares Mihai	University of Piteşti
Gordan Cristian	“Politehnica” University of Timişoara
Burgheaua Mihai	“Stefan cel Mare” University of Suceava
Craciun Gabriel	“Politehnica” University of Timişoara
Tibuleac Catalin-Ciprian	“Politehnica” University of Bucharest
Bostan Adrian	“Politehnica” University of Bucharest
Fiastru Bogdan	Technical University of Cluj-Napoca
Aldea Alin	University of Piteşti
Andries Lucian	“Stefan cel Mare” University of Suceava
Caracaţeanu Cătălin Paul	“Dunărea de Jos” University of Galaţi

* *Industrial Advisor Committee*

TIE Contest 2011 – Proposed project

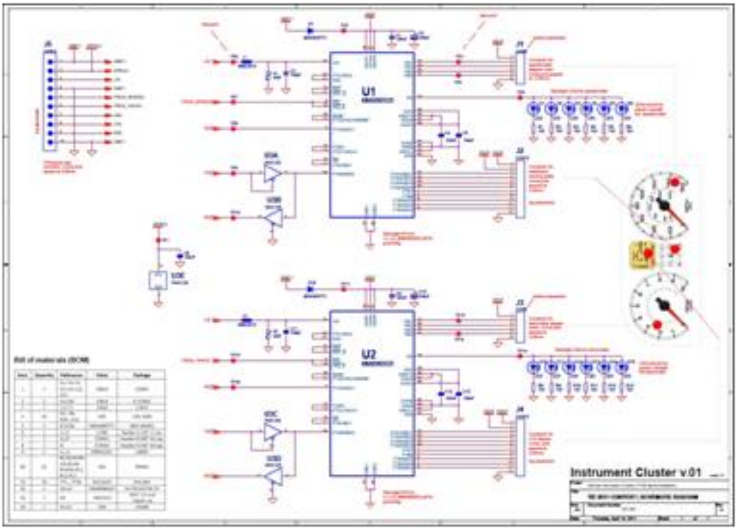
TIE 2011 Project description





Mechanical drawing

Schematic diagram



A

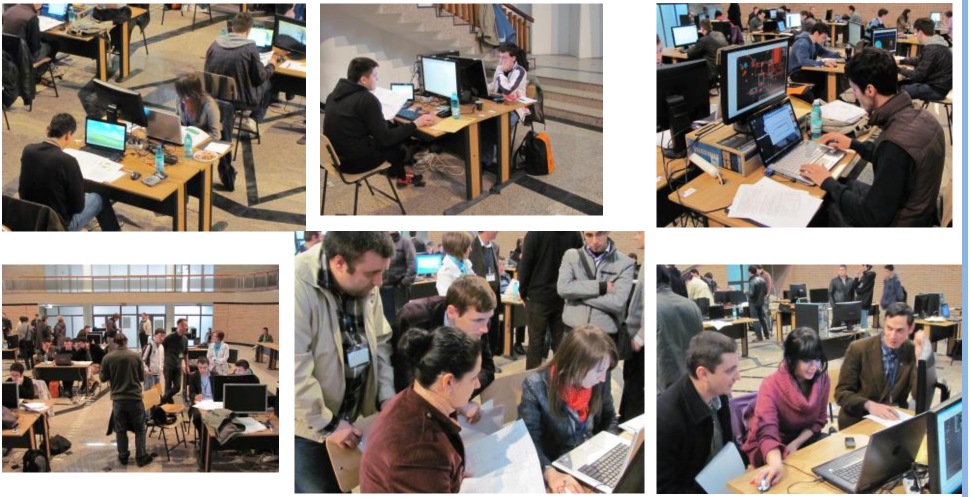
B

C

D

E

Awarding Ceremony - TIE Contest 2011
A: The Winners: Antonovici Dorin, Precup Calin and Mares Mihai with Marius Rangu (second from left - trainer of the winner)
C: The Contest Cup and the Winner Cup
E: Mention Award receivers



TIE Contest 2011 Bucharest -Participants

TIE 2012
Participants from

“1 Decembrie 1918” University, Alba Iulia

“Dunărea de Jos” University of Galaţi

"Gheorghe Asachi" Technical University of Iaşi

"Lucian Blaga” University of Sibiu

North University of Baia Mare

"Politehnica" University of Timişoara

Technical University of Cluj-Napoca

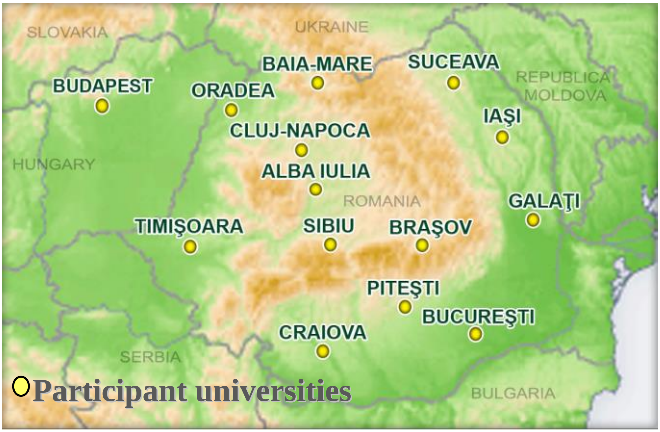
Transilvania University of Braşov

University of Oradea

University of Piteşti

University "Ştefan cel Mare" of Suceava

“Politehnica” University of Bucharest



“1 Decembrie 1918” University of Alba – Iulia

http://www.uab.ro/

Academic coordinators:

Assoc. Prof. Ceuca Emilian, Ph.D.	eceuca@uab.ro

Contestants:

Popescu Vasile	B.Sc.	vasi3007@yahoo.com
Marin Tiberiu	B.Sc.	black_flame767@yahoo.com
Sima Ciprian	B.Sc.	crashxnow@gmail.com

“1 DECEMBRIE 1918” University of Alba Iulia started on May 1991. This year is the 20th celebration of our University. At first it was the historical domain and economics and after ten years the industry and local firms required persons with technical skills. It was the moment when technical domain starts with Geodesy and Informatics.

Our Department manages the Informatics (bachelor and Master) and Applied Electronics (– bachelor).

In our University – *The Engineering curriculum* - provides specialized knowledge on: Electronic devices and circuits, analog and digital integrated circuits analysis and synthesis of electrical circuits, power electronics, embedded systems and micro-processors, sensors and sensor systems, data transmission and communication TV, automotive and medical electronics, industrial automation and other related disciplines.

Platforms used by students: OrCAD, Spice, Matlab, Simplorer, AutoCAD, DSpace, LabVIEW for analysis and design of analog and digital electronic circuits. In “1 DECEMBRIE 1918” University one of the most important aspects provided is to motivate students through awards / internships offered by businesses, that involve the closer link between industry and universities and the students accomplished the importance of practice and good theory examples. Another aspect assured is to maintain and update the knowledge of those involved (teachers and students) in electronic technology design work.

“Dunărea de Jos” University Galaţi

http://www.ugal.ro/

Academic coordinators

As. Ing. Crăciun Cristinel Aurel	craciun@ugal.ro
Assist. Eng. Epure Silviu	silviu.epure@ugal.ro

Contestants

Marinescu Sorin	B.Sc.	marinescusorin@ymail.com
Călin Raluca	B.Sc.	calin.raluca@rocketmail.com
Ropotan Daniel	B.Sc.	ghybort@yahoo.com
Plăşoianu Cosmin	B.Sc.	cosmin_p12@yahoo.com

Galaţi is a city in the eastern part of Romania, with 300,000 inhabitants. The university was established in 1974 and it has a very broad education area: engineering, sciences, medicine, economics, humanities, art and law. There are some 14.000 students in this university. Current research activities, also at the European level, are oriented to PCB simulation and design (both virtually on computer in classroom or laboratory and physical performance in practical activities and project), embedded systems and circuits, and biomimetic ultrasonic transduceres for sonar head applications.

Usually, the students who participate in the TIE contest (since 2008) are studying electronics and telecommunications engineering. They count about 250, among the 1000 students of the Faculty of Automatic Control, Computers, Electric and Electronic Engineering (Bsc, Msc and PhD). The students receive usual education in electronic technology; the knowledge useful for the TIE contest comes mainly from the courses of Computer Assisted Electronic Design and Technology of Electronic Devices.

The trainers of the student team are As. Cristinel Crăciun and As. Silviu Epure. The organizers are the dean of the faculty (prof. Dorel Aiordăchioaie) and the head of the Department of Electronics and Telecommunications (assoc. prof. Nicolae Mărăşescu). They helped the contest TIE 2009, who took place in Galaţi. The event was managed by prof. Laurentiu Frangu.

“Gheorghe Asachi” Technical University of Iaşi

http://www.tuiasi.ro/

Academic coordinators

Prof. Eng. Vlad Cehan, Ph.D.	vlcehan@etti.tuiasi.ro
Conf. dr. ing. Goras Tecla	
Eng. Constantin Barabasa	cbarabasa@etti.tuiasi.ro

Contestants

Tardea Ioan Dan	B.Sc.	dan.tardea@yahoo.com
Gheltu Stefan Andrei	B.Sc.	stefan_andrey92@yahoo.com
Schipor Sergiu	B.Sc.	sergius92@yahoo.com

There are four departments in the Faculty of Electronics, Telecommunications and Information technology within the "Gheorghe Asachi" Technical University of Iasi: Fundamentals of Electronics, Applied Electronics and Intelligent Systems, Telecommunications and Mathematics with 150 faculty members and about 1000 students, Master and PhD students. The students of the faculty can compete in 9 student contests and participate in 5 student scientific meetings. The first contact the students have with the problem of electronic packaging is in their first year of study at Computer Graphics and Materials, Components and Passive Circuits; later on they learn the basics of computer aided PCB design when study Electronic Technology and Electromagnetic Compatibility in Power Electronics.

“Lucian Blaga” University Sibiu

http://www.ulbsibiu.ro

Academic coordinators

Eng. Zamfir Pică	
Assist. Eng. Emanoil Toma	emanoil.toma@ulbsibiu.ro
Prof. Eng. Ioan P. Mihu, Ph.D.	ioan.p.mihu@ulbsibiu.ro

Contestants

Traistaru Adrian	adrian.traistaru@hotmail.com
Ghenescu Alin	alin.ghenescu@gmail.com
Scortar Alin	alin.scortar@gmail.com
Nedelcu Serban	serbanu_06@yahoo.com

In recognition of Sibiu’s certain potential as an academic center, the Ministry of Education decreed, on March, 5, 1990, the founding of a University encompassing five Schools: Letters, History and Law, Medicine, Food and Textile-Processing Technology, Engineering, and Sciences. On 12 May 1995, the University of Sibiu was granted the name of the distinguished Romanian writer and philosopher, Lucian Blaga.

Since 1992, the specialization Applied Electronics represent a strong interest for many students, mainly because of the social demand, coming from the local industry: Continental Automotive System, Maquardt Schaltsystems SCS, Takata Sibiu, Kuhnke Production Romania, Wenglor Electronic, Kromberg & Schubert Romania Me, Simens Simea, and others in the field of electronics. This strong cooperation with the industry allows us to organize the 21th edition of the TIE contest, at Lucian Blaga University in Sibiu.

North University of Baia Mare
Branch of Technical University of Cluj-Napoca

http://www.ubm.ro/

Academic coordinators

Prep. Eng. Lung Claudiu	claudiu.lung@ubm.ro

Contestants

Vele Adrian	B.Sc.	adrian.vele@student.unbm.ro
Vlasin Adrian	B.Sc.	adrian.vlasin@student.unbm.ro

The impetuous development of Baia Mare, require the creation, in 1961, of the three-year Pedagogic Institute, with three faculties: Philology, Mathematics, and Natural and Agricultural Sciences, the first step towards the development of the Baia Mare higher education. The rapid evolution of higher education in Baia Mare was naturally followed by the creation, on October 1st, 1974, of the Higher Education Institute, with two faculties: the Faculty of Pedagogic Education, day courses, with 3 majors: Philology, Mathematics, Natural and Agricultural Sciences, and the Faculty of Technical Education, with 4 majors: Mines, Mining Technological Electromechanics, Nonferrous Metallurgy, Civil, industrial and agricultural constructions. In March 1991, through Governmental Decree, the Higher Education Institute becomes the Baia Mare University, and in 1996 it receives its present name of North University of Baia Mare. The North University of Baia Mare is a state institution for higher education and scientific research; it shares the ideas of the Magna Charta of European Universities (Bologna, 1988) and of the Lima Declaration on Academic Freedom and Autonomy of Higher Educational Institutions (Lima, 1988), being a member of the European Universities Association and of the International Association of Universities.

“Politehnica” University of Timişoara

http://www.upt.ro/

Academic coordinators

Prof. Aurel Gontean	
Lect. Eng. Marius Rangu, Ph.D.	marius.rangu@etc.upt.ro
Catalin Negrea	catalin.negrea@etc.upt.ro

Contestants

Mihaela Ardelean
Alexandru Botila
Gordan Cristian

Founded in 1920, Politehnica University of Timisoara is one of the first technical universities in Romania, currently gathering about 15000 students in 10 faculties. The TIE team comes from the Electronics and Telecommunications Faculty, where it operates the Electronic Technology and Testing Laboratories. The main topics of interest of the TIE team, related to Electronic Packaging, are PCB Design, Signal & Power Integrity and Thermal Management of Electronics.

Technical University of Cluj-Napoca
Applied Electronics Department

http://www.ael.utcluj.ro

Academic coordinators

Prof. Eng. Pitica Dan, PhD	dan.pitica@ael.utcluj.ro
Asoc.prof. Eng. Chindris Gabriel, PhD	gabriel.chindris@ael.utcluj.ro
Lecturer. Eng. Viman Liviu, PhD	liviu.viman@ael.utcluj.ro

Contestants

Turdeanu Mihai	B.Sc.	mihai89t@gmail.com
Tyirean Stefan	B.Sc.	tyirean_utcn@yahoo.com
Ilie Mihai	B.Sc.	alexandruilie90@yahoo.com

Department R&D fields

- Power Systems
  - Power Supplies with Power Factor Correction, Power Line Communication for Energy Metering Equipment
  - High Voltage System for Electron Beam Evaporation Equipment
  - Solar Energy Conversion Systems, Inductive Heating Systems
- Monitor and Control Systems
  - Control for Automotive Systems, Control for Intelligent House
  - Data Loggers for Energetic Systems
  - Data Loggers for Monitor the Hydroelectric Buildings (Dams, Electrical Plant Building), Data Loggers for Medical Applications

Past TIE contestants – present position

- Liviu Viman, Monica Zolog, Raul Fizesan, Mihai Daraban – Technical University of Cluj Napoca
- Istvan Kovacs – Intel Portland USA
- Ferenc Mitruly – Infineon Germania
- Zamfir Pica – Continental Sibiu
- Cornel Sortoc, Sabin Catana – Siemens Timisoara
- Cristian Groza – Microchip Bucuresti

Transilvania University of Brasov

http://www.unitbv.ro/

Academic coordinators

Assoc. Prof. Pană Gheorghe, Ph.D.	pana@vega.unitbv.ro
Eng. Carp Marius	marius.carp@yahoo.com

Contestants

Bude Horaţiu	B.Sc.	horatiu.bude@gmail.com
Chitic Mihail	B.Sc.	danimoth36@yahoo.com
Gheorghe Marius Radu	B.Sc.	gheorghemr@rocketmail.com

The beginning and development of higher education in Brasov originate in the old cultural traditions and intense cultural climate of the city. Here the well known technical and scientific engineering activity, the artistic creation in the fields of folkloric literature and culture, as well as the intensive studies in the numerous schools of all levels, blend in perfect harmony.

The University of Brasov is born in 1971 through the merger of the Polytechnic and Pedagogical Institutes. Following the recommendation of the University of Brasov's Senate, the new name of the university becomes, in 1991, Transilvania University of Brasov. In 1990 the Electro-technical Faculty is founded comprising three specialties: General Electrotechnics, Applied Electrotechnics and Electro-mechanics. The following specialties were next: Automatics and Industrial Informatics in 1995, Electrical Engineering and Computer Sciences (taught in English) in 2000, Telecommunication Sciences in 2001, Energetic Engineering in 2005, and Computer Sciences and Information Technology in 2007.

The premise of electronic packaging appeared in 1990 when the Applied Electronics speciality was founded, and through the ulterior development of the Telecommunication Sciences and Computer Sciences and Information Technology specialties.

University of Oradea

http://www.uoradea.ro/

Academic coordinators

Lecturer. Eng. Adrian Şchiop, Ph.D.	adr_schiop@yahoo.com

Contestants

Őri István	B.Sc.	ori_istvan2006@yahoo.com
Turlacu Andrei	B.Sc.	turlacuandrei@yahoo.com
Paranici Andras	B.Sc.	paranici.andras91@yahoo.ro

In May 1990 a decree of the Romanian Government established the Technical University of Oradea, later called the University of Oradea, and based on impressive traditions of academic life in the town. It was an act of scientific and cultural restoration long expected in the life of the Romanian society, a major gain of the people's Revolution of December 1989, one of the greatest Romanian achievements in Crisana after the Great Union on 1 December 1918. This is how the dream of several generations of scholars came true, clearly expressed by a historian of Oradea: "As regarding the future, the desire of all well-meant Romanians is to establish in Oradea a complete university, the lights of which will shine across the entire western border of Romania". Today, the University of Oradea is an integrated institution of higher education of this kind, comprising 18 faculties.

The Faculty of Electrical Engineering and Information Technology trains according to its purpose engineers, both in a wider specialities and in narrower specializations: Electrical Systems, Applied Electronics, Networks and Telecommunication Software, Computers, Information Technology, Automation, Electromecanics, Management Engineering, Medical Engineering.

The students who will participate to the 2012 TIE contest are studying electronics and telecommunications engineering. They receive usual education for this field, but the knowledge useful for the TIE contest comes mainly from the courses of Computer Aided Design of Electronic Circuits and Electronic Technology.

University of Piteşti

http://www.upit.ro/

Academic coordinators

Prof. Eng. Liţă, Ph.D.	ioan.lita@upit.ro
Lect. Eng. Alin Mazăre, Ph.D.	alinmazare@yahoo.com
Assist. Bogdan Cioc	bogdan.cioc@upit.ro

Contestants

Aldea Alin	B.Sc.	telumeusuna@yahoo.com
Mareş Mihai	B.Sc.	misupenet@yahoo.com
Marin Marian–Valentin	B.Sc.	valy10_10@yahoo.com
Monea Cristian	B.Sc.	cristi_m90@yahoo.com

University of Pitesti has a 49 year old and was founded in 1962. The specializations in electronics came in 1985 and since then this area has developed continuously until today when under Electronic Faculty brand are accredited 4 specializations.

Our students are draw into the CAD design by the courses that follow under the direction of professor eng. Ioan Lita and assistant professor Alin Mazare, the holders of these courses. Beside these courses, the student teams from all classes make technical practice in TCAD laboratories where translate into practice various projects.

Then, in summer school, going training in PCB Design Solutions with licensed software design applications like Mentor Graphics – PADS and Cadence – OrCAD under the guidance of assistant professor Alin Mazare. Finally, the training is certified through participation in local stage of the competition TIE where first top three will participate to International student professional competition TIE Design of Electronic Modules & Microsystems.

University “Ştefan cel Mare” of Suceava

http://www.usv.ro/

Academic coordinators

Assoc. Prof. Eugen Coca, Ph.D.	eugen.coca@usv.ro
Ass. Adrian Petrariu	apetrariu@eed.usv.ro

Contestants

Antonovici Dorin	B.Sc.	dorin_dx@yahoo.com
Burgheaua Mihai	B.Sc.	mburgheaua@yahoo.com
Andrieş Lucian	M.Sc.	fantomas2002ro@yahoo.com

The Stefan cel Mare University is a modern institution with over 45 years of tradition in higher education. In 2005, the University adopted the principles of the Bologna Declaration (1999) and of the Magna Charta Universitatum. The University is located in northeastern Romania, in Bukovina, a region of scenic beauty with a strong focus on social and cultural tradition, a source of national pride and inspiration throughout the centuries. Since 1990, all nine faculties of our University have provided 3-4 years undergraduate programmes (undergraduate programmes in technical education take 4 years) and postgraduate programmes, including PhD. The 1.5 and 2-years Master’s degree programmes provide in-depth study of subjects previously taken at undergraduate level or related to such fields. This degree may lay the compulsory foundations for subsequent three-year doctoral programmes. Currently, there are 360 teaching staff (of which 161 are PhDs) at the Suceava University. The 17 international academic conferences and symposia organized here on a regular basis, the many books published at the Suceava University Press, the association with over 80 institutions of higher education of similar fields of academic research, all these bear witness to the evolution of the University of Suceava into a real Alma Mater Sucevensis. The University of Suceava is a member of numerous international scientific forums.

Politehnica University of Bucharest

http://www.pub.ro/

Academic coordinators

Assoc. Prof. Norocel Codreanu, Ph.D.	norocel.codreanu@cetti.ro

Contestants

Ţibuleac Cătălin	B.Sc.	ciprian.tibuleac@gmail.com
Tănase Mihai Constantin	B.Sc.	tana-mihai@yahoo.com
Ştefan M. Andrei	B.Sc.	andrei.m.stefan@gmail.com
Avădănii Alexandru	M.Sc.	alex@softwareelite.com

Politehnica University of Bucharest is one of the oldest engineering schools in Romania. The Faculty of Electronics, Telecommunications and Information Technology was founded in 1953. In this faculty, the Department of Electronics Technology and Reliability is focused to research and educational activities in the field of electronic packaging. CETTI operates, since its establishment in 1995, as an “Electronic Packaging Services and Research” Department within the POLITEHNICA University of Bucharest (UPB). As similar centers in the world, the main objectives of CETTI are to offer solid support in electronic packaging activities for innovative SMEs and to sustain educational and training for continuing education of the human resource involved in electronics industry. The center was initially focused, for students and engineers, mainly on printed circuit board - PCB CAD training activities. Today CETTI provides professionally, confidentially and nondiscriminatory a wide range of educational activities and services for electronic packaging (as counseling, training, research and information, human resource) and manufacturing. These are offered mainly to the business owners and managers - at an international standard, using the most advanced American and European expertise.

The organizers wish GOOD LUCK to all TIE 2012 participants!

TIE cups offered in the competition. The small one is given to the first place winner and the great one will remain at the university where the contest winner comes from until the next TIE edition.

… …

… …

… …

… …

… …

… …

… …

… …

… …

… …

… …

… …

… …

… …

… …

… …

… …

… …

… …

… …

… …

"LUCIAN BLAGA" UNIVERSITY OF SIBIU
&
"POLITEHNICA" UNIVERSITY OF BUCHAREST
CENTER FOR TECHNOLOGICAL ELECTRONICS AND INTERCONNECTION TECHNIQUES

INTERCONNECTION TECHNIQUES IN ELECTRONICS

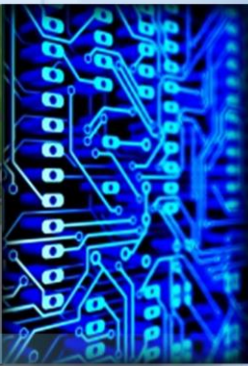
International Student Professional Contest

The 21st Edition, Sibiu, 25-28 April 2012

TIE
DESIGN OF ELECTRONIC MODULES & ASSEMBLIES
www.tie.ro

The 21st Edition

Participant universities



edu.ro
ANCS
ARIES Romanian Association for Electronic and Software Industry
IEEE Romania Section
IPC
APTE
IEEE CPMT Hu&Ro Joint Chapter

SPONSORS

KROMBERG & SCHUBERT
Blue Air your destination.our way
TRIAS Mikroelektronik GmbH Mentor Graphics
MARQUARDT
Continental
MICROCHIP
wenglor
ROMSTRADE
Elsix
ELREF
KUHNKE
ADVICE SERV
roel innovating for a safer life
EOC
SAMWAY your way
ebs Expectations Beyond Software
Radio Consult professional radio consulting
ANTRICE
SC ROND ELECTRIC SRL
TAKATA
Cavallioti

SPONSORS