"TRANSILVANIA" UNIVERSITY OF BRAȘOV
&
"POLITEHNICA" UNIVERSITY OF BUCHAREST
CENTER FOR TECHNOLOGICAL ELECTRONICS AND INTERCONNECTION TECHNIQUES

INTERCONNECTION TECHNIQUES IN ELECTRONICS

International Student Professional Contest

The 22nd Edition, Brașov, 24-27 April 2012

TIE

DESIGN OF ELECTRONIC MODULES & ASSEMBLIES

www.tie.ro

A WAY to turn your hobby into PROFESSION

The 22nd Edition

Detalied Program

Promoted by IEEE CPMT HU&RO Joint Chapter

Final program

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Student professional contest
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Organized by:

"TRANSILVANIA" UNIVERSITY OF BRAŞOV

"POLITEHNICA" UNIVERSITY OF BUCHAREST

Faculty of Electronics, Telecommunications and Information Technology

Center for Technological Electronics and Interconnection Techniques

http://www.cetti.ro

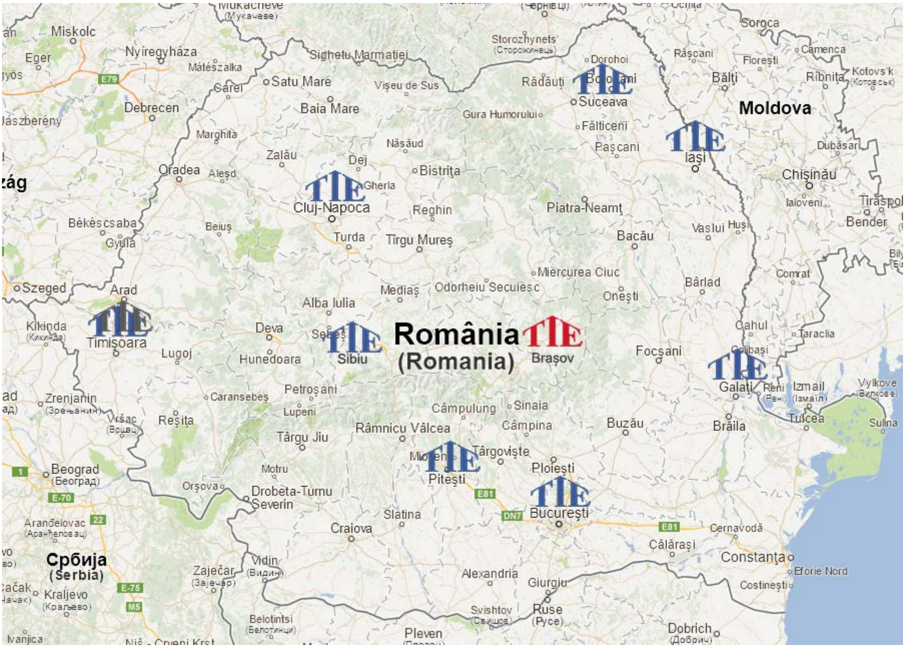
and supported by

EPETRUN (Electronic Packaging Education Training and Research Network)

The organizers wish GOOD LUCK to all TIE 2013 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.

TIE Past, Present and Future Editions



1992-2002	"Politehnica" University of Bucharest
2003	"Politehnica" University of Timişoara
2004	Technical University of Cluj-Napoca
2005	"Gh. Asachi" Technical University of Iaşi
2006	"Politehnica" University of Bucharest
2007	"Ştefan cel Mare" University of Suceava
2008	University of Piteşti
2009	"Dunărea de Jos" University of Galați
2010	Technical University of Cluj-Napoca
2011	"Politehnica" University of Bucharest
2012	"Lucian Blaga" University of Sibiu
2013	"Transilvania" University of Braşov
2014	"Politehnica" University of Timişoara

Dear participants and guests,

It is my pleasure and honor to welcome you to the 22nd Edition of the TIE contest on behalf of the event organizers from Transilvania University of Braşov.

Braşov is one of the largest and most cherished cities of Romania surrounded by mountains, a medieval citadel and a modern city as well. History, culture, science and technology play together in Braşov County.

Transilvania University of Braşov is an important performer in the social, cultural and economical life of the city and of the region. Within the university, electrical engineering studies celebrated recently the 50th anniversary, the age of maturity.

We are confident that you will enjoy your stay in Braşov and we look forward welcoming you to TIE 2013.

Assoc. Prof. Carmen Gerigan, Ph.D.
Dean of Electrical Engineering and Computer Science Faculty
Transilvania University of Braşov
Romania

It is possible to talk, in our region, about an academic community in the field of electronic packaging!

We are participating at the 22nd edition of the TIE Event and we are very pleased to notice that the participating students are coming from almost all the universities involved in education and training in the field of electrical engineering. The increased interest, to be a part of TIE event manifested both by students and by universities, is a proof of the importance of this event as a way to shape students for their professional life. We can talk about an academic community, centred in this area, interested in promoting electronic packaging.

Some time ago, at the 2008 TIE Edition, in Piteşti, the TIE Steering Committee has adopted two decisions that were extremely beneficial for all the people involved in the training of the future electrical engineers. The first decision was the "de facto" establishing of a national academic network to promote electronic packaging: "Electronic Packaging Education, Training and Research University Network – EPETRUN". The second decision was meant to increase the international opening of the Event and to promote the EPETRUN network and has established English as the official language of the contest. It was possible to notice the first results next year, at the 2009 edition (organized by "Dunărea de Jos" University of Galaţi) where, thanks to IEEE-CPMT Hu&Ro Joint Chapter, students from the Budapest University of Technology and Economics and Prof. Illyefalvi-Vitéz Zsolt as well as Prof. Nihal Sinnadurai, representing IEEE –CPMT Society, took part.

Today it is safe to say that EPETRUN has managed to create a good collaboration platform between members of the academia and through the two outcomes, TIE, in the educational field and SIITME, in the scientific/research field, ensures our connection with the international electronic packaging community of IEEE – CPMT Society.

Prof. Dr.h.c. Paul M. Svasta, Ph.D.
Head of Center and TIE Initiator
Center for Technological Electronics and Interconnection Techniques
"Politehnica" University of Bucharest, Romania

The memory of a professional experience

30 years ago, during the same time of the year, I was working on my diploma project. For this I have design a system that allowed the obtaining of films for printed circuit boards. In those times PCB design was done manually, using only squared foils. The system I designed acquired the information about the layout designed on these foils. Through digitization the coordinates of the characteristic points were read from the drawing board. The information was send towards a system with a microprocessor where it was memorized and then analyzed on order to control a plotting device with a photo head. With the help of this device, placed in a dark room, positive films could be obtained for the faces of the printed circuit board. In order for the system to be functional I designed an electronic module based on a DMA memory (two boards in double EUROCARD format, one containing the memories and the other the circuits and command logic). This module received the files with the data which was acquired with the microcontroller system and then send the necessary command for the plotting system. All the programs (for data acquisition, the digitizer, the transforming the data to the format accepted by the plotter and the transfer to the DMA) were written using assembly.

With the help of this system I managed the following year (my first year as an engineer) to design and obtain the films for the PCB of the first personal computer designed in Romania. The plotting of each face lasted over two and a half hours.

I wish all TIE 2013 participants to be able to share such professional experiences in 30 years' time.

Cluj-Napoca, April 5th, 2013

Prof. Dan Pitică, Ph.D.
Ex PCB Designer

TIE – a Scientific Show of Eminent Students

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 to demonstrate their expertise in the rapidly developing CAD design. The 22nd TIE 2013 in Brasov is the fifth opportunity for me, with a Hungarian group, to attend this exceptionally beneficial event. In the followings I am sharing with you a few reasons why I am always so happy when participating in TIE.

- TIE is the opportunity of talented students, already grown up to be considered young researchers, who demonstrate their outstanding capabilities and affections towards leading edge technologies and design methods. The mostly Romanian eminent students, however, present the excellent intellectual power of entire Central Eastern Europe, which assures our place in the European scientific arena.

- During the event one can be acquainted and make friendship with enthusiastic professors, who do not spare time, effort and trouble to organize the meeting for the benefit of the students, their future employers, and ultimately the knowledge based society.

- The Contest is preceded by a Workshop where excellent scientists and industrial experts share their knowledge with the young audience and each other.

- The visit to a nice city of Romania provides the opportunity to be familiar with the people and culture of other nations, to honour their assets, efforts and results, which lead to fruitful cooperation in the fields of culture, science and industrial development as well.

Budapest, April 3rd, 2013.

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

TIE – A Starting Point for a Successful Career

The idea that competition is the whetstone of talent receives confirmation with every edition of the **Interconnection Techniques in Electronics** (**TIE**) Contest which was internationalized in 2009.

TIE invites students, scholars and industry professionals to come together and discuss new ideas, test new technologies, exchange good practices, share valuable insight into complex engineering matters and stir young people's interest in advanced electronics practice.

The topics presented each year have presupposed high practical skills and solid theoretical knowledge. TIE challenges students to look for improved PCB layout solutions, employ CAD software to create PCB and eventually devise a final product that is submitted for evaluation.

Many students who participated in previous TIE editions appreciated the usefulness of the topics selected and the infusion of real world experiences into engineering education. Many of these students have decided to embark on a career in PCB layout design.

TIE is a reliable companion to today's electronics practice.

Good luck to all participants in TIE 2013!

March 21st, 2013

Professor Valentin Popa, Ph.D.

RECTOR
Ştefan cel Mare University of Suceava

TIE Contest – Opportunity to Find out What an Engineer Does

In a nutshell, an engineer is someone who, using his scientific and technological knowledge and practical experience, can manage the designing and operating of devices, equipment and systems.

The participation in the Interconnection Techniques in Electronics (TIE) contest is for students an excellent opportunity of getting familiar with an indispensable activity for electronical engineers: designing printed circuits. It is also an opportunity to understand the importance of theoretical knowledge – as no printed circuit can be developed without understanding the principles of circuit operation, component characteristics or reciprocal dependencies. Moreover, they may also understand, maybe for the very first time, the importance of practical experience, without which one cannot design printed circuits that are useful, that is manufacturable and functional.

In the same vein, I should also underline the importance of the joint activity of the universities and the electronic product design and manufacturing companies in this contest in suggesting design projects and evaluation criteria, and in adopting pedagogical requirements.

From another perspective, partipating in the TIE contest may represent another first and useful contact that students establish with engineering, a rough activity which involves technical, technological and economic compromise, required by a basic engineering principle: the end product must work faultlessly, at low costs and minimizing damage to the environment.

Good luck to all participants in TIE 2013!

March 24th, 2013

Professor Vlad Cehan, PhD
"Gh.Asachi" Technical University of Iaşi

The TIE 2013 Workshop and Contest

It is an honor and a great pleasure for me to express some of my thoughts about this TIE event, which takes place under the umbrella of the IEEE CPMT Society and is mainly sustained by the IEEE CPMT, Hu & Ro Joint Chapter.

The topic of TIE is directly correlated to what industry expects from universities regarding professional education in electronics engineering. The participant students at the TIE contest have a high knowledge level regarding CAD- assisted design of interconnection structures of electronic modules. Therefore, this is a good example of their high education level they are expected have to satisfy the needs of companies involved in the development of electronic products. In fact, many TIE participants during the years are now employed in professional activities at companies strongly involved in innovative products, like Continental Automotive, Bosch, Siemens, HITECH, Wenglor, Microchip, Yazaki and many more. This is a good example for how academia from this part of the European Union responds to the industry demands for educating human resources according to company needs. And this becomes even more important as many companies across the EU are now forced by strong competition to shift their production and even R. & D. activities towards this region of the EU.

At TIE one can observe the good mixture between academia and industry through the Industrial Advisor Committee. The presence of the IAC guaranties that the contest subjects are strongly related to the economic needs. The contest evaluation process is done by IAC members and academia staff, familiarizing the students with their future design activities.

A good part of the IAC members are former participants or even winners at TIE contest. Their actual engineering CAD- activity may be seen as a result of their TIE contest participation. From the point of

view of knowledge appreciation TIE can be seen as an industry certification activity regarding PCB design.

The workshop organized at the final stage of TIE is a good opportunity for the participants to be informed by specialists of industry or research about the newest trends in electronic packaging.

I wish good luck to all participants of this year final TIE event!

Braşov, April 25th, 2013

Detlef Bonfert, Ph.D.
TIE European Consultance Committee
Circuits and systems, CS-ATIS
Fraunhofer EMFT Munich, Germany
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A point of view from Galați University

As far I know, there are quite few examples where people from industry and those involved in engineering education have a tight schedule and wide spectrum of meetings during the year. The electronic packaging and module design are such domains where people, juniors and seniors, work together in order to understand better where industry is going and where we can or we must go.

We joined the network of Electronic Packaging few years ago, in order to better understand what is with electronic technology, to learn from the experience of other main centers and to offer our students more opportunities of learning and testing their knowledge and skills.

There are two important events, TIE and SIITME, which we try to attend and to contribute as much as possible. Both events are de facto international events, and – if the gradient is not changing - very soon will become true European events with satisfactions and constraints related to the quality of developed activity and results.

Finally, a word about the leaders. As a representative of a very young team, the tenacity and skills management of the main leaders, the organizers of these events have impressed us very much. If TIE, SIITME or other workshops are on the first page of journals and newsletters, we must address many thanks to them.

A plus also for ARIES for what was made until now, for initiative and mainly for vision in promoting new approaches in the activities of universities and companies.

Galați, March 3rd, 2013

Prof. Dorel Aiordachioaie, Ph.D.
"Dunărea de Jos" University of Galați

EPETRUN a community for the future

As people have to share in general their perceptions, ideas and thoughts to get a common sense of their being and overall actions in this world, communities have to share their experiences, ideas and actions to get best practices, effectiveness and trust among their members and stakeholders. Lees understanding of this commandment or self-isolation of people, communities or stakeholders is not an excuse for pour performance or failure. As other communities are doing all over the world, meeting each other and sharing ideas and best practices, the regional community of electronic packaging university teaching staff have to join in a professional organization which have to respond to the new education paradigm, quality standards improvement, innovation infrastructure and stakeholder care challenges.

But even joining the community, nothing is more binding the members as the trust gained through years of cooperation and idea and best practice sharing. If the annual TIE student contest and the annual SIITME conference where been for more than two decades the link between many electronic packaging university teaching staff from European countries, EPETRUN have to be the reputation and authoritative voice of this community in front of the respective authorities, a reliable partner of their stakeholders and the guaranty of the electronic packaging university education quality.

It is a new way and a new challenge of this community, which have to demonstrate its high social responsibility, its leveraged self-trust, its extraordinary commitment to support our nation's competitiveness and its future challenges in the innovation driven economy. It is a foundation which has to last and to be an example of the future generations of higher education teaching staff.

March 25th, 2013

Alexandru Borcea, President
ARIES, Romanian Association for Electronic and Software Industry

TIE 2013 Workshop Summaries

How to design efficiency and EMC in same time?

Abstract: The workshop aims to improve the understanding of the participant in designing switching mode power supplies (SMPS) and understand not only their inner workings under normal operating conditions, but also possible design errors that may cause unwanted functioning.

Keywords: SMPS, ferrite, inductor, EMI, EMC

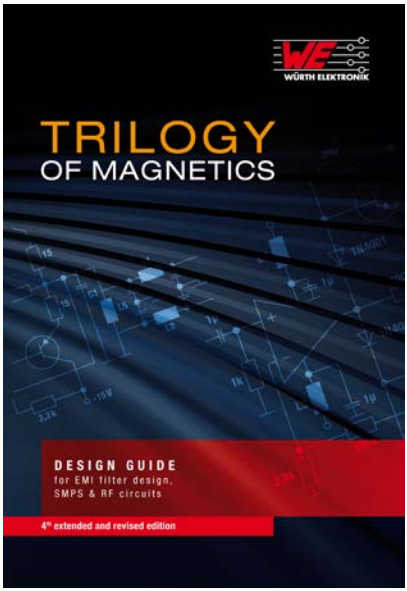

Fig. 1. Trilogy of Magnetics

In the time that all electronics are working only in a digital way and we, the design engineers, have to design complex digital circuits using different tools, sometimes we forget the other side of electronics called Analog. With this short workshop I would like to turn back into the analog design of switched mode power supply (SMPS) and try to understand why in some way they are doing things which we did not designed.

In the beginning we will talk about different ferrite materials to better understand the physics behind.

In the second part we try to remember filter design with the rediscovering the system impedances given from different lines.

At the end we calculate the right inductance for a simple SMPS and consider the losses which occur during switching. All the tools

presented are free of charge and can be downloaded from our website (www.we-online.de/tools)
More additional design tips and rules can be found in the “Trilogy of Magnetics 4-th edit.”, as seen in Fig.1.

Würth Elektronik eiSos GmbH & CO.KG is the last European manufacturer who designs and manufactures EMC ferrites, inductors for power supplies, transformers for power converter, LAN transformers, surge protection, shielding materials, connectors and assembly components, offering design in service and support with local FAE’s Worldwide (www.we-online.com).
With over 25 years’ experience in electronic design, including 14 years in product management for passive components at Würth Elektronik eiSos, Lorandt Fölkel has widespread experience for EMC filter design and efficiency improvement for DC/DC converters. After his study at “University Transilvania” in Brasov/RO, he works as service engineer for consumer electronics then as design engineer for EX (explosion safety) remote controllers.

Waldenburg, March 1st, 2013

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Design and Measurement of Integrated Passive Devices on Flexible Substrates

Abstract: Polymer electronics, polytronics, realized in a roll-to-roll process provides cheap devices and circuits. Besides active devices and integrated circuits on foils, passive devices play also a key role. But their realization needs special care for design and measurement.

Keywords: Integrated passive devices, flexible substrates, foils, polymer resistors and capacitors.

Using advanced screen printing processes functional high density flexible electronic circuits can be build. This includes multi- layer techniques and micro-vias. Passive devices like resistors, capacitors and inductors are directly integrated on the flexible substrates.

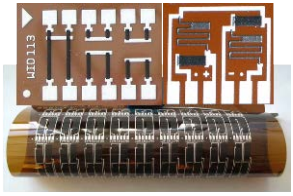


Fig. 1. Polymer resistors on PI-foil

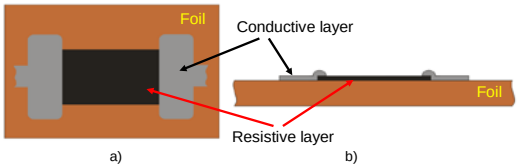


Fig. 2. Layout of polymer resistors on foil.

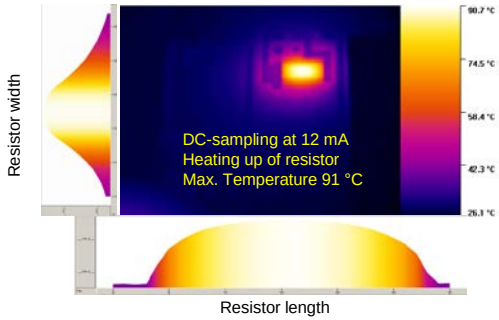
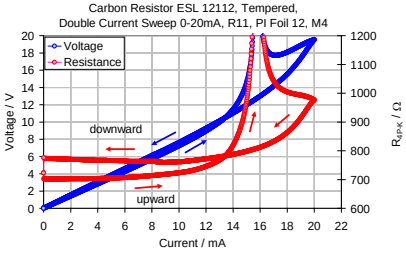


Fig. 3. Temperature distribution of self- heated polymer resistors.

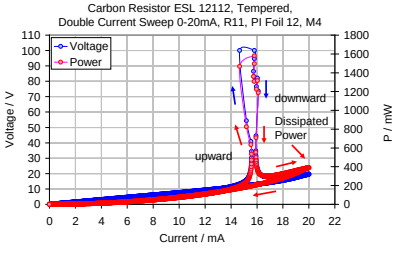
Application of certain design rules is necessary to obtain reliable devices and circuits. Fig. 1 and 2 is an example of polymer resistors design and realization on PI-foil. Electrical measurements reveal the

non-uniform temperature distribution across the resistive layer (Fig. 3).

As an example, current carrying capabilities and power dissipation (Fig. 4) are important factors during the design of a polymer resistor.



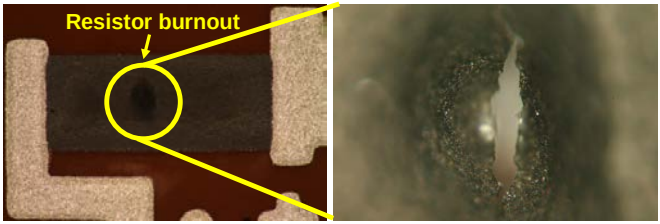
a)



b)

Fig. 4. Power dissipation in a polymer resistor at burn out.

Electrical overstress of the resistor can lead to burn- out because of the thermal hot spot in the center of the resistive layer, as pointed out in Fig. 5.



a) b)

Fig. 5. Polymer resistors burn- out during DC stressing, caused by hot spot in the center of the resistive layer.

The presentation underlines the importance of design and measurement of mentioned passives for the production process of reliable devices and circuits on flexible substrates.

Brasov, April, 25th, 2013

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Supplying of Electronic Components an Important Step for Electronic Modules Manufacturing

Abstract: TME company will present features and key functionalities which are helpful in design process. During the presentation it will also be explained how TME ensures the quality of delivered goods in order to make design process as easy as possible.

Keywords: TME, supply, design process

Presentation Agenda:
1. TME introduction
2. Main features of the TME website
3. Data sheets and information on website
4. Dedicated engineering help
5. Quality issues
6. TME laboratory procedures

TME is one of the leading companies in electronic components distribution business. For more than 20 years we cooperate with engineers all around the globe. The experience gathered during that time give us the knowledge what kind of information and services are the most important for the engineers during the design process.

Using the experience gathered with time TME created a website with a set of features that could make this design process easier. The TME website gives not only such tools as prices or current stock but also data sheets and available certificates.

In the engineering process it is also very important to have an accurate knowledge about the products and the way they are designed. This kind of knowledge is also easily available by special consultants who

have deep knowledge in the narrow product group – a good example would be delegated consultants from Microchip.

When the project is created and theoretical backgrounds are set, there comes a time for practice. In this particular moment when an engineer is creating a working prototype it is very important that all elements will be same as in documentation. Here quality issues are at stake. TME have a special laboratory division where products are tested and checked in order to minimize the risk of selling poor quality products to the end customer.

March 29th, 2013

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Stencil Design Guidelines for Electronics Assembly Technologies

Abstract: In mass assembly of today electronic circuits, the first step is the stencil printing of solder paste. Although it is a very stable process, almost 60 percent of reflow soldering failures can be traced back to stencil printing. Thus, the proper design of stencils is crucial to eliminate common soldering failures. The aim of the presentation is to introduce the attendees to the basics of stencil design for fine-pitch, advanced assembly technologies.

Keywords: stencil printing, stencil design, step-stencils, area ratio, printing efficiency

Reflow soldering is the most widespread method in surface mount technology (SMT) to join component leads or terminals to the contact pads of a Printed Wiring Board (PWB). In the first step the solder paste, which is a suspension of flux and powder alloy, is printed selectively onto the surface of the board through a stencil mask. However, it is well known based on previous studies that 60% of soldering defects can be traced back to the solder paste printing process in which the stencil design has a major role. Hence, a stencil rather has to be considered as a carefully designed precise tool than a simple punched metal sheet.

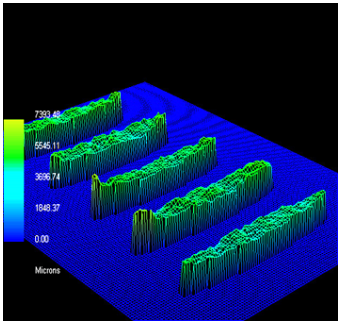

Fig. 1. Printed paste on QFP pads

Generally, we suppose that the volume of the deposited solder paste is the same as the volume of the stencil aperture. In fact, the amount of printed paste, the transfer efficiency depends mainly on four parameters: the capability of printers, the rheology of solder pastes, the design and the manufacturing technology of stencil apertures.

Concerning the workshop, the presentation will deal with almost all the type of surface mounted components that stencil aperture should be designed properly for. In the beginning, the manufacturing technologies of stencils will be summarized briefly, and then the stencil design guidelines will be presented in details taking even the surface finish types of soldering pads on PWBs into consideration.

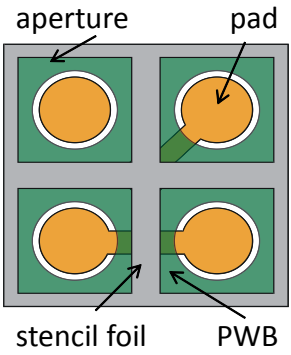

Fig. 2. Stencil design for CBGA

Once the general rules have been described, the definition of area ratio relating to stencil apertures will be given and the method to determine the appropriate foil thickness will be shown. Based on the foil thickness considerations, stencil design for QFPs (Quad Flat Package), plastic and ceramic BGA (Ball Grid Array) packages and for other fine-pitch components will be discussed.

After overviewing the aperture design for surface mounted components, design guidelines will be presented for step stencils pointing beyond the standard of IPC-7525. Finally, the end of the presentation will include some recommendations regarding stencil design for Pin-in-Paste technology.

Budapest, March 5th, 2013

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Smart electronics in home appliances

Abstract: Miele is a manufacturer of premium home appliances and machines for commercial use, well known for quality and durability of the products. The presentation provides an insight into the technology of modern home appliance with the focus on electronics.

Keywords: Electronics, M Touch, Sensors, Drives, Miele@home

Miele is the world leader in the field of premium domestic appliances, including cooking, baking and steam-cooking appliances, refrigeration products, coffee makers, dishwashers and laundry and floorcare products. This line-up is augmented by dishwashers, washer-extractors and tumble dryers for commercial use as well as washer-disinfectors and sterilisers for use in medical and laboratory applications (Miele Professional).

Miele started very early to integrate electronics into home appliances. The first electronic controlled washing machine was introduced in the late seventies. Already 1993, all Miele washing machines and dryers were controlled by microprocessors. Today, electronics is an indispensable part of modern domestic appliances. The use of electronics guarantees perfect results, helps to reduce the consumption of energy, water and detergent, makes the operation more comfortable and allows innovative designs. For this reasons, the development and production of electronics is done by Miele itself.

Fig. 1. “M Touch” technology

At the exhibition "Living Kitchen" earlier this year, Miele introduced a new generation of appliances with the innovative “M Touch” technology (Fig. 1.). This world-exclusive user interface for kitchen

appliances is an integral part of flagship models of the new Generation 6000. “M Touch” stands for a high-resolution touch display similar to that on smart phones and tablet PCs. This presentation provides a look behind the front panel and the hidden technology inside.

Another highlight of kitchen appliances is the wireless food probe used in ovens and steam ovens to measure and control the core temperature of the food. The presentation will give answers to the question, how to measure core temperatures with a wireless, passive and batteryless probe inside an oven.

Miele uses different types of motors to drive the drum of washing machines and dryers as well, as pumps and fans. As part of the presentation, latest electronics solutions in the field of drive technology are shown.

Fig. 2. Info Control Plus

The “Miele@home” system offers possibilities to connect Miele products via powerline or wireless adapters to a network and to exchange data with the home appliances. The presentation gives an overview of system components and applications like “Info Control Plus” (Fig. 2.) or “Con@ctivity 2.0”.

Gütersloh, March 20th, 2013

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Prof. Valentin Popa, Ph.D., "Ştefan cel Mare" University of Suceava, Romania
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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

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Dipl. Eng. Mariana Poparlan, Simea, Sibiu
Dipl. Eng. Mihai Savu, Samway, Bucharest
Dipl. Eng. Cristian Codreanu, Kromberg & Schubert Romania Me SRL, Sibiu
Dipl. Eng. Emilian Stoica, Simea, Sibiu

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Cristina Marghescu, IEEE-CPMT "Politehnica" University of Bucharest SBC Chair

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Robert Dobre
Bogdan Mihăilescu
Mihaela Pantazică

Local Organizing Committee

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Mariana Păturleanu, Politehnica University of Bucharest, Romania
Dacian ZAINEA, "Transilvania" University of Brasov, Romania
Doru Alexandru MODORCEA, "Transilvania" University of Brasov, Romania

TIE 2013 Program

<table>
<tr><th colspan="4">April 25, 2013</th></tr>
<tr><th></th><th>“Students” Track</th><th>“Steering Committee” Track</th><th>“Technical Committee” Track</th></tr>
<tr><td>08:00-10:00</td><td></td><td></td><td rowspan="2">Technical meeting
(local members only)
AULA, Multimedia Room 1, Library</td></tr>
<tr><td>10:00-12:00</td><td></td><td></td></tr>
<tr><td>12:00-14:00</td><td></td><td>Steering committee meeting
AULA, Multimedia Room 2, Library</td><td>Technical meeting
AULA, Multimedia Room 1, Library</td></tr>
<tr><td>13:00- 14:00</td><td colspan="2">Registration of the participants
AULA, Iuliu Maniu street, 41A</td><td>Technical Meeting
AULA, Multimedia Room 1, Library</td></tr>
<tr><td>14:15-19:00</td><td colspan="2">International Workshop „Advanced Topics in Electronic Assembling Technology”
AULA, U II 3 Room</td><td>Technical meeting
AULA, Multimedia Room 1, Library</td></tr>
<tr><td>19:00-19:45</td><td colspan="3">Student Technical Session
Presentation of TIE 2012 subjects
Set-up and checking of contest computers, CAD environments
AULA, U II 3 Room</td></tr>
<tr><td>20:00-20:45</td><td colspan="3">Dinner
Student Restaurant (Cafeteria 2 Colina, Universitatii street, 1)</td></tr>
<tr><td>21:00-22:30</td><td></td><td>Steering committee meeting
AULA, U II 3 Room</td><td>Technical meeting
AULA, Multimedia Room 1, Library
+
Advertising Committee Meeting</td></tr>
</table>

April 26, 2013			
07:00-07:30	Breakfast AULA (ground floor)		**Technical preparation** AULA, Library Reading Room
07:30-08:00	**Contest preliminary activities**		
08:00-12:00	**TIE 2013 CONTEST** AULA, Library Reading Room		**Technical session** AULA, Multimedia Room 1, Library
12:00-13:00	Lunch AULA (ground floor)		
13:00-18:00	**Assessment of the TIE 2013 projects** AULA, Library Reading Room		
18:00-18.30		**Steering committee meeting** AULA, U II 3 Room	
18.30-20.00	TIE 2013 Awarding ceremony AULA, U II 3 Room		
20:00-22:00	Gala dinner TIE 2013 Student Restaurant (Cafeteria 1 Memo, Memorandumului str., 39)		

April 27, 2013	
07:30-08:30	Breakfast
09:00-12:00	Ending session / Final remarks AULA, U II 3 Room

Note:

1. Items in the program marked with **bold** type represent **compulsory activities** for the given track.
2. Please note that the location of the Gala Dinner (Cafeteria 1 Memo, Memorandumului street, 39) on the 26th is different than the dinner location on the 25th (Cafeteria Colina, Universitatii street, 1)

Workshop

„Advanced Topics in Electronic Assembling Technology”

25 April 2013

13.00-14.15 ***Registration, AULA, Iuliu Maniu street, 41A***

14.15-14.30 **Welcome**

Prof. Carmen Gerigan, “Transilvania” University of Braşov

Prof. Paul Svasta, Politehnica University of Bucharest

14.30-16.30 **First Session: PCB Design**

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

14.30-15.50 PCB Design Behind EMC Thinking

Lorand Foelkel, M. Eng. Würth Elektronik

15.50-16.30 Design and Measurement of Integrated Passive Devices on Flexible Substrates

Detlef Bonfert, PhD, EMFT Munich, Germany

16.30-17.00 ***Networking Break***

17.00-19.00 **Second Session: Assembling Technology**

Session chair: Prof. Dan Pitica, Technical University of Cluj-Napoca

17.00-17.30 Selection/Supplying of Electronic Components an Important Step for Electronic Modules Manufacturing

Wojtek Kuczyński, Transfer Multisort Electronik, Poland

17.30-18.30 Stencil Manufacturing Technologies and Stencil Design Guidelines

Oliver Krammer, Ph.D., Electronic Technology Department, Budapest University of Technology

18.30-19.00 Smart electronic devices in Household Appliance

Dominik Beier – Team Leader, Development Department – Miele Electronics

TIE Past Editions Winners

Year	Name	University
2012	Aldea Alin	University of Piteşti
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

PCB designers recommended by Industrial Adviser Committee, TIE 2010 - 2012

Participant Name	University	Year
Dungă Tudor Dan	"Politehnica" University of Timişoara	2010
Pică Zamfir	Technical University of Cluj-Napoca	2010
Gross Péter	Budapest University of Technology and Economics	2010
Antonovici Dorin	University "Ştefan cel Mare" of Suceava	2010
Condrea Daniel	University "Ştefan cel Mare" of Suceava	2010
Lupuț Cătălin	"Politehnica" University of Timişoara	2010
Banciu Alexandru	"Politehnica" University of Bucharest	2010
Fülöp Krisztián	Budapest University of Technology and Economics	2010
Tudose Mihai Liviu	"Politehnica" University of Bucharest	2010
Burgheaua Mihai Alexandru	University "Ştefan cel Mare" of Suceava	2010
Knizel Alexandru	"Politehnica" University of Timişoara	2010
Pandelică Ovidiu	University of Piteşti	2010
Caracațeanu Cătălin	"Dunărea de Jos" University of Galați	2010
Țibuleac Cătălin	"Politehnica" University of Bucharest	2010
Blănaru Andrei	"Transilvania" University of Braşov	2010
Malinetescu Adrian	North University of Baia Mare	2010
Ungureanu Vlad	“Transilvania” University of Braşov	2010
Precup Călin	"Politehnica" University of Timişoara	2011
Antonovici Dorin	University "Ştefan cel Mare" of Suceava	2011
Mareş Mihai	University of Piteşti	2011
Gordan Cristian	"Politehnica" University of Timişoara	2011

Crăciun Gabriel	"Politehnica" University of Timişoara	2011
Bostan Adrian	"Politehnica" University of Bucharest	2011
Fiastru Bogdan	Technical University of Cluj-Napoca	2011
Aldea Alin	University of Piteşti	2011
Andrieş Lucian	University "Ştefan cel Mare" of Suceava	2011
Turdean Mihai	Technical University of Cluj-Napoca	2012
Andrieş Lucian	University "Ştefan cel Mare" of Suceava	2012
Avădanii Alexandru	"Politehnica" University of Bucharest	2012
Marin Marian Valentin	University of Piteşti	2012
Tănase Mihai	"Politehnica" University of Bucharest	2012
Boţilă Alexandru	"Politehnica" University of Timişoara	2012
Ardelean Mihaela	"Politehnica" University of Timişoara	2012
Ştefan Andrei	"Politehnica" University of Bucharest	2012

TIE 2012 Awarding ceremony

From right to left: Prof. Liviu Roşca, Dean of Engineering Faculty, "Lucian Blaga" University of Sibiu, ***TIE 2012 Winner, Alin Aldea*** *with his trainer Lecturer Alin Mazăre, and Prof. Paul Svasta, Steering Committee Chair*

TIE 2013
Participants

"1 Decembrie 1918" University of Alba Iulia

"Gheorghe Asachi" Technical University of Iaşi

"Lucian Blaga" University of Sibiu

"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

Constanţa Maritime University

University of Craiova

"Politehnica" University of Bucharest

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AIET

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TIE 2014
A short glance of a challenging event

On behalf of the local organizing committee, I wish you all a warm invitation to Timisoara. “Politehnica” University of Timisoara is one of the biggest and most well-known technical universities from Central and Eastern Europe. It was founded in 1920, and during its almost 100 years of existence, “Politehnica” University of Timisoara produced over 100 000 engineers, appreciated both in Romania and abroad, for their competence and seriousness.
At present, “Politehnica” University of Timisoara has 10 faculties and 4 independent departments. 15 000 students, 850 teaching staff and 900 administrative and auxiliary staff study, respectively, work within their framework.
The Electronics and Telecommunication Faculty is therefore a perfect host for the 24th edition of the TIE competition.

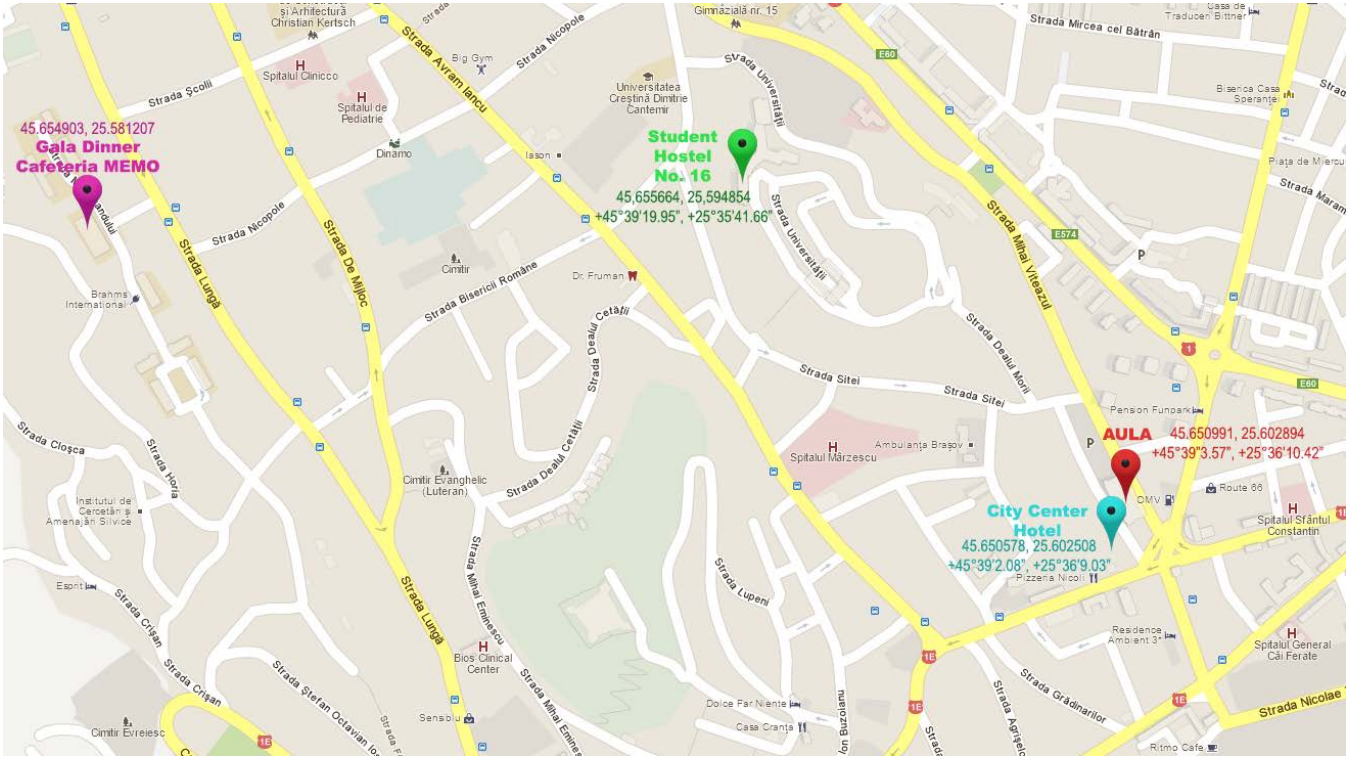
Timişoara is located in the Banat region of Western Romania and as one of country’s largest cities, is home to an estimated 312,000 people. Lying on the picturesque northern bank of the Bega River, Timişoara’s long and dramatic history and stunning architecture attracts thousands of visitors each year. Widely regarded as a “Little Vienna”, the city’s vibrant cultural life has transformed Timişoara into one of Romania’s most developed and cosmopolitan cities.

Culture lovers can enjoy some of the city’s numerous museums and art galleries that illustrate Romania’s rich heritage.

See you in Timişoara!

Timişoara, March 3rd, 2013

Prof. Aurel GONTEAN, Ph.D.
Politehnica University of Timişoara
TIE 2014 Event Director


45.654903, 25.581207
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Cafeteria MEMO
Student
Hostel
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45,655664, 25,594854
+45°39'19.95", +25°35'41.66"
AULA
45.650991, 25.602894
+45°39'3.57", +25°36'10.42"
City Center
Hotel
45.650578, 25.602508
+45°39'2.08", +25°36'9.03"
Strada Avram Iancu
Strada Nicopole
Strada Şcolii
Strada Lungă
Strada De Mijloc
Strada Bisericii Române
Strada Dealul Cetății
Strada Sitei
Strada Mihai Viteazul
Strada Mircea cel Bătrân
Strada Universității
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OMV
Route 66
Spitalul Sfântul Constantin
Cimitir Evanghelic (Luteran)
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