



OPEN  
INNOVATION  
HUB

# ***Screen Printing Forever***

*The SPF Workshop 2016 in Barcelona*

 **ASADA MESH CO.,LTD.**

Dear attendees,

**Asada Mesh Co., Ltd.** will host their **3rd Advanced Screen Printing Workshop** at the **Polytechnic University of Terrassa, Barcelona** during the **3rd and 4th of October**. The latest news and developments in areas like Substrate Technology, Conductive Inks, Sensors, Batteries, Solar Cells and Smart Textiles will be shared by our distinguished Speakers. **Asada Mesh** will also review their newest products and share the latest Research done in our **Open Innovation Hub Lab**.

We are happy to welcome our **Speakers: Cecilia Wolluschek, Art Dobie, Professor José María Canal, Professor Tim Claypole, Tomas Syrový, Bavo Muys, Luis Gómez, Professor Hübner, Armand Bettinelli, Gregoire Staelens, Sousuke Nabeshima and Toru Matsumoto**; please see their Bios and Abstracts on pages 7-28.








An **Exhibitor Tabletop Area will be in the entrance of the main Conference Hall** where you will be able to see some interesting demonstrator products.

Afternoons will be dedicated for fun; please check with your **Hotel** to book a trip to downtown Barcelona, Theme Parks, Winery, etc.






We expect all Invitees to join us for **Lunch on the 3<sup>rd</sup> of October** at the **Hotel Don Cándido** to sample a great **Spanish Meal**.

**Please enjoy our Workshop!**

## Asada Mesh Workshop Schedule for Day 1 (October 3<sup>rd</sup>)

8:30	<b>BUS FROM THE HOTEL DON CÁNDIDO + HOTEL TERRASSA TO UPT</b>	
9:00-9:10	Welcome remarks by UPC's Rector Delegate, Dr. Xavier Cañavate + Intro from Mr. Hideaki Asada Jr. (President).	
9:10-9:25	Ph.D. Cecilia Wolluschek Perri from <u>Navarra's Functional Print Cluster</u> ; "An example of innovative business collaboration in Functional Printing".	
9:30-9:55	Mr. Art Dobie from <u>Ikonics</u> : "Advances in Flexible Substrate Technology for Improved Resolution and Accuracy of Screen Printing Ag Conductors".	
10:00-10:25	Prof. José María Canal from <u>Catalonia's Polytechnic University</u> : "Improving the criteria for Fabrics prepared for High performance Screen Printing with conductive pastes".	
10:30-10:55	Prof. Tim Claypole from <u>Swansea University</u> : "Raising the bar in Screen Printing".	
11:00-12:30	<b>SNACK TIME, TOUR OF THE UNIVERSITY ELECTRONICS / TEXTILE LABS + EXHIBITORS</b>	
12:30-12:55	Ph.D. Tomas Syrový from <u>University of Pardubice</u> : "Fine Line Printing for Sensor Applications".	
13:00-13:25	Mr. Bavo Muys from <u>Agfa</u> : "Conductive Inks for Functional Printing; less is more".	
13:45	<b>BUS TO THE HOTEL DON CÁNDIDO</b>	
14:00	<b>LUNCHEON RECEPTION FOR INVITEES</b>	

## Asada Mesh Workshop Schedule for Day 2 (October 4<sup>th</sup>)

8:30	<b>BUS FROM THE HOTEL DON CÁNDIDO + HOTEL TERRASSA TO UPT</b>	
9:00-9:10	Comments by Fernando Zicarelli	
9:10-9:35	Mr. Luis Gómez from <u>SensingTex</u> : "Large area Pressure Sensor Textiles".	
9:40-10:05	Prof. Gunter Hubner from <u>University of Stuttgart</u> : "Challenges for screen printing of Zinc air Batteries".	
10:10-10:35	Mr. Armand Bettinelli from <u>CEA/INES</u> : "Advanced PV Research using Screen Printing Technology".	
10:40-12:10	<b>SNACK TIME, TOUR OF THE UNIVERSITY ELECTRONICS / TEXTILE LABS + EXHIBITORS</b>	
12:15-12:40	Mr. Grégoire Staelens from <u>Gene's Ink</u> : "State of the art of Conductive Nano inks for Screen Printing".	
12:45-13:10	Mr. Sousuke Nabeshima and Mr. Matsumoto from <u>Asada</u> : "Update on OIH Lab activities and intro to latest products from Asada Mesh".	
13:15	<b>WRAP UP</b>	
13:30	<b>BUS TO THE HOTEL DON CÁNDIDO + AIRPORT (The bus will leave right after the Don Cándido Hotel stop).</b>	

## October 3<sup>rd</sup> Featured Speakers



**“Functional Print Cluster of Navarra: an example of Innovative Business Collaboration in Functional Printing”**  
by **Cecilia Wolluschek**, Cluster of Navarra. SPAIN.

A group of 24 private companies, technology and knowledge centers are working together to promote one of the most innovative sectors with the best perspectives for industrial growth. The Cluster will demo some of the Screen Printed Sensor Products developed by the Students from the Salesianos Technical School.



**“Advanced Flexible Substrate Technology for Improved Resolution and Accuracy of Screen Printed Ag Conductors”**  
by **Mr. Art Dobie**, Chromaline Screen Print Products. USA.

Improvements in flexible substrates have been few and stagnant; recent advances in PET substrate technology by Chromaline have shown substantial improvement in print quality and accuracy. Chromaline will demo some of their latest Screen Printed results with High Mesh Count Screens from Asada Mesh.



**“Improving the criteria for Fabrics prepared for High performance Screen Printing with conductive pastes”**  
by **Prof. José Mª Canal Rodríguez** from Catalonia’s Polytechnic University. SPAIN.

Key fabric properties to be able to obtain Screen Printed Conductive Layers and the influence of textile surface preparation on the results obtained; washing processes, hydrophilic property, dimensional stabilization, surface treatment with Plasma and Calendaring.



**“Raising the bar in screen printing”** by **Prof. Tim Claypole**, David Gethin, James Claypole, Sarah-Jane Potts and David Beynon, Welsh Centre for Printing and Coating. UK.

A portfolio of projects on screen printing have been initiated in the WCPC to relate fundamental ink properties, process parameters and curing on printed product quality. This understanding is key to reducing time from concept to production and improving consistency during manufacture, particularly print to print variation and long term drift.



**“Fine Line Printing for Sensor Applications” by Dr. Tomas Syrový.** University of Pardubice. CZECH REPUBLIC.

The presented study will deal about fabrication process of fully printable NTC thermistor for Smart Label and general sensing application. It will show a comparison of printed thermistors in dependence to quality of the used stencil. Results of conventional stencil based on PES fabrics and precise stencil based on high count stainless steel mesh supported by ASM Assembly Systems/ Asada Mesh Co., Ltd.



**“Conductive Inks for Functional Printing; Less is More” by Mr. Bavo Muys,** Agfa Materials. BELGIUM.

Agfa’s knowledge in silver chemistry and large scale ink manufacturing capability is used to develop inks for functional printing: transparent conductive polymer inks and efficient nano silver inks with high conductivity. These inks should fit in efficient and lean production processes.

## **October 4<sup>th</sup> Featured Speakers:**



**“Large area Pressure Sensor Textiles” by Luis Gómez,** SensingTex. SPAIN.

SensingTex will present material to complement the presentation from Professor José María Canal but in real Pressure Sensor Manufacturing Products. Demo products will be exhibited.



**“Challenges for Screen Printing of Zinc air Batteries”** by Professor Gunter Hübner, IAD of the HdM Stuttgart University. GERMANY.

A new project has started where we deal with Zinc-air Battery-systems. The challenges are printing on PTFE based substrates, printing the electrolytes/separators and printing spacers with high aspect ratios in order to bring the air to the zones where the energy providing reactions take place.



**“Advanced PV Research using Screen Printing Technology”** by Dr. Armand Bettinelli, CEA/INES. FRANCE.

CEA-INES is working on various solar cell Architectures including Heterojunction cells. PV Modules are built using ribbons or wire interconnections. The printing of the cells must be adapted to the interconnection mode, especially for HJ cells metallized with low temperature pastes more resistive than conventional pastes. Results from various mesh choices will be presented.



**“State of the art of Conductive Nano inks for Screen Printing”** by Gregoire Staelens, Gene’s Ink. FRANCE.

This presentation highlights the latest developments in the world of nano-inks for Screen Printing in particular: the advantages vs standard silver paste, the technical achievements, the future developments and the importance of synergy between companies through the entire value chain.



**“Activity Report of the Open Innovation Hub (OIH) since its opening and Update on the latest products from Asada Mesh”** by Mr. Nabeshima and Mr. Matsumoto, Asada Mesh. JAPAN.

Asada’s OIH Team shares how PE Companies, Universities, Technology Centers, Screen Makers, Paste Makers and Equipment Manufacturers benefit from learning about Screen Printing and Screen Making from our experts. We will share the latest Mesh Technology Products coming out in 2017.

**ABSTRACT:**

**“Functional Print Cluster of Navarra: an example of Innovative Business Collaboration in Functional Printing” by Cecilia Wolluschek. FPCN, Spain.**



- The Functional Print Cluster of Navarra Spain is a group of 24 private companies, technology and knowledge centers that are working together to promote one of the most innovative sectors with the best perspectives for industrial growth. Our vision is to develop the industries sector of our region and become a global benchmark in the field of Functional Printing.
- Since 2013, the Cluster has participated in numerous national and international activities and has made more than 10 collaborative R&D projects, which have given rise to 5 products that are already in the market. One of the most interesting experience has been the Electroluminescent Device Manufacturing Project conducted in screen printing by students of the Salesianos Pamplona Educational Center under the technical supervision of Cemitec Technology Centre.

## **CECILIA WOLLUSCHEK'S BIO:**



- Degree in Physics from the University of Buenos Aires (Argentina).
- PhD in Physics from the University of Navarra.
- Master in Project Management from the Public University of Navarra.
- University of Oviedo and the University of La Rioja, Certified in Lean Management from Lean Management Institute of Spain.
- She has extensive experience - over 18 years - in the leadership, management and execution of R & D and industrial projects, working at universities, technology centers and private enterprise.
- Cecilia has worked in Argentina, Colombia, Italy and Spain.
- She is the founder of the technical-scientific CW CONSULTING and is involved in technological entrepreneurship.
- Currently, she combines teaching at the Public University of Navarra UPNA with industrial consulting and technical advice to Functional Cluster Printing Navarra.



## **ABSTRACT:**

**“Advances in Flexible Substrate Technology for Improved Resolution and Accuracy of Screen Printing Ag Conductors” by Art Dobie. Chromaline, USA.**



- One of the major concerns with screen printing of polymer Ag pastes onto common flexible PET substrate materials is the overwhelming spread of the paste beyond the design line width after printing.
- Industry observation and controlled testing have shown this spread to be as much as 180% or greater over the circuit design's intended line width.
- This issue inhibits designers from increasing circuit density and/or reducing circuit real estate without incorporating other, more involved and more costly patterning methods. In many cases, flexible circuit fabricators may have to subcontract parts out of house in order to incorporate other patterning methods and in-turn lose control of both cost and lead time to the hands of their subcontracting partners.
- This presentation will provide results of numerous in-house and field testing, comparing printed line width control, resolution capability, and edge definition of printed polymer Ag conductors on different flexible PET substrates.

## **ART DOBIE'S BIO:**



- Art Dobie is Northeast Region Technical Sales Representative for Chromaline Screen Print Products in Duluth, MN.
- Mr. Dobie has 35 years of experience in the screen printing industry since receiving his BS in Graphic Communications specializing in Screen Printing Technology in 1980 from California University of Pennsylvania.
- He is a Life Member and Fellow of the Society of the International Microelectronics and Packaging Society (IMAPS), and was the 2006 recipient of the IMAPS John A. Wagon Technical Achievement Award for outstanding technical contributions to screen printing technology as related to microelectronics.
- Art was inducted into the SGIA's Academy of Screen Printing Technology in 1998, and was the 2010 recipient of the SGIA David Swarmstedt, Sr. Memorial Award, recognizing the best published article or technical paper written for any aspect of the screen printing industry.

**ABSTRACT:**

**“Improving the criteria for Fabrics prepared for High performance Screen Printing with conductive pastes” by Professor José María Canal from UPC (ESEIAAT) Terrassa, Spain.**



- Key fabric properties to be able to obtain Screen Printed Conductive Layers.
- The influence of textile surface preparation on the results obtained; washing processes, hydrophilic property, dimensional stabilization, surface treatment with Plasma and Calendaring.

## **PROFESSOR JOSÉ MARÍA CANAL'S BIO:**



**Head of the ECOTEXTILE FINISHING LABORATORY (UPC) and the SPPT RESEARCH GROUP (UPC)** (Surfaces, Processes and Textile Products).

- Ascribed to Research Center of Nano engineering of UPC.
- 2 Patents, 61 papers, 15 books, and many R+D industrial projects, with 2 awards, and lectures at international conferences.

**Main expertise fields:** enzymatic treatments, high exhaustion dyeing, pigment and digital printing, textile BAT's, textile ecolabel, REACH, plasma treatments, technical textiles. Medical Textiles.

### **University Management:**

- DIRECTOR OF ENGINEERING DEPARTMENT OF TEXTILE AND PAPER UPC, the periods 1997-2000 and 2000-2003.
- Secretary and Vice President of the Board of Directors of Department of the UPC.
- Elected Member of the CSAPDIU (Staff selection Commission Teaching and Research of the University) by the General Faculty UPC.
- CSAPDIU President from April 2005 to April 2006.

## **ABSTRACT:**

**“Raising the bar in Screen Printing” by Prof. Tim Claypole, David Gethin, James Claypole, Sarah-Jane Potts and David Beynon. WCPC, UK.**



Screen printing accounts for 98% of the profitable printed electronics (IDTechEx, Innolae, 2015). However, much of the theories on ink transfer and resulting product quality are still highly reliant on research with graphic inks. A portfolio of project on screen printing have been initiated in the WCPC to relate fundamental ink properties, process parameters and curing on printed product quality. This understanding is key to reducing time from concept to production and improving consistency during manufacture, particularly print to print variation and long term drift.

This study is not restricted to feature size but also to surface roughness which is a critical parameter in the printing of aerials, batteries, super capacitors etc. Another key aspect is the impact of interlayer interaction. Previous work at the WCPC has shown the impact of the texturing of a flat substrate by one layer on the next. There is evidence in printed electronics of the occurrence of line distortion and uneven deposition caused by the presence of a raised feature.

This is not restricted to the external features but will look at the internal structures of the printed features as alignment of active materials could possibly be manipulated to produce enhanced performance. In order to address these issues, it will be necessary to create a series of model inks and to use techniques such as FIB and cryogenic fracture to study the internal structure.

This paper will review the current understanding of ink transfer mechanisms, before presenting an overview of the results to date and discussing the future direction of the portfolio.

## **PROFESSOR TIM CLAYPOLE'S BIO:**



**Prof. Tim C. Claypole, MBE, PhD, BSc (Hons), C. Eng, F.I.Mech.E., M.I.E.T.**

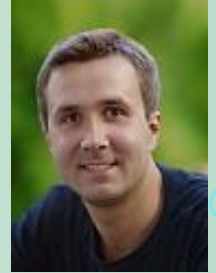
Tim Claypole is a founder and director of the WCPC (Welsh Centre for Printing and Coating, Swansea University). He is a faculty member of the College of Engineering, Swansea University. His areas of research include colour control, manufacturing systems, quality, maintenance, reliability experimental design, fluid mechanics and process thermodynamics. He is a British Expert on ISO TC130 on standards for the graphic arts. As well as graphics and packaging, he has internationally leading research on the use of volume printing processes for advanced manufacture of a diverse range of products including electronics, sensors and point of care health.

Tim led the ERDF funded DIPLE project won the 2009 Regiostars award for “Research, Technology Development and Innovation”, reflecting the successful transfer of the research into industry. He was awarded an MBE for his services to graphic arts and industry in the 2010 Queens New Years Honours.

His contribution to the printing industry has been recognised by the industry with the TAGA Michael Bruno award in 2008 and in 2009 an EFTA special award for outstanding contribution to flexographic printing. The EPSRC, Government and Industry have funded his research that has led to over 170 publications on printing and related topics. He recently finished a prestigious EPSRC Portfolio Grant in “Complex Fluids for Complex flows”, these are only awarded to World leading research groups. He is a co-investigator on the EPSRC Centre for Innovative Manufacture of Large Area Electronics. This major UK award for research is held by the WCPC jointly with the other 3 UK Centres of excellence in Printable Electronics - Cambridge University, Imperial College London and Manchester University.

**ABSTRACT:**

**“Fine Line Printing for Sensor Applications” by Tomas Syrový.**  
University of Pardubice, CZECH REPUBLIC.



- The presented study will deal about fabrication process of fully printable NTC thermistor for Smart Label and general sensing application.
- It will be demonstrated comparison of printed thermistors in dependence to quality of used stencil.
- Within study it was used conventional stencil based on PES fabrics and precise stencil based on high count stainless steel mesh supported by ASM Assembly Systems/ ASADA MESH CO.,LTD.
- The higher stencil quality allowed to print finer interdigital structures which improved some specific characteristics of thermistors.
- The sensors behavior obtained from cycling tests will be discussed.

## **TOMAS SYROVY'S BIO:**

- Since 2006, Dr. Syrový has been a Senior Researcher at the Department of Graphic Arts and Photo physics at the University of Pardubice, Czech Republic.
- From 2009 is leader of a research group working on material Printing/Coating Technologies.
- Since 2010, he has been the Deputy Manager of the Department of Graphics Arts and Photo physics. His research is focused on of various topics of printed/coated electronics (sensors, RFID, displays – (ECD, LEC), accumulators, smart labels, etc.), functional layers/structures (antistatic, antibacterial, luminescent, photochromic, etc.).
- The core of his activities in projects is the development of ink formulations, and the technology of preparing functional layers/structures, including upscaling and transfer to industry.





## **ABSTRACT:**

**“Conductive Inks for Functional Printing; Less is More” by Mr. Bavo Muys.**  
Agfa Materials. BELGIUM.



- In the fast-moving world of Printed Electronics with all kinds of sensors, touch enabled surfaces, intelligent packaging etc. we should go for the most efficient solutions at optimal costs, sources and resources being finite.
- Agfa’s knowledge in Silver chemistry and Large scale ink Manufacturing capability is used to develop inks for functional printing: transparent conductive polymer inks and efficient nano silver inks with high conductivity. These inks should fit in efficient and lean production processes.
- The system approach with Agfa’s nano silver screen print inks combined with ASADA’s fine metal mesh, opens new possibilities: applications aiming for minimum line widths or coating thicknesses.

## **BAVO MUYS' BIO:**

- Bavo is the Application Manager Orgacon & Silver Electronic Materials at Agfa Materials.
- He obtained his Master's degree in Chemistry-Biotechnology in 1984 and started as Production Leader Sterile Medical Preparations at Shering-Plough.
- In 1995 he took the position of Research Leader Antistatic Coatings at Agfa-Gevaert N.V.
- In 2006 he became Research Leader Electrostatics & Surface Modification.



**ABSTRACT:**

**“Large area Pressure Sensor Textiles” by Luis Gómez.**  
SensingTex, SPAIN.



- Large Area Pressure Sensor Textiles based on Printed Electronics done with Screen Printing Technology:
  - ❖ Mattress Mat  
Wellness  
Healthcare
  - ❖ Sitting Mat  
Wellness  
Healthcare
  - ❖ SmartMat  
Counting people  
Security
  - ❖ FitnessMat  
Wellness  
Exergaming  
Sports

## **LUIS GÓMEZ'S BIO:**



- Industrial Engineer specialized in knitting textiles (UPC), has been working in the Textile sector for more than 15 years.
- Luis has been working in R&D projects for more than 8 years, especially in projects related with Printed Electronics on Textiles.
- Involved in different European projects as PRESSTEX, PUMA, HARKEN, TDK4PE, etc; projects that cover from the basic investigation to the development and production of new materials and products.
- Co-inventor of three patents related with Smart Textiles.
- Co-founder and CTO at Sensing Tex and member of the Board.

**ABSTRACT:**

**“Challenges for Screen Printing of zinc air Batteries” by Professor Gunter Hübner.**  
IAD of the HdM Stuttgart University, Germany.



- IAD (Institute for Innovative Applications of the Printing Technologies) of the HdM Stuttgart we mainly work on screen printed batteries.
- IAD's new project has started where we deal with zinc-air battery-systems.
- There the challenges are printing on PTFE based substrates, printing the electrolytes / separators and printing spacers with high aspect ratios in order to bring the air to the zones where the energy providing reactions take place.

## PROFESSOR GUNHER HÜBNER'S BIO:



- Since 1999 Prof. Huebner teaches at the Stuttgart Media University “Hochschule der Medien“ (HdM).
- From 2004 until 2014 he was the leader of the HdM study program “Print and Media Technology”. His specialties in teaching and research are digital, screen and functional printing.
- Since 2006 he leads the Institute for Applied Research (Institut für angewandte Forschung – IAF). His own research group within the IAF is called “Institute for Innovative Applications of the Printing Technologies” (IAD). Recent successful developments are printed antennae for automotive applications and screen-printing of rechargeable batteries.
- Before joining the HdM he worked for about 11 years with the companies AGFA Gevaert AG and DuPont de Nemours.
- He obtained the Dr.-Ing.-title at the Technical University, Darmstadt, the place where he had passed his diploma in mechanical engineering, before.

**ABSTRACT:**

**“Advanced PV Research using Screen Printing Technology” by Dr. Armand Bettinelli.**  
CEA/INES, France.



- CEA-INES is working on various solar cell Architectures including Heterojunction cells.
- PV Modules are built using ribbons or wire interconnections.
- The printing of the cells must be adapted to the interconnection mode, especially for HJ cells metallized with low temperature pastes more resistive than conventional pastes.
- Results for various Mesh choices will be presented.

## **ARMAND BETTINELLI'S BIO:**

- Armand Bettinelli received his Ph.D. in Materials Science in 1987, specializing in the metal-ceramic co-sintering, from Strasburg University.
- He worked more than 10 years as Process Manager and Technical Manager in the co-fired ceramic (HTCC & LTCC) and hermetic package fields.
- After 7 years in displays (Plasma & OLED) he joined CEA-INES in 2005 as senior expert.
- Expert for the industrialization of crystalline silicon PV, his main R&D work concerns the Metallization and Interconnection of the Solar Cells.





**ABSTRACT:**

**“State of the art conductive Nano inks for Screen Printing” by Gregoire Staelens.**  
Gene’s Ink, FRANCE.



- This presentation highlights the latest developments in the world of Nano inks for screen printing.
- Advantages vs standard silver paste.
- Technical achievements.
- Future developments.
- The importance of synergy between companies through the entire value chain.

## GREGOIRE STAELENS' BIO:

- Gregoire is working as a Scientist in the R&D department of Genes' Ink.
- The company is offering innovative solution for Printed electronic market, Including OPV, OLED displays and IoT (sensors, RFID).
- 4 years at Genes' Ink working in ink formulation, printing process development (Screen printing, Ink Jet and Flexo, Spray) and curing process.
- One of his key achievement is the development of the first curing free silver nano ink for screen printing.



**ABSTRACT:**

**“Activity Report of the Open Innovation Hub (OIH) since its opening and Update on the latest products from Asada Mesh” by Mr. Nabeshima and Mr. Matsumoto. Asada Mesh Co., Ltd. JAPAN.**



- Asada’s Team shares how PE Companies, Universities, Technology Centers, Screen Makers, Paste Makers and Equipment Manufacturers benefit from learning about Screen Printing and Screen Making from our experts at the Open Innovation Hub.
- We will share the latest Mesh Technology Products coming out in 2017.

## MR. MATSUMOTO + MR. NABESHIMA'S BIOS:

### **TORU MATSUMOTO (Presenter)**

- Joined Asada Mesh in 2007.
- One of the first members of the R&D department who also lead the establishment of Open Innovation Hub (OIH).
- Has been working on reevaluating the basic data of screen printing from screen making to printing.
- Main person who guides visitors through the OIH.
- Supports also the Sales Team with technical inquiries.



### **SOSUKE NABESHIMA (Sub-presenter/translator)**

- Joined Asada Mesh in 2014.
- Leader of Overseas Sales (mainly in English speaking regions).
- Master of Sustainable Development.
- Automotive filter expert.

## ATTENDEES:

HIDEAKI ASADA	PRESIDENT	ASADA MESH	JAPAN
HIDEAKI HAYASHI	VICE-PRESIDENT	ASADA MESH	JAPAN
SOUSUKE NABESHIMA	SALES	ASADA MESH	JAPAN
ROMINA HAYASHI	FILTRATION	ASADA MESH	JAPAN
TORU MATSUMOTO	OIH	ASADA MESH	JAPAN
FERNANDO ZICARELLI	EUROPE MGR.	ASADA MESH	JAPAN
GREGOIRE STAELENS	SCIENTIST	GENE'S INK	FRANCE
ARMAND BETTINELLI	TECH. MGR.	CEA/INES	FRANCE
ART DOBIE	TECH. MGR.	ICONICS	USA
DEAN BUZBY	TECH. MGR.	HERAEUS	USA
GUNTER HUBNER	PROFESSOR	STUTTGART UNI	GERMANY
WANNER, EUGEN	TECH. MGR.	EKRA	GERMANY
JOSE ANTONIO LEGARRETA	TECH. REP.	KOENEN	SPAIN
MICHAEL LINSE	PV TECH.	FRAUNHOFFER ISE	GERMANY
PETER FLEISCHER	PRESIDENT	PVF	GERMANY
JULIA FLEISCHER	VICE PRESIDENT	PVF	GERMANY
JANA UHL	FILTRATION	PVF	GERMANY
ANJA HECKENS	PASTE DEV. MGR.	HENKEL	BELGIUM
BAVO MUYS	PASTE APPL. MGR.	AGFA	BELGIUM

## ATTENDEES:

FRICK HANS-RUDOLF	TECH. MGR.	GALLUS	SWITZERLAND
BROCKER HEINZ	VICE PRESIDENT	GALLUS	SWITZERLAND
TIM CLAYPOLE	PROFESSOR	SWANSEA UNI.	UK
KIRSTY DENNING	SALES	ASM	UK
SCOTT HAMMOND	SALES MGR.	ASM	UK
FRANK EIRMBTER	BUS. DEVP. MGR.	SUNCHEMICAL	UK
MIKE BAIN	MGR. DIRECTOR	INKTRONICS	UK
YIN CHEUNG LAU	STUDENT	SWANSEA UNI	UK
TOMAS SYROVY	ING PhD	PARDUBICE UNI	CZECH REP
ALESSANDRA QUERCI	SP EXPERT	AMAT	ITALY
MAR GONZALEZ PAREDES	MGR. CLUSTER	NAVARRA	SPAIN
CECILIA WOLLUSCHEK	PE CONSULTANT	NAVARRA	SPAIN
NIKOLA PERINKA	ENGINEER	EUROCAT	SPAIN
MARC SABADELL SIMÓ	OWNER	IMPORTCAT	SPAIN
MARIA KITSARA	R&D FELLOW	UNI AUT BAR	SPAIN
MIGUEL ALTER	R&D FELLOW	UNI AUT BAR	SPAIN
FC. JAVIER DEL CAMPO GARCÍA	R&D FELLOW	UNI AUT BAR	SPAIN
JOSEP ORTEGA	PRESIDENT	AEETT	SPAIN
JOSEP VALERO	GENERAL MGR.	TENYCOL	SPAIN
ISIDRE MARTI	GENERAL MGR.	ITRAM 2000	SPAIN

## ATTENDEES:

LUIS GOMEZ	CTO	SENSINGTEX	SPAIN
JOSE CANDIDO VAZQUEZ	EUROPE MGR.	MONOCRYSTAL	SPAIN
BORJA MUERZA	FUNC. PRINT MGR.	G. ULZAMA	SPAIN
AITOR SANCHEZ	STUDENT	SALESIANOS	SPAIN
MIGUEL ASTIZ AMEZQUETA	PROFESSOR	SALESIANOS	SPAIN
MIREN GÁRATE LLOMBART	PROFESSOR	SALESIANOS	SPAIN
JOSEBA IRIGOYEN	R&D ENGINEER	CEMITEC	SPAIN
ARANTXA SANCHEZ	R&D ENGINEER	CEMITEC	SPAIN
MIREIA BLANES	R&D ENGINEER	FAE	SPAIN
FCO. MANUEL RAMOS	R&D ENGINEER	FAE	SPAIN

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**30 STUDENTS (Master's & Ph.D.)** FROM THE UPC TERRASSA ELECTRONICS AND TEXTILE DEPARTMENTS

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**10 PROFESSORS** FROM UPC TERRASSA ELECTRONICS AND TEXTILE DEPARTMENTS

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# “SCREEN PRINT FOREVER”

**The World's Finest  
Stainless Steel Wire Mesh**

*Cutting edge Weaving Technology*



Manufacturing Wire Meshes for over 70 years,  
Asada Mesh is the Leading Company for  
High Quality Screen Printing  
Meshes used in Electronics  
Manufacturing.



For High Quality Screen Printing  
Stainless Steel Wire Mesh

Asada Mesh has succeeded in the development of the World's Highest Definition  
Stainless Steel Mesh; thanks to this development, Screen Printing Technology has  
entered a New Stage.

1960



High Quality

1990



High Definition

2010



High Dimensional  
Accuracy

2014



The Next Generation  
Application  
Technology

<http://www.asada-mesh.co.jp/en/products/index.html>