



- Training
- Seminars
- Workshops
- Consultancy

PIEK International Education Centre (I.E.C.) BV
 info@piekiec.eu - www.piekiec.eu

In-Company Tailor-Made

Training & Certification
 in
 Interconnection Technologies

PCB Design

PCB Manufacturing

PCB Assembling

PCB Repair and Rework

Wire Harness Fabrication

Wave and Reflow Soldering

Special Training Programs

In-company training? More than 5 participants? Special Training Programs?

Why not contact us if you have more than 5 trainees.

We will tailor the training content to your specific situation and needs and then conduct the training wherever you need it. Your staff spends less time off site and you save time, travel and expense.

We would like to emphasize that the training programs in this brochure are just examples. All our training programs are tailor-made to your specifications and adapted to the skill level of the students. These and other factors, which will be discussed with our customers, determine the length and final costs of the training program.

"The whole is more than the sum of its parts":
 We do not make empty promises, we create facts.

PIEK: "Training Solutions on Demand"

Headoffice:
 Schelsberg 111-113
 6413 AC Heerlen
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E-mail: info@piekiec.eu
 Internet: www.piekiec.eu
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Chamber of Commerce
 South Limburg: 14038721

VAT: NL 8006 68 492 B 01

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Banking:
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PCB Design
 Certification Center



IPC-A-600
 Training Center



IPC-A-610
 Training Center



IPC J-STD-001
 Training Center



IPC-7711/7721
 Training Center



IPC/WHMA-A-620
 Training Center



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Convincing and conclusive results

PIEK provides approximately 420 trainings a year and hands out more than 3000 certificates. Approximately 70% of all the trainings we provide are made to measure and are adjusted to meet the client's needs and wishes. In the last year, PIEK was able to welcome and satisfy more than 50 new clients. The whole team is excited about these results. You are our motivation to continue to convince our regular clients of the high standards of our services, or rather, to convince new clients to choose us. Client satisfaction is an important part of our work. Furthermore, we are privileged to work with and have gained the trust of many manufacturers and suppliers in the electronics industry.

Our trainers:

PIEK's trainers are professionals in their fields and possess extensive technical knowledge both on a national and international level. Each group of sessions is a new challenge to the PIEK team and that is how we avoid developing tunnel vision. That is why our motto is: "Your success is our success!"

All our trainings incorporate the latest technological developments. We are able to do this because of our intensive collaboration with IPC America, industry professionals and many other companies both at home and abroad.

References:

We gauge the quality of our services based on the feedback we receive from our clients. With over 45 years of training experience we can proudly provide you with a long (and growing) list of satisfied clients who use our services on a regular basis. Our clients come from various areas in the electronics industry such as; aviation, high tech, automotive and telecommunication industries. Even the army, the air force and the marines are regular customers, as well as national and international organisations. Branch-insiders such as the Electronic Assembly Contractors, PCB manufacturers and PCB developers also use our facilities.

Companies:

- Companies that provide design services
- OEMs (producers in the electronics industry)
- OEMs (companies that provide design services in the electronics industry and produce their own PCBs)
- OEMs (electronic assembly companies that assemble their own products)
- PCB manufacturers/Companies that provide design services in the electronics industry and produce PCBs to order
- Services/EMS (electronic assembly companies that provide assembly services to clients)
- Repair companies (quality control)
- Rework / Touch-up Departments of assembly companies (OEM and EMS)
- Companies that produce and/or supply according to military standards (suppliers to the military)
- Cable processing industry and assembly companies
- OEMs (electronic assembly companies that assemble their own wiring harnesses)
- Service providers / EMS (cable and wiring harness assembly companies that assemble to order)

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Outsourcing provides huge savings:

You will save time and money this way as it is hard to estimate many of the extra costs for a group of training sessions. Before the training starts we will provide a clear and informative tender. This means there will not be any unpleasant financial surprises. Money spent on one of PIEK's trainings is never wasted as you decide upon the content of the course together with PIEK. Therefore, you will always be able to meet the needs of your employees. We offer both theoretical and practical knowledge. You will be able to select different types of printing machines during your training sessions such as; Hakko, JBC, Metcal, Oki, Pace and Weller.

Our number one priority is a strategic collaboration with our clients!

Our advice and support will help you obtain the renowned IPC certification and re-certifications. PIEK's team will help you reinforce your company's market position internationally as you will benefit from the support of a team of experts who will be at your side thinking with you. You can always count on our support, even after a training has been completed via our website on (www.piekiec.eu).

Discretion is our middle name

Long-term relationships with clients can only be realised when there is trust between both parties. This requires integrity and discretion. Naturally, we treat any information received from your company with the utmost discretion. After all we would not have been able to sustain over 45 years of success in an information sensitive branch had we not held true to that promise all these years.

We have one more important thing we want to share with you; PIEK's primary activities revolve around training and certification policies for companies and employees working in the electronics industry. PIEK and its team will not be trying to sell you anything during the training sessions provided.

PIEK IEC is the officially IPC Authorized Training Centre for:

- IPC PCB Designer Certification, the standard for the design of PCB's
- IPC PCB Advanced Designer Certification, the advanced standard for the design of PCB's
- IPC-A-600 Certification, inspection of PCB's (Bare Boards)
- IPC-A-610 Certification, inspection of assembled PCB's
- IPC's J-STD-001 Certification, the standard for assembly and inspection of PCB's
- IPC-7711 & 7721 Certification, the standard for Repair and Rework of PCB's
- IPC/WHMA-A-620, the inspection standard for cabling and wiring techniques

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Get the in-company customised trainings

PIEK would like to welcome you in Southern Limburg for a thorough training. However, time is becoming more precious by the day. That is the reason why PIEK also provides "in-company" trainings. For you, this offers the following advantages:

- your staff spend less time travelling and can start straight away in the morning and go home in the evening.
- the trainings are completely focused on your company's specific desires and situations.
- your staff train as a team and of course this boosts the team spirit. Employees know each other's knowledge and this stimulates the collaboration.
- naturally the costs are lower, you do not have to pay dinners, night accommodation, travel expenses, extra travel and study hours for your staff.

PIEK works for the entire electronics production industry and can tailor every training to your specific needs. Customised trainings are also possible in our beautiful hilly countryside. It is up to you.... When can we certify your staff?

Equipment

It speaks for itself that our client's wishes and our pragmatic approach are the most essential elements in the development of our training supply. In our courses we make use of the most advanced soldering equipment like HAKKO, JBC, METCAL, OK, PACE and WELLER.

We even provide training courses for several clients of equipment suppliers like Weller Tools, OK Industries and JBC. Therefore our trainers are absolutely familiar with the latest techniques and developments, for which they themselves are very thoroughly trained.

As our client your demands and requirements form the basis for our tailor made training supply.

PIEK is a fully licensed IPC-certification partner

We are more than a training institute. We guide and give advice to our customers in the process of planning and implementing of industry standards. Manufacturing processes and the end products usually have to comply to the standards like the internationally recognised IPC-standards and a well-educated workforce is crucial when implementing these standards.

The added value of ANSI/IPC Certification

The industry standards as developed by IPC for the fabrication of electronic components are universally accepted as the criterion to which design, fabrication and assembly must comply to. The IPC standards are universal reference-books for suppliers, manufacturers, OEM's and end users and provide clear guidelines with respect to production methods and quality. Furthermore these guidelines are used as reference points in the communication between fabricators and their clients.

IPC Certified Master Instructors

All IPC Certified Master Instructors, employed by PIEK, are frequently trained and certified in the United States by IPC. Furthermore they are almost constantly in direct contact with fellow technicians of IPC where they exchange information on the latest technical developments in the electronics industry. These technical capabilities of our trainers make them the ideal sounding board for IPC in the development of new standards.

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E-Learning

What is e-learning actually?

E-learning is the teaching concept for the 21st century, a learning environment on the Internet developed especially for you, which guides you through the material using explanations, animation and questions, with a test at the end. Where you have questions, you can communicate with your own specialist tutor in a forum.

The result is a modern, pleasant and flexible way of learning, with the much sought-after PIEK Certificate to round it off.

Confidentiality

Long term client relationships, like we have, are established based on mutual trust, respect and discretion. It goes without saying that all confidential and sensitive company information will be treated with the utmost discretion and confidentiality. This company's attitude made it possible to be more than 45 years active in this highly sensitive and technology driven industry.

Natural advise

Implementing IPC standards in your organisation is one of the natural advise functions we offer to our clients. We gladly act as counselee for all your possible solutions when it comes to manufacturing and assembly issues.

CSS (Client Satisfaction Survey)

Alongside the well-known IPC Certification process we annually execute a Client Satisfaction Survey in order to determine the level of client satisfaction and quality of our service. The independent institute CEDEO addresses several clients (design, production, repair, rework and cable manufacturing) and reports back on our performance. We latest score was 9.7 on a scale of 10. Something to be proud of.

www.piekiec.eu

These websites contain a wide array of relevant industry information with respect of training and education. All training courses (both in-house and in our well-equipped institute) are listed and links to international trade associations and possible suppliers of soldering and inspection materials and machinery are provided.

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**What is the philosophy of a professional and serious training company working in an industry, such as electronics, that is competitive and lives on the fast lane?
"The whole is more than the sum of its parts":**

- Over 45 years of well-founded knowledge, experience in theory and practice, and a worldwide customer base
- Long-term intensive co-operation with IPC in the USA to stay at the forefront of the newest developments in the area of IPC norms and certifications
- Using our training facilities and methodology you are guaranteed that your workforce is trained according to the latest industry standards, resulting in improved cost control and highly motivated and well trained personnel.
- Our clients are part of a network of industry fellows that exchanges the latest developments and experiences and raise the standing of our industry as a whole.
- The payback-time of your training investments is extremely short.
- Individually developed training programmes to fit individual businesses and their specific requirements
- Own Trainers who not only know what they are talking about but are trained in practical application and certified
- The highest level of customer focus: PIEK listens to you and, together with you, develops training and certification programmes required by YOUR business
- All areas of electronic communications industry are covered by PIEK's training and certification
- PIEK is always there for you: by phone, via the PIEK website or via the PIEK forum
- A reference list of national and international customers with a long track-record of co-operation with PIEK

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Contact us

If you have any questions or need additional information, please do not hesitate to contact:

Rob Walls, Managing Director, phone +31-(0)45-5703333
or via e-mail: sales@piekiec.eu



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IPC J-STD-001
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IPC-7711/7721
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IPC/WHMA-A-620
Training Center



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CONTENTS

PCB Design

- IPC PCB Designer Certification CID
- IPC PCB Advanced Designer Certification CID+
- Hybrid Integrated Circuits Design Thick Film Technology
- Hybrid Integrated Circuits Design Thin Film Technology

PCB Manufacturing

- IPC-A-600 Certified IPC Trainer (CIT)
- IPC-A-600 Certified IPC Trainer (CIT) – IPC Certification Including IPC-6010 Series & IPC-SM-840
- IPC-A-600 Certified IPC Specialist (CIS)
- IPC-A-600 Certified IPC Specialist (CIS) – IPC Certification Including IPC-6010 Series & IPC-SM-840
- Printed Board Process Operator
- Design for Manufacturing, Assembly, Recyclability and Testability
- Printed Board Finishes

PCB Assembly

- Component Identification
- Electro Static Discharge (ESD)
- IEC 61340-5-1 Certified Instructor/Inspector training
- Wave & Reflow Soldering including Trouble Shooting
- IPC-A-610 Certified IPC Trainer (CIT)
Acceptability of Electronic Assemblies
- IPC-A-610 Certified IPC Specialist (CIS)
Acceptability of Electronic Assemblies
- J-STD-001 Certified IPC Trainer (CIT)
Requirements for Soldered Electrical and Electronic Assemblies
- J-STD-001 Certified IPC Specialist (CIS)
Requirements for Soldered Electrical and Electronic Assemblies
- Implementation of BGA and Flip Chip Technology on PCB's according to the IPC-7095, IPC-J-STD-013 and IPC-J-STD-012
- Fabrication Techniques in the Electronic Assembly

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PCB Repair and Rework

- Qualified Rework and Repair Engineer
- Qualified Rework and Repair of High Density Assemblies Multilayer with Thermal mass, ground planes, High Density Components with / without BGA/CSP/QFN
- Cleanroom in the electronics
- Cleaning and Cleanliness Testing of Printed Boards and Assemblies
- Conformal Coating
- Solder Paste Printing (including Lead-Free)
- IPC-7711 & IPC-7721 Certified Trainer (CIT)
Rework of Electronic Assemblies & Repair and Modification of Printed Boards and Electronic Assemblies.
- IPC-7711 & IPC-7721 Certified IPC Specialist (CIS)
Rework of Electronic Assemblies & Repair and Modification of Printed Boards and Electronic Assemblies.

Wire Harness

- Qualified Fiber Optics Cable Assembly
- IPC/WHMA-A-620 Certified IPC Trainer (CIT)
Requirements and Acceptance for Cable and Wire Harness Assemblies
- IPC/WHMA-A-620 Certified IPC Specialist (CIS)
Requirements and Acceptance for Cable and Wire Harness Assemblies

Special Training Programs

- Lead-Free Design
- IPC-7351 Generic Requirements for Surface Mount Design and Land Pattern Standard
- Pressfit Technology
- How to order and to receive printed boards in accordance with expected delivery time and cost, customer's requirements and requested reliability.
- Moisture Sensitive

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IPC PCB Designer Certification CID IPC Certification

Training goal

Good designers' creations must be able to navigate through a long and complicated process. This IPC Designer certification program assesses a designer's knowledge of how to transform a schematic into a reliable rigid PCB design, which can be easily manufactured, assembled and tested.

Certification

The training will be concluded with an official IPC Designer Certificate in case the participants have passed the multiple-choice test at the end of training. The certification test is based on several critical IPC documents that link design principles to the end product use of the printed wiring assembly. The examination is in a multiple choice format. Answer choices are all plausible; therefore, you must indicate the most correct answer. More information about the examination dc.ipc.org/education/workexams.htm

Meant for

The training is meant for all employees who design PCB's, as well for conventional components as for SMD's and who also needs to have a knowledge of the IPC Designer Standard.

Primary training

For this training secondary education supplemented with knowledge of the English language and the design of PCB's is required.

Training material

Every participant will receive the IPC-2221 and IPC-2222 standards and the IPC PCB Design Certification study guide and CD-ROM. All training materials will be send six weeks before training for preparation.

Program (short version)

- Design Considerations
- Materials
- Mechanical, physical and Electrical properties
- Thermal management
- Component and assembly issues
- Holes/interconnections
- General circuit feature requirements
- Quality assurance
- Bare board and electronic assembling process

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IPC PCB Advanced Designer Certification CID+ IPC Certification

Training goal

Good designers' creations must be able to navigate through a long and complicated process. The CID designation is an important recognition of a designer's accomplishments. Yet with the industry changing at an ever-faster pace, continuing education becomes necessary to maintain a designer's effectiveness and marketability. The Advanced Module covers forty key goals beyond the CID. Participants who successfully complete the exam are awarded the CID+ designation.

Certification

The training will be concluded with an official IPC Designer Certificate in case the participants have passed the multiple-choice test at the end of training. The certification test is based on several critical IPC documents that link design principles to the end product use of the printed wiring assembly. The examination is in a multiple choice format. Answer choices are all plausible; therefore, you must indicate the most correct answer.

Meant for

The training is meant for all employees who design PCB's and who also need to have knowledge of the IPC Design Standard. The PCB Designer Certification exam is a challenging exam. It is recommended for designers with at least some experience designing PCBs who have a good understanding of electronics and manufacturing issues.

Primary training

The Advanced Certification is open to anyone possessing a valid CID credential. It is recommended for designers with at least three to five years of experience designing PCBs.

Training material

Every participant will receive the IPC PCB Advanced Design Certification study guide and CD-ROM. All training materials will be send six weeks before training for preparation.

Program (short version)

Design Considerations, Layout Principles, Component and Assembly Issues, Printed Board Characteristics, EMC, EMI and Impedance control, Documentation and Dimensioning.

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PIEK: "Training Solutions on Demand"



IPC
 PCB Design
 Certification Center

IPC
 IPC-A-600
 Training Center

IPC
 IPC-A-610
 Training Center

IPC
 IPC J-STD-001
 Training Center

IPC
 IPC-7711/7721
 Training Center

IPC
 IPC/WHMA-A-620
 Training Center



- Training
- Seminars
- Workshops
- Consultancy

PIEK International Education Centre (I.E.C.) BV
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Hybrid Integrated Circuits Design for Manufacturing and Assembly and Assembly Thick Film Technology PIEK Certification

Training goal

During the training the participant will get an insight in the necessary knowledge for the manufacturing of Thick Film Hybrid Integrated Circuits (HIC's), the manufacturing possibilities of the HIC's industry and the trends within the electronic industry. Which elements are necessary during the design for the right quality, price and reliability so that an efficient design, production and assembly process can be guaranteed for the HIC's?

Meant for

This training is meant for everyone who designs HIC's.

Primary training

For this training secondary education supplemented with knowledge of the English language is required.

Training duration

The training will be for 5 days.

Training material

Every participant will receive a syllabus. During the training photographs, DVD's and slides will be used.

Program (short version)

- Applicable documents
- Base materials
- Thick film technology
- Thick film-hybrid circuit process
- Trends in electronics and influence on hybrid integrated circuit design
- Quality assurance
- Items to contemplate by verifying the design-cost considerations

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Schelsberg 111-113
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Forum: www.piekforum.eu

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Hybrid Integrated Circuits Design for Manufacturing and Assembly and Assembly Thin Film Technology PIEK Certification

Training goal

During the training the participant will get an insight in the necessary knowledge for the manufacturing of Thin Film Hybrid Integrated Circuits (HIC's), the manufacturing possibilities of the HIC's industry and the trends within the electronic industry. Which elements are necessary during the design for the right quality, price and reliability so that an efficient design, production and assembly process can be guaranteed for the HIC's?

Meant for

This training is meant for everyone who designs HIC's.

Primary training

For this training secondary education supplemented with knowledge of the English language is required.

Training duration

The training will be for 5 days.

Training material

Every participant will receive a syllabus. During the training photographs, DVD's and slides will be used.

Program (short version)

- Applicable documents
- Base materials
- Thin film technology
- Thin film-hybrid circuit process
- Trends in electronics and influence on hybrid integrated circuit design
- Quality assurance
- Items to contemplate by verifying the design-cost considerations

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PIEK: "Training Solutions on Demand"





- Training
- Seminars
- Workshops
- Consultancy

PIEK International Education Centre (I.E.C.) BV
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Design for Manufacturing, Assembly, Recyclability and Testability PIEK Certification

Training goal

During the training the participant becomes an insight into the necessary knowledge about the design rules for the production and assembly of PCB's, the fabrication and assembly possibilities of the PCB industry and the trends within the electronic industry. Which elements are necessary during the design for the right quality, price and reliability so that an efficient production and assembly process can be guaranteed. The methods to check the quality of a design to avoid production and assembly problems which arise during the design of PCB's.

Meant for

The training is meant for all employees who design PCB's, as well for conventional components as for SMD's. Furthermore the training is suitable as an information source for designers of electronic appliances, PCB manufacturers and assembly engineers.

Training duration

The training will be for 3 days.

Training material

Every participant will receive a syllabus, the IPC-2221 and IPC-2222 standards and a list with references and books.

Program (short version)

- Scope – purpose
- Applicable documents
- Base Materials
- Process
- Electrical inspection
- Mechanical/physical properties
- Test boards and test coupons
- Design relationship with materials – technologies
- Test requirement considerations
- Implementation of BGA's
- Recyclability issues and RoHS requirements 2010

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PIEK: "Training Solutions on Demand"



PCB Design
 Certification Center



IPC-A-600
 Training Center



IPC-A-610
 Training Center



IPC J-STD-001
 Training Center



IPC-7711/7721
 Training Center



IPC/WHMA-A-620
 Training Center



- Training
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- Workshops
- Consultancy

PIEK International Education Centre (I.E.C.) BV
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IPC-A-600 Certified IPC Trainer (CIT) IPC Certification

Training goal

The IPC-A-600 Training and Certification Program helps all segments of the electronic interconnection industry improve their understanding of printed board quality issues, greatly enhances communication between PCB manufactures, their suppliers and their customers, and – most importantly – provides a valuable credential to industry professionals and recognition for their companies. The goal of this training is to qualify and certify the student as a Certified IPC Trainer (CIT) in the IPC-A-600. In this capacity the certified trainer may conduct Certified IPC Specialist (CIS) training in the IPC-A-600 and hand out the IPC-A-600 Certified Application Specialist certificate.

Certification

PIEK is an **IPC-A-600 Authorized Certification Center** and therefore has IPC Certified Master Instructors who conduct the training according to IPC standards. After the student has successfully completed the final test (70% score) the IPC Certified Master Instructors may hand out the IPC-A-600 Certified Application Specialist certificate. This certificate is valid for 2 years. After 2 years re-certification training must to be followed.

This training does not only support your employees at their job duties, but also supports the ISO-9000F or a similar quality system.

It will give your customers more confidence and information about the way you deal with an order and how you produce and deliver your product. Namely you can show them, on the basis of the IPC standard, how your product was assembled and according to which class. Because the IPC standards are accepted world-wide by all electronic branches, they can be implemented into your quality system. You will profit from the fact that you do not have to develop and maintain standards, you simply refer to the IPC standards.

Meant for

This training is meant for everyone working in the PCB manufacturing, quality assurance and controlling department, next to PCB inspectors and quality controllers in the electronic assembly companies.

Pre-training

For this training a college degree or equivalent is recommended

Training duration

The training will be for 3 days.

Training material

Each student receives IPC-A-600 Certified IPC Trainer (CIT) Training Materials Kit.

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**IPC-A-600 Certified IPC Trainer (CIT)
 IPC Certification**

Program (short version)

Training Program Overview IPC-A-600H-2010 CIT

Module 1 – 4 (100% theory)

Module 1 (Chapter 1):

Introduction/IPC Professional Training – Policy and Procedures/Overview IPC-A-600H

Module 2 (Chapter 2):

External Observable Characteristics

Module 3 (Chapter 3):

Internally Observable Characteristics

Module 4 (Chapter 4, 5):

Miscellaneous, Cleanliness Testing

Final Examination:

Final Examination (75 Questions) Open Book: ca. 3 hrs.

Final Examination (25 Questions) Closed Book: ca. 1 hr.

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PIEK International Education Centre (I.E.C.) BV
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IPC-A-600 Certified IPC Trainer (CIT) - IPC Certification including IPC-6010 Series & IPC-SM-840 IPC Certification

Training goal

The goal of this training is to certify the Certified IPC Trainer (CIT), who then may conduct a Certified IPC Specialist (CIS) Training on the IPC-A-600 and hand out the IPC-A-600 Certified IPC Specialist (CIS) certificate. The training may be given to groups of up to 15 people. Furthermore this training will support the production and assembly companies within the electronic interconnection industry to achieve highest quality, productivity, and cost-effective production by ensuring their workers can correctly apply the acceptability criteria of IPC-A-610

During the training we also cover the IPC-6011, IPC-6012, IPC-6013, IPC-6015, IPC-6016 IPC-6017, IPC-6018 & SM-840.

Certification

PIEK is an **IPC-A-600 Authorized Certification Center** and therefore has IPC Certified Master Instructors who conduct the training according to IPC standards. After the student has successfully completed the final test (70% score) the IPC Certified Master Instructors may hand out the IPC-A-600 Certified Application Specialist certificate. This certificate is valid for 2 years. After 2 years re-certification training must be followed.

This training does not only support your employees at their job duties, but also supports the ISO-9000F or a similar quality system.

It will give your customers more confidence and information about the way you deal with an order and how you produce and deliver your product. Namely you can show them, on the basis of the IPC standard, how your product was assembled and according to which class.

Because the IPC standards are accepted world-wide by all electronic branches, they can be implemented into your quality system. You will profit from the fact that you do not have to develop and maintain standards, you simply refer to the IPC standards.

Meant for

This training is meant for everyone working in the PCB manufacturing, quality assurance and controlling department, next to PCB inspectors and quality controllers in the electronic assembly companies.

Pre-training

For this training a college degree or equivalent is recommended

Training duration

The training will be for 4 days.

Training material

Each student receives IPC-A-600 Certified IPC Trainer (CIT) Training Materials Kit.

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PIEK: "Training Solutions on Demand"





- Training
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- Workshops
- Consultancy

PIEK International Education Centre (I.E.C.) BV
 info@piekiec.eu - www.piekiec.eu

IPC-A-600 Certified IPC Trainer (CIT) - IPC Certification including IPC-6010 Series & IPC-SM-840. IPC Certification

Program (short version)

Training Program Overview IPC-A-600H-2010 CIT

Module 1 – 4 (100% theory)

Module 1 (Chapter 1):

Introduction/IPC Professional Training – Policy and Procedures/Overview IPC-A-600H

Module 2 (Chapter 2):

External Observable Characteristics

Module 3 (Chapter 3):

Internally Observable Characteristics

Module 4 (Chapter 4, 5):

Miscellaneous, Cleanliness Testing

Final Examination Module 1, 2, 3, 4:

Final Examination (75 Questions) Open Book: ca. 3 hrs.

Final Examination (25 Questions) Closed Book: ca. 1 hr.

IPC-6011	Generic Performance Specification for Printed Boards
IPC-6012C	Qualification and Performance Specification for Rigid Printed Boards
IPC-6013B	Qualification and Performance Specification for Flexible Printed Boards
IPC-6015	Qualification and Performance Specification for Organic and Multichip Module Mounting and Interconnecting Structures
IPC-6016	Qualification & Performance Specification for High Density Interconnect (HDI) Layers or Boards
IPC-6017	Qualification and Performance Specification for Printed Boards Containing Embedded Passive Devices
IPC-6018A	Microwave End Product Board Inspection and Test
IPC-SM-840	IPC-SM-840D Qualification and Performance Specification of Permanent Solder Mask

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IPC-A-600 Certified IPC Specialist (CIS) IPC Certification

Training goal

The Training and Certification Program helps all segments of the electronic interconnection industry improve their understanding of printed board quality issues, greatly enhances communication between PCB manufactures, their suppliers and their customers, and – most importantly – provides a valuable credential to industry professionals and recognition for their companies. The objective of this training is to qualify and certify the student in the IPC-A-600 standard.

Certification

PIEK is an **IPC-A-600 Authorized Certification Center** and therefore has IPC Certified Master Instructors who conduct the training according to IPC standards. After the student has successfully completed the final test (70% score) the IPC Certified Master Instructors may hand out the IPC-A-600 Certified Application Specialist certificate. This certificate is valid for 2 years. After 2 years re-certification training must to be followed.

This training does not only support your employees at their job duties, but also supports the ISO-9000F or a similar quality system.

It will give your customers more confidence and information about the way you deal with an order and how you produce and deliver your product. Namely you can show them, on the basis of the IPC standard, how your product was assembled and according to which class.

Because the IPC standards are accepted world-wide by all electronic branches, they can be implemented into your quality system. You will profit from the fact that you do not have to develop and maintain standards, you simply refer to the IPC standards.

Meant for

This training is meant for everyone working in the PCB manufacturing, quality assurance and controlling department, next to PCB inspectors and quality controllers in the electronic assembly companies.

Training duration

The training will be for 3 days.

Training material

Each student receives the IPC-A-600 "Acceptability of Printed Boards and the IPC-A-600 Certified IPC Specialist (CIS) Handbook.

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IPC-A-600 Certified IPC Specialist (CIS) IPC Certification

Program (short version)

Exam/Training Program Overview IPC-A-600H-2010 CIS

Module 1 – 4 (100% theory)

Module 1 (mandatory)

(Chapter 1):

Introduction/IPC Professional Training – Policy and Procedures/Overview IPC-A-600H

Open and closed book exam Module 1: ca. 1,5 hr

Module 2

(Chapter 2):

External Observable Characteristics

Open book exam Module 2: ca. 1 hr

Module 3

(Chapter 3):

Internally Observable Characteristics

Open book exam Module 3: ca. 1 hr

Module 4

(Chapter 4, 5):

Miscellaneous, Cleanliness Testing

Open book exam Module 4: ca. 1 hr

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 IPC J-STD-001
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 IPC-7711/7721
 Training Center

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- Training
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- Workshops
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IPC-A-600 Certified IPC Specialist (CIS) - IPC Certification including IPC-6010 Series & IPC-SM-840 IPC Certification

Training goal

The Training and Certification Program helps all segments of the electronic interconnection industry improve their understanding of printed board quality issues, greatly enhances communication between PCB manufactures, their suppliers and their customers, and – most importantly – provides a valuable credential to industry professionals and recognition for their companies. The objective of this training is to qualify and certify the student in the IPC-A-600 standard. Furthermore the training will help PCB manufacturers achieve highest quality, productivity, and cost-effective production. During the training we also cover the IPC-6011, IPC-6012, IPC-6013, IPC-6015, IPC-6016 IPC-6017, IPC-6018 & SM-840.

Certification

PIEK is an **IPC-A-600 Authorized Certification Center** and therefore has IPC Certified Master Instructors who conduct the training according to IPC standards. After the student has successfully completed the final test (70% score) the IPC Certified Master Instructors may hand out the IPC-A-600 Certified Application Specialist certificate. This certificate is valid for 2 years. After 2 years re-certification training must to be followed.

This training does not only support your employees at their job duties, but also supports the ISO-9000F or a similar quality system.

It will give your customers more confidence and information about the way you deal with an order and how you produce and deliver your product. Namely you can show them, on the basis of the IPC standard, how your product was assembled and according to which class.

Because the IPC standards are accepted world-wide by all electronic branches, they can be implemented into your quality system. You will profit from the fact that you do not have to develop and maintain standards, you simply refer to the IPC standards.

Meant for

This training is meant for everyone working in the PCB manufacturing, quality assurance and controlling department, next to PCB inspectors and quality controllers in the electronic assembly companies.

Training duration

The training will be for 4 days.

Training material

Each student receives the IPC-A-600 "Acceptability of Printed Boards and the IPC-A-600 Certified IPC Specialist (CIS) Handbook and the IPC-6010-Series and IPC-SM-840..

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IPC-A-600 Certified IPC Specialist (CIS) - IPC Certification including IPC-6010 Series & IPC-SM-840 IPC Certification

Program (short version)

Exam/Training Program Overview IPC-A-600H-2010 CIS

Module 1 – 4 (100% theory)

Module 1 (mandatory)

(Chapter 1):

Introduction/IPC Professional Training – Policy and Procedures/Overview IPC-A-600H
Open and closed book exam Module 1: ca. 1,5 hr.

Module 2 (optional)

(Chapter 2):

External Observable Characteristics
Open book exam Module 2: ca. 1 hr.

Module 3 (optional):

(Chapter 3):

Internally Observable Characteristics
Open book exam Module 3: ca. 1 hr.

Module 4 (optional):

(Chapter 4, 5):

Miscellaneous, Cleanliness Testing
Open book exam Module 4: ca. 1 hr.

IPC-6011	Generic Performance Specification for Printed Boards
IPC-6012C	Qualification and Performance Specification for Rigid Printed Boards
IPC-6013B	Qualification and Performance Specification for Flexible Printed Boards
IPC-6015	Qualification and Performance Specification for Organic and Multichip Module Mounting and Interconnecting Structures
IPC-6016	Qualification & Performance Specification for High Density Interconnect (HDI) Layers or Boards
IPC-6017	Qualification and Performance Specification for Printed Boards Containing Embedded Passive Devices
IPC-6018A	Microwave End Product Board Inspection and Test
IPC-SM-840	IPC-SM-840D Qualification and Performance Specification of Permanent Solder Mask

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PIEK: "Training Solutions on Demand"





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- Consultancy

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Printed Boards Process Operator PIEK Certification

Training goal

As an operator the trainee deals with the manufacturing process for a small part. To improve his work he will have to know his colleague better and know what he or she is dealing with. Because of the training Printed Board Process Operator the operator will get an insight his own work and its colleagues work as well as the quality of the PCB. Due to this fact the trainee together with his colleague will improve the quality.

Meant for

The training is meant for all employees who work in the PCB Manufacturing field.

Primary training

No special education is required.

Training duration

The training will be for 5 days.

Training material

Every participant will receive the Printed Board Process Operator handbook.

Program (short version)

- Quality, application, pros and cons of the basis material.
- PCB technologies: statement of technologies and layout of the PCB's.
- Per technology a general description will be given and fabrication processes, used materials and techniques, applications, technical capacity and the future will be discussed.
- Description of kinds of PCB's: rigid double sided PCB's, rigid multi-layer PCB's, flexible and flex-rigid PCB's, metal core PCB's, microvias for the PCB's.
- Steps of the PCB process: per step a short description, one or more processes by which the process steps can be realized, used materials and auxiliary materials, used tools and machines, defects, problems, causes and resolvments.
- The following process steps are pointed out: work preparation, imaging, etching, drilling, metallizing, applying solder resist, finishing soldering surface, screen printing of text, mask and coating, mechanical finishing, electronically check, quality, specifications and standards.

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Printed Circuit Board Finishes PIEK Certification

Training goal

The training Printed Board Finishes provide the participants with insight information on: the most widely used PCB finishes Tin/lead and Lead-free (ROHs), specifications of the finishes, requirements for use and deposit thicknesses based on performance criteria. The training is based one on the IPC 6012, IPC4552, IPC 4553 and IPC 4554 standards.

Meant for

This training is intended for supplier, printed circuit manufacturer, electronics manufacturing services (EMS) and original equipment manufacturer (OEM).

Pre-training

For this training a college degree or equivalent is recommended

Training duration

The training will be for 2 days.

Training material

Every participant will receive a hand-out containing the PowerPoint presentation on Printed Circuit Board Finishes.

Program (short version)

- Dip Coating
- Electroless Plating
- Specification for Electroless Ni/ Immersion Gold Plating for Printed Circuit Boards (IPC-4552)
- Electrolytic Plating
- Immersion Plating
- Characteristics PCB Finishes:

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IPC-A-600
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IPC-A-610
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IPC J-STD-001
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IPC-7711/7721
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IPC/WHMA-A-620
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Component Identification PIEK Certification

Training goal

The training goal of the Component Identification training is to supply the student with the knowledge to identify components that are used in the electronic assembly. The student will gain knowledge of the package types and shapes, the function of the component, its value, polarization etc.

Meant for

This training is meant for everyone who works with electronic components.

Pre-training

No special pre-training is required for this training.

Training duration

The training will be for 3 days.

Training material

Each student will receive the handbook Component Identification and the IPC-DRM-18 Desk Reference Manual. During the training DVD material, demonstration panels and slides will be used.

Program (short version)

- The resistance value and the wattage of a resistor.
- Resistance identification, numerical coding, color coding.
- Identification shapes and forms of fixed resistors.
- The symbol, identification, shapes and forms of potentiometers.
- The symbol, identification, shapes and forms of temperature sensitive resistors Light dependent resistors, voltage dependent resistors, SMD resistors, resistor networks in SIL and DIL packages and hybrid resistors.
- The size and capacity of capacitors, unit of capacitance, ceramic capacitors, SMD capacitors, electrolytic capacitors.
- The electrolytic functions of aluminum and tantalum capacitors, film capacitors, special capacitors, trim capacitors, SMD electrolytic tantalum capacitors.
- The symbol, identification, shapes and forms of diodes, zener diodes, LED's, photo diodes, DIAC's, transistors, photo transistors, opto couplers, FET's, Thyristors, Triac's
- The symbol, identification, shapes and function of coils trim coils, transformers, relays, crystals and fuses.
- SMD package types, such as CHIP-components, MOLDED-components, MELF, SOT, SOD, SOIC, SOJ, PLCC, LCCC, FP, QFP, BQFP, TQFP, SSOP, TSOP, BGA, micro BGA's and Flip-Chips.

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Electro Static Discharge (ESD) PIEK Certification

Training goal

The goal of the Electro Static Discharge (ESD) training is to give the student insight in the protective measures that need to be taken to protect PCB's and components against static electricity. The emphasis is on packaging materials, transport, workbench layout, storage, tools and inspection criteria according to the NEN-EN-IEC 61340-5-1, NEN-EN-IEC 61340-5-2 standards.

Meant for

The training is meant for everyone that is directly or indirectly involved in the assembly, rework, repair etc. of PCB's.

Pre-training

No special pre-training is required for this training.

Training duration

The training will be for 2 days.

Training material

Each student will receive the handbook Electro Static Discharge (ESD). During the training DVD material and demonstration materials will be used.

Program (short version)

- Realization of the ESD problem and motivational factors for the student.
- Behavior of static electricity on conductors and insulators.
- The effect of static electricity.
- The source of ESD damage.
- ESD sensitive components, types of ESD damages and damage mechanisms.
- Relative Humidity and ESD.
- The ESD protective workplace.
- Handling of tools and equipment.
- Cleaning procedures of clothing and personnel.
- Inspection and storage of components.
- Testing ESD protective workbenches.
- Wrapping materials (cushion and wrap material, bags and sleeves).
- Procedures for wrapping ESD sensitive material.
- Markings, storage materials, furniture and personal items.
- Tools, accessories, rules and regulations i.e. NEN-EN-IEC 61340-5-1, NEN-EN-IEC 61340-5-2 standards.

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IEC 61340-5-1 Certified Instructor/Inspector training PIEK Certification

Training goal

The goal of the IEC 61340-5-1 Certified Instructor/Inspector training is to give the student insight in the protective measures that need to be taken to protect PCB's and components against static electricity. The emphasis is on packaging materials, transport, workbench layout, storage, tools and inspection criteria according to the NEN-EN-IEC 61340-5-1 standard.

Certification

IEC 61340-5-1 Certified Instructor/Inspector training finishes with a written test on the last day. Students that pass the test will receive the certificate IEC 61340-5-1 Certified Instructor/Inspector training. This certificate is valid for 2 years. After the 2 years, a re-certification IEC 61340-5-1 Certified Instructor/Inspector training needs to be followed.

Meant for

The training is meant for ESD Instructors, Inspectors and Engineers.

Pre-training

For this training a college degree or equivalent is recommended

Training duration

The training will be for 3 days.

Training material

Each student will receive the handbook Protection of electronic devices from electrostatic phenomena according to the IEC 61340-5-1 standard and the Instructor/Inspector Training Materials Kit.

Program (short version)

- Scope of the IEC 61340-5-1 standard
- Normative references
- Definitions
- Signs and markings
- ESD protected area (EPA)
- Protective packaging
- Training
- Quality responsibilities
- Periodic audit instructions
- Test methods
- Test methods for charge decay
- ESDS design considerations to minimize the effects of ESD
- Operator Training, Policy and Procedures

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Wave & Reflow soldering including Trouble shooting PIEK Certification

Training goal

The goal of this training is to provide the participants with the theoretical and practical knowledge necessary for the operation and optimisation of the wave and reflow soldering process. During the training we will use a data logger. The training is put together according to the IPC's international standards and, especially, the ANSI/J-STD-001 and SMT Process Guideline Checklist

Following this training the participant will be able to:

- program, operate and fine-tune a Wave soldering machine and
- program, operate and fine-tune a Reflow soldering machine.
- "Trouble shoot", by being able to establish whether or not defects are process related or the result of an incorrect set up of the Wave or Reflow soldering machines.

Target employees

- Process engineers
- Operators
- Anyone and everyone involved with the Wave and Reflow soldering process.

Target companies

- OEMs (Electronics assembly companies that assemble their own products)
- Contractors/EMS (Electronics assembly companies that assemble for customers)
- Companies that produce/supply according to military standards (suppliers to the air force, the army and the navy)

Participants

A group in this training will consist of no more than 5 people.

Practical sessions

The practical sessions will take place using the client's wave and reflow soldering machines which should be available for the duration of the training.

The times for the practical sessions will be decided upon in consultation between the trainer and the client.

PIEK will provide the following equipment during the course of the training:

- Notebook with ECD Software
- ECD Fluxometer
- ECD Wave Rider
- ECD OvenRider
- ECD's Super MOLE Gold including Software
- Thermocouples and Tempres

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IPC J-STD-001
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IPC-7711/7721
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 Training Center



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Wave & Reflow soldering including Trouble shooting PIEK Certification

Training duration

The training will be for 3 days.

Program Wave Soldering including Trouble Shooting (short version)

Theory:

- Flux in general
- Flux application
- Preheating
- Wave (soldering)
- Design changes in Lead-free Wave soldering
- Guidance for solder defects and problem solving
- Process optimization (Wave Rider)

Practice Wave soldering machine

- Trouble Shooting soldering machine

Program Reflow Soldering including Trouble Shooting (short version)

Theory:

- Solder paste
- Print Process Parameters
- Reflow soldering
- Basic Profiling (Thermal profile measurement)
- Oven Rider (ECD)

Practice Reflow soldering

- Trouble Shooting soldering machine

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**IPC-A-610 Certified IPC Trainer (CIT)
 Acceptability of Electronic Assemblies
 IPC Certification**

Training goal

The goal of this training is to qualify and certify the student as a Certified IPC Trainer (CIT). In this capacity the Certified IPC Trainer (CIT) may conduct a Certified IPC Specialist (CIS) training in the IPC-A-610 and hand out the IPC-A-610 Certified Application Specialist certificate. The training may be given to groups of up to 15 people. Furthermore the training will help electronic manufacturers to achieve highest quality, productivity, and cost-effective production.

Certification

PIEK is an **IPC-A-610 Authorized Certification Center** and therefore has IPC Certified Master Instructors who conduct the training according to IPC standards. After the student has successfully completed the final test (70% score) the IPC Certified Master Instructors may hand out the IPC-A-10 Certified Application Specialist certificate. This certificate is valid for 2 years. After 2 years re-certification training must to be followed.

This training does not only support your employees at their job duties, but also supports the ISO-9000F or a similar quality system.

It will give your customers more confidence and information about the way you deal with an order and how you produce and deliver your product. Namely you can show them, on the basis of the IPC standard, how your product was assembled and according to which class.

Because the IPC standards are accepted world-wide by all electronic branches, they can be implemented into your quality system. You will profit from the fact that you do not have to develop and maintain standards, you simply refer to the IPC standards.

Target

Instructors, supervisors, inspection, maintenance technicians, engineering manufacturing, process engineers, quality managers, assembly technicians, buyers, sales personnel, some line workers and design engineers, anyone responsible for the training, quality and reliability of electronic assemblies.

Pre-training

For this training a college degree or equivalent is recommended

Training duration

The training will be for 4 days.

Training material

Each student receives IPC-A-610 Certified IPC Trainer (CIT) Training Materials Kit.

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IPC-A-610 Certified IPC Trainer (CIT) Acceptability of Electronic Assemblies IPC Certification

Program (short version)

Training overview IPC-A-610E-2010 (100% theory)

- Session 1: Introduction/Establishing and Maintaining Certification Program Integrity
- Session 2 (Chapter 1, 2 & 3): Foreword, Applicable Documents, Handling
- Session 3 (Chapter 4): Hardware
- Session 4 (Chapter 5): Soldering
- Session 5 (Chapter 6): Terminal Connections
- Session 6 (Chapter 10): Printed Circuit Boards
- Session 7 (Chapter 7): Through-Hole Technology, modification THT
- Session 8 (Chapter 8): Surface Mount Assemblies, modification SMT
- Session 9 (Chapter 9): Component Damage
- Session 10 (Chapter 11): Discrete Wiring (Wire Wrap)
- Session 11 (Chapter 12): High Voltage
- Session 12: Instructor Skills
- Session 13: Administrative Responsibilities of a CIT
- Session 14: Evaluation, Open and Closed Book Exams & Review

At the end of the training program every CIT-participant will be tested:
 (all multiple choice)

- Final Examination (75 questions) Open Book: ca. 3 hrs.
- Final Examination (25 questions) Closed Book: ca. 1 hr.

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IPC-A-610 Certified IPC Specialist (CIS) Acceptability of Electronic Assemblies IPC Certification

Training goal

The goal of this training is to certify employees in the IPC-A-610 Certified IPC Specialist (CIS). Furthermore this training will support the production and assembly companies within the electronic interconnection industry to achieve highest quality, productivity, and cost-effective production by ensuring their workers can correctly apply the acceptability criteria of IPC-A-610

Certification

PIEK has retained the status of an IPC Approved Certification Centre for a number of years and during that time PIEK has worked with its own Master IPC Trainers (MIT) who are all IPC certified. These professionals ensure the competent execution of our trainings according to the current IPC standards. PIEK also applies its own high standards to all trainings provided. The Master IPC Trainer (MIT) assesses the knowledge and/or competence according to the IPC-A-600, IPC-A-610, IPC-7711/21, ANSI/J-Std-001 and/or IPC-WHMA-A-620 standards or any other additional standards. The Master IPC Trainer (MIT) will be awarded in the shape of the relevant PIEK personal certificate should the knowledge and/or competence of the participant match the criteria for examination.

Target group

maintenance technicians, supervisors, operators, manufacturing process engineers, inspection, assembly engineers, quality managers, assembler, anyone responsible for the quality and reliability of electronic assemblies, Some line workers and design engineers.

Pre-training

For this training a general knowledge of the electronic assembly is required.

Training duration

The training will be for 4 days.

Duration

The total duration time of training and exam is between 21 and 24 hours, depending on the number of modules your company choses. Exam duration is 3-6 hours.

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IPC-A-610 Certified IPC Specialist (CIS) Acceptability of Electronic Assemblies IPC Certification

Program (short version)

Training overview IPC-A-610E-2010 Certified IPC Specialist (CIS)
 (IPC-Certification) – (Module 1-9 is 100% Theory).

- Module 1: (mandatory)
Introduction/Establishing and Maintaining Certification Program Integrity
- Module 2 (mandatory)
Foreword, Applicable Documents, Handling
- Module 3 (optional)
Hardware
- Module 4 (optional)
Soldering
- Module 5 (optional)
Terminal Connections
- Module 6 (optional)
Through-Hole Technology, modification THT
- Module 7 (optional)
Surface Mount Assemblies, modification SMT
- Module 8 (optional)
Component Damage, Printed Circuit Boards & Assemblies
- Module 9 (optional)
Discrete Wiring (Wire Wrap)

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IPC J-STD-001 Certified IPC Trainer (CIT) Requirements for Soldered Electrical and Electronic Assemblies IPC Certification

Training goal

The J-STD-001E-2010 Requirements for Soldered Electrical and Electronic Assemblies has emerged as the pre-eminent authority for producing high quality soldered interconnections. The standard emphasises process control and sets industry-consensus requirements for a broad range of electronic products.

IPC has received hundreds of requests from companies' world-wide to support this critical standard with a formal training program that recognises individuals as qualified instructors and provides them with teaching materials.

Now, IPC has a comprehensive, hands-on solder training and certification program based on J-STD-001 that gives companies all the tools they need to increase employee skills and performance.

This training does not only support your employees at their job duties, but also supports the ISO-9000F or a similar quality system.

It will give your customers more confidence and information about the way you deal with an order and how you produce and deliver your product. Namely you can show them, on the basis of the IPC standard, how your product was assembled and according to which class.

Because the IPC standards are accepted world-wide by all electronic branches, they can be implemented into your quality system. You will profit from the fact that you do not have to develop and maintain standards, you simply refer to the IPC standards.

How the Certification Program works

J-STD-001 Training and Certification Program is built on a train-the-trainer instructional model. A company seeking to create an J-STD-001 sends their candidate to an J-STD-001 Authorized Certification Center. The training program uses soldering labs and demonstrations as well as classroom instruction to teach the standard criteria.

Certified IPC Trainer (CIT) candidates who successfully complete the soldering workmanship portions of the course and the certification examination are given the instructional materials needed for training operators. The Certified IPC Specialist (CIS) training is "modularised", meaning that training on the entire document is not required. Certified IPC Specialist (CIS) must be trained on the introductory section, and then may be trained on other modules covering: wires and terminals, through hole technology, surface mount technology and inspection.

Certification

J-STD-001 Certified IPC Trainer (CIT) who successfully complete the examination at the end of the training (80% correct answers), will receive the J-STD-001 Certified IPC Trainer (CIT) Certificate of Completion. Certified IPC Trainer (CIT) are considered certified for 2 years after the course completion date, then they must re-certify.

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IPC J-STD-001 Certified IPC Trainer (CIT) Requirements for Soldered Electrical and Electronic Assemblies IPC Certification

Meant for

Assembly process engineers, quality assurance supervisors, training managers and others responsible for the quality and reliability of soldered electronic assemblies are excellent candidates for the program.

Any company that uses J-STD-001 or is considering its adoption can use the program to address the training requirement identified in the standard.

Prospective Certified IPC Trainer (CIT) should have experience not only in soldering but ideally in training as well.

Training duration

The training will be for 5 days.

Program (short version)

Training program overview J-STD-001E-2010 CIT

- Session 1: Introduction/Course Overview/Policy and Procedures
- Session 2: (Chapter 1, 2): General Requirements of J-STD-001E/Applicable Documents
- Session 3: (Chapter 3): Materials, Components & Equipment Requirements
- Session 4: (Chapter 4): General Soldering & Assembly Requirements
- Session 5: (Chapter 9): PCB Requirements
- Session 6: (Chapter 8): Cleaning Process Requirements
- Session 7: Progress Check & Review Session 1 – 6
- Session 8: (Chapter 5): Wire & Terminal Assembly/Soldering Requirements
- Session 9: (Practice): Wire & Terminal Demo
- Session 10: (Practice): Wire/Terminal Lab
- Session 11: (Chapter 6): Through-Hole Mounting and Terminations
- Session 12: Progress Check & Review Session 8 – 11
- Session 13: (Practice): TH Demo
- Session 14: (Practice): T-H Lab
- Session 15: (Chapter 7): Surface Mounting of Components
- Session 16: Progress Check & Review Session 15
- Session 17: (Practice): SMT Demo
- Session 18: (Practice): SMT Lab
- Session 19: (Chapter 1): Coating and Encapsulation
- Session 20: (Chapter 12): Rework & Repair
- Session 21: (Chapter 11): Product Assurance
- Session 22: Progress Check & Review Session 19 – 21
- Session 23: Instructor Basics
- Session 24: Comprehensive Review
- Session 25: Final Exam Open Book (75 Questions): 3 hrs.
 Final Exam Closed Book (25 Questions): 1 hr.
- Session 26: Administration of the CIS J-STD-001E Program

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IPC J-STD-001 Certified IPC Specialist (CIS) Requirements for Soldered Electrical and Electronic Assemblies IPC Certification

Training goal

The J-STD-001E-2010 Requirements for Soldered Electrical and Electronic Assemblies has emerged as the pre-eminent authority for producing high quality soldered interconnections. The standard emphasises process control and sets industry-consensus requirements for a broad range of electronic products.

IPC has received hundreds of requests from companies' world-wide to support this critical standard with a formal training program that recognises individuals as qualified instructors and provides them with teaching materials.

Now, IPC has a comprehensive, hands-on solder training and certification program based on J-STD-001 that gives companies all the tools they need to increase employee skills and performance.

This training does not only support your employees at their job duties, but also supports the ISO-9000F or a similar quality system.

It will give your customers more confidence and information about the way you deal with an order and how you produce and deliver your product. Namely you can show them, on the basis of the IPC standard, how your product was assembled and according to which class.

Because the IPC standards are accepted world-wide by all electronic branches, they can be implemented into your quality system. You will profit from the fact that you do not have to develop and maintain standards, you simply refer to the IPC standards.

How the Certification Program works

The standard describes materials, methods and verification criteria for producing high quality soldered interconnections. The standard emphasizes process control and sets industry-consensus requirements for a broad range of electronic products.

The training program uses also soldering labs, soldering demonstrations as well the understanding of the IPC/J-STD-001.

In the IPC/J-STD-001 Certified IPC Specialist (CIS) training, only the Introduction module (module 1), is a required element. Other operator-level modules are taught based on company needs. IPC/J-STD-001 Certified IPC Specialist (CIS) are certified for two years for each module taken.

Meant for

Maintenance technicians, operators, process engineers, repair and reworkers, quality managers, anyone responsible for the quality and reliability of soldered electronic assemblies, are excellent candidates for the program.

Pre-training

For this training knowledge of the electronic assembly is necessary.

Training duration

The training time is 1 day per module

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IPC J-STD-001 Certified IPC Specialist (CIS) Requirements for Soldered Electrical and Electronic Assemblies IPC Certification

To receive the certificate the participant has to follow at least 2 modules.
 Module 1 is required. Module 2 until 5 are optional.

Program (short version)

Exam/Training program overview J-STD-001E-2010 CIS

Module 1 (100% theory),
 Module 2 – 5 (50% theory, 50% practice/lab)

- Module 1 (mandatory)
 (Chapter 1 – 4, 8, 10):
 General Requirements of J-STD-001 & Applicable Documents, Materials, Components & Equipment Requirements, General Soldering & Assembly Requirements
- Module 2 (optional)
 (Chapter 5):
 Wire & Terminal Assembly & Soldering, Lab soldering wires on terminals
- Module 3 (optional)
 (Chapter 6, 9, 11, 12):
 Through Hole Mounting & Terminations, Lab soldering of TH-components
- Module 4 (optional)
 (Chapter 7, 9 – 12):
 Surface Mounting of Components, Lab soldering of SMDs
- Module 5 (optional)
 (Chapter 11, 5 – 7, 9):
 Product Assurance, Theory of Inspection/SPC, Lab Inspection

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Cleaning and Cleanliness Testing of Printed Boards and Assemblies PIEK Certification

Training goal

The goal of the Cleaning and Cleanliness Testing of Printed Boards and Assemblies training is to provide the participants with insight into the different elements, types of contamination, IPC procedures relating to cleaning, assembly & stencil cleaning, waste water and the machines and cleaning agents used. Special attention is paid to lead contamination in lead-free assemblies.

Target employees

This training is intended for everybody involved in the cleaning of PCBs and stencil printers. The Cleaning and Cleanliness Testing of Printed Boards and Assemblies training is also suited for everybody involved in the assembly, repair etc. of PCBs. This training can also be of use, depending on the program selection, to non-production staff and warehouse staff.

Participants

A group in this training will consist of no more than 10 people.

Training duration

The training will be for 2 days.

Training material

Every participant will receive a handout Cleaning and Cleanliness Testing of Printed Boards and Assemblies.

Program (short version)

- Ionic residue (contamination)
- Non-ionic residue (contamination)
- Explanation of electro migration (Dendritic Growth)
- Results of "Dendritic Growth"
- Reliability issues for contamination on PCB
- Test methods for contamination: SEC, ROZE, Ion chromatography and SIR tests
- IPC recommendations for cleaning and cleanliness in: IPC-A-610D, IPC-A-600G, IPC J-STD-001D, IPC-CH-65A and IPC-7526
- Assembly cleaning, how? Ultrasonic, aqueous or solvent systems
- Stencil cleaning, how? Ultrasonic, aqueous or solvent systems
- Function of ultrasonic, aqueous and aqueous systems
- Cleaning agents
- Advantages and disadvantages of ultrasonic, aqueous and solvent systems
- Waste water treatment
- Environmental requirements of waste water
- Different contaminations like oil and mud in waste water
- Filter systems for waste water
- Can the cleaning process damage the stencil?
- What is the environmental impact?
- Safety and versatility
- How clean is the PCB? (testing)

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Conformal Coating PIEK Certification

Training goal

The training on Conformal Coating including the main application equipment and coating processes such as masking, de-masking, inspection and stripping and repair of coatings. Delegates will be encouraged to bring along their own products for processing or help and guidance in the future.

An option is for the second day to be based at the customer's facilities where the delegates will train on their own systems along with processing sample products for experience.

Target employees

This training is intended for everybody involved in the conformal coating of PBCAs. The Conformal coating of Printed Boards Assemblies training is also suited for everybody involved in the assembly, repair etc. of PBCAs.

Participants

A group in this training will consist of no more than 15 people.

Training duration

The training will be for 2 days.

Training material

Every participant will receive a hand-out containing the PowerPoint presentation on Conformal Coating.

Program (short version)

- Explanation and discussing the IPC-CC-830
This is the industry standard for qualification and quality conformance of conformal coating. Its intent is to show how to obtain maximum information with minimum test redundancy. Includes requirements and evaluations of material properties using standardized test vehicles.
- Explanation and discussing the IPC-HDBK-830
This handbook is a compilation of the conformal coating industry's practical experience, and will assist the designers and users of conformal coatings in making informed choices.
- Cleaning
- Applying Conformal Coating

Practice (IPC-7711/21)

- Inspection of Conformal coating according to IPC-A-610
- Rework of Conformal coatings according to IPC-7711/21
- Procedure of removing coating:
- Procedure of applying coating
- Qualification of Conformal coating according to IPC-CC-830

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Qualified Rework and Repair of High Density assemblies Multilayer with thermal mass, ground planes, High Density components with/without BGA/CSP/QFN

PIEK Certification

Training goal

The goal of this training is to provide participants with both theoretical and, more importantly, practical insight into the craftsmanship and methods used in the qualified soldering and desoldering (tin, lead and/or lead free) of multilayer PCBs with a high thermal mass and component density by using:

- Extra under-heaters for PCBs;
- Nitrogen hand-operated soldering stations for desoldering components with a high thermal mass
- Rework stations like:
 - a complete rework station (JBC AM6500)
 - a hot air rework station (Hakko FR 801)
 - a BGA rework station (client)

The training is executed in accordance with the IPC's following international standards:

- **IPC-A-610:** this standard forms the basis for the visual inspection of assembled PCBs;
- **J-Std-001:** this standard forms the basis for the visual inspection of assembled PCBs and also, more importantly, describes the demands made of the materials and processes used.
- **IPC-7711/IPC-7721:** this standard covers the guidelines for rework, repair and touch-up.

Target employees

Test & Repair employees

- Repair employees
- Staff working in the Rework/Touch-Up department in assembly companies (OEM and EMS)
- Managerial staff in Rework/Touch-Up departments

Target companies

Electronics repair companies

- Rework/Touch-Up departments of assembly companies (OEM and EMS)
- OEMs (Electronics assembly companies that assemble their own products)
- Contractors / EMS (Electronics assembly companies who assemble for customers)
- Companies that follow military procedures for their production and/or deliveries (suppliers to the army, air force and the navy)

Participants

This training is intended for people that are directly or indirectly involved in the rework, repair and touch-up process of assembled multilayer PCBs with high thermal masses. The groups for this training will consist of no more than 5 participants

Prior knowledge

Practical experience and knowledge in the basic repair and rework procedures is required for this training.

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**Qualified Rework and Repair of High Density assemblies
 Multilayer with thermal mass, ground planes, High Density
 components with/ without BGA/CSP/QFN
 PIEK Certification**

Training duration

The training will be for 4 days.

Training material

Every participant will receive a hand-out containing the PowerPoint presentation on Qualified Rework and Repair of High Density assemblies

Practical work stations equipped by PIEK

PIEK will provide a fully fitted work station consisting of a rework station and the necessary tools, soldering irons etc. We also provide a microscope, PCB, consumer materials and components. As our client you will be able to select one of the following rework stations: Hakko, JBC, Metcal, Oki, Pace or Weller.

Program (short version)

Qualified Rework and Repair of High Density Assemblies

- Solder alloys, Tin/lead versus Lead-free (J-STD-006)
- Flux Activity Low, Mildly and High (J-Std-004)
- Maximum temperature components (J-STD-001)
- Maximum temperature PCB
- Practice.

Qualified Rework and Repair of Grid Array Assemblies

Ball Grid Array

- What is the difference between a BGA and a normal component?.
- Related IPC-Standards (IPC-7095, J-STD-001D, IPC-7711/21)
- Advantage BGA Package
- Population of solder balls on a BGA

Reflow BGA/CSP/QFN Process

- Reflow soldering against BGA Rework machine
- Reflow Profile (Ramp, Soak, Ramp, Reflow, Cooling)
- Temperature Board and BGA/CSP/QFN
- Paste Printing
- Practice.

BGA Pad repair and Modification

- Surface Mount BGA Pad Repair Film adhesive Method
- Surface Mount BGA Pad Repair Epoxy Method
- Jumper Wires, BGA Component, Foil Jumper method
- Jumper Wires BGA Components, Trough Board Method
- Practice.

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IPC-A-610
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IPC J-STD-001
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Cleanroom in the Electronics (ISO-14644-F) PIEK Certification

Training goal

The goal of this training is to supply the student with a theoretical and practical knowledge of electronic assembly process. In particular the various processes, products, machines materials standards etc. will be discussed. Furthermore the training will help to achieve higher quality, productivity, and cost-effective production.

Target employees

group leaders, process engineers, quality inspectors, sales personnel, development technicians, designers, production managers, etc.

Target companies

- OEMs (Electronics assembly companies that assemble their own products)
- Contractors/EMS (Electronics assembly companies that assemble for customers)
- Companies that produce/supply according to military standards (suppliers to the air force, the army and the navy)

Participants

A group for this training will consist of no more than 20 people.

Prior knowledge

For this training a college degree or equivalent is recommended

Training duration

The training will be for 3 days.

Training material

Each participant will receive a hand-out on Fabrication Techniques in the Electronic Assembly.

Program (short version)

The training is made up of the following modules:

- Layout design according to IPC-2221 and IPC-2222, standardized footprints.
- PCB dimensions, pre-forming components according to IPC-2615.
- Bare PCB inspection according to IPC-A-600.
- Workshop and workbench layout.
- Materials en machines for pre-forming.
- Machines, terms and definitions and mounting processes in de electronic assembly.
- ESD.
- Automated mounting techniques.
- Surface Mounting Technology.
- Wave soldering PCB's incl. trouble shooting.
- Reflow soldering incl. trouble shooting.
- Rework and Repair according to IPC-7711 and IPC-7721.
- Acceptability criteria for electronic assemblies IPC-A-610.

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Qualified Rework and Repair Engineer PIEK Certification

Training goal

The goal of this training is to provide the participants with both theoretical and, above all, practical insight into the craftsmanship and methods used in qualified soldering, de-soldering (tin/lead and/or lead-free) and the repair of two-sided and multilayer PCBs which have been fitted with conventional, SMD and Fine Pitch components.

The training is executed in accordance with the IPC's following international standards:

- **IPC-A-610:** This standard forms the basis for the visual inspection of assembled PCBs;
- **J-Std-001:** This standard forms the basis for the visual inspection of assembled PCBs and also, more importantly, describes the demands made of the materials and Processes. It also highlights the standards demanded for assembly (PCBA).
- **IPC-7711/IPC-7721:** this standard encompasses the rework, repair and modification processes for the reliability of product classes 1 up to and including 3.

Target employees

Test & Repair employees

- Repair employees
- Staff working in the Rework/Touch-Up department in assembly companies (OEM and EMS)
- Managerial staff in Rework/Touch-Up departments

Target companies

Electronics repair companies

- Rework/Touch-Up departments of assembly companies (OEM and EMS)
- OEMs (Electronics assembly companies that assemble their own products)
- Contractors / EMS (Electronics assembly companies who assemble for customers)
- Companies that follow military procedures for their production and/or deliveries (suppliers to the army, air force and the navy)

Participants

A group for this training will consist of no more than 10 people.

This training is intended for employees who solder, desolder and repair PCBs which have been fitted with conventional and/or SMD and/or fine pitch assemblies.

Prior knowledge

No prior knowledge is required for this training.

Training duration

The training will be for 4 days.

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PIEK: "Training Solutions on Demand"





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Qualified Rework and Repair Engineer PIEK Certification

Practical work stations equipped by PIEK

PIEK will provide a fully fitted work station consisting of a rework station and the necessary tools, soldering irons etc. We also provide a microscope, PCB, consumer materials and components. As our client you will be able to select one of the following rework stations: Hakko, JBC, Metcal, Oki, Pace or Weller.

Program (short version)

- Module 1: Reworking Through Hole Assemblies
- Module 2: Reworking SMD Assemblies
- Module 3: Reworking Fine Pitch Assemblies (module 2 compulsory)
- Module 4: Repair and Modification of Through Hole Assemblies
- Module 5: Repair and Modification of SMD Assemblies
- Module 6: Repair and Modification of Fine Pitch Assemblies

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IPC-A-610
 Training Center



IPC J-STD-001
 Training Center



IPC-7711/7721
 Training Center



IPC/WHMA-A-620
 Training Center



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Qualified Fiber Optics Cable Assembly PIEK Certification

Training goal

Cable and Wiring systems using Fiberglass techniques. Fiberglass techniques are the transmission medium of the future. It allows data traffic free of interference and at really high speeds due to the high bandwidth, flexibility and a wide range of application.

The goal of this training is to provide the participants with both a theoretical and, mostly, practical knowledge of cable and wiring systems using fiberglass techniques. The training also focuses on the tools and connectors used and the methods of soldering, assembly and testing. The use of testing and soldering machines and materials is also covered by the syllabus.

Target employees

This course is geared to design, IT, engineering and installation professionals who desire a strong understanding of fiber optic principles
 Everyone directly or indirectly involved in Fiber Optics Cable Assembly

Target companies

- Fiber Cable processing industry and assembly companies
- OEMs (electronic assembly companies that assemble their own Fiber wiring systems)
- Contractors/EMS (Fiber optic cable and wiring harness assembly companies that assemble for customers)

Participants

A group for this training will consist of no more than 10 people.

Prior knowledge

No prior knowledge is required for this training.

Training duration

The training will be for 4 days.

Training material

Each participant will receive a hand out on Qualified Fiber Optics Cable Assembly.

Participants

A group for this training will consist of no more than 10 people.

Prior knowledge

No prior knowledge is required for this training.

Training duration

The training will be for 4 days.

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**Qualified Fiber Optics Cable Assembly
 PIEK Certification**

Program (short version)

- Module 1: Introduction and Standards
- Module 2: Wiring
- Module 3: Assembly of pluggable designs
- Module 4: Repairing or connecting fiberglass wiring
- Module 5: Testing and Inspecting
- Module 6: Quality control.

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Solder Paste Printing (including Lead-Free) PIEK Certification

Training goal

The goal of this training is to provide the participants with the theoretical and practical knowledge necessary for the operation and optimisation of the SMD Soldering paste printing process. The training is put together according to the IPC's international standards and, especially, the IPC-HDBK-005, HDBK-820 and IPC-S-816 SMT Process Guideline & Checklist.

Following this training a participant will be able to:

- program, operate and fine-tune a Solder Paste Printer.
- "Trouble shoot", by being able to establish whether or not defects are process related or the result of an incorrect set up of the Solder Paste Printer.

Target employees

Process engineers, Operator, anyone and everyone involved with the soldering paste printing process

Target companies

- OEMs (Electronics assembly companies that assemble their own products)
- Contractors/EMS (Electronics assembly companies that assemble for customers)
- Companies that produce/supply according to military standards (suppliers to the air force, the army and the navy)

Participants

A group for this training will consist of no more than 6 people.

Prior knowledge

No prior knowledge is required for this training.

Training duration

The training will be for 2 days.

Training material

Each participant will receive a hand-out on Solder Paste Printing (including Lead-Free).

Program (short version)

- Flux in general
- Print Process Parameters
- Solder paste
- Stencil Printing Trouble Shooting
- Practice Wave soldering machine:

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Implementation of BGA and Flip Chip Technology on PCB's according to the IPC-7095, J-STD-013 and J-STD-012 PIEK Certification

Training goal

The goal is to train the employee theoretically and especially practically in the implementation of BGA and Flip Chips in the PCB Design, Bare Board manufacturing and the assembly process according to the IPC-7095, J-STD-012 and J-STD-013. Furthermore this training will support the quality, productivity and cost-efficiency of the production.

Target employees

This seminar is meant for everyone who is involved in the problems surrounding BGA and Flip Chip implementation, such as engineers, development technicians, designers, production managers, etc.

Target companies

- OEMs (Electronics assembly companies that assemble their own products)
- Contractors/EMS (Electronics assembly companies that assemble for customers)
- Companies that produce/supply according to military standards (suppliers to the air force, the army and the navy)

Participants

A group for this training will consist of no more than 6 people.

Prior knowledge

For this training a college degree or equivalent is recommended

Training duration

The training will be for 2 days.

Training material

Each participant will receive the IPC-7095, J-STD-012 and J-STD-013.

Program (short version)

- Module 1: BGA implementation according to IPC-7095 and J-STD-013
- Module 2: Flip Chip implementation according to J-STD-012

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Fabrication Techniques in the Electronic Assembly PIEK Certification

Training goal

The goal of this training is to supply the student with a theoretical and practical knowledge of electronic assembly process. In particular the various processes, products, machines materials standards etc. will be discussed. Furthermore the training will help to achieve higher quality, productivity, and cost-effective production.

Target employees

group leaders, process engineers, quality inspectors, sales personnel, development technicians, designers, production managers, etc.

Target companies

- OEMs (Electronics assembly companies that assemble their own products)
- Contractors/EMS (Electronics assembly companies that assemble for customers)
- Companies that produce/supply according to military standards (suppliers to the air force, the army and the navy)

Participants

A group for this training will consist of no more than 20 people.

Prior knowledge

For this training a college degree or equivalent is recommended

Training duration

The training will be for 3 days.

Training material

Each participant will receive a hand-out on Fabrication Techniques in the Electronic Assembly.

Program (short version)

The training is made up of the following modules:

- Layout design according to IPC-2221 and IPC-2222, standardized footprints.
- PCB dimensions, pre-forming components according to IPC-2615.
- Bare PCB inspection according to IPC-A-600.
- Workshop and workbench layout.
- Materials en machines for pre-forming.
- Machines, terms and definitions and mounting processes in de electronic assembly.
- ESD.
- Automated mounting techniques.
- Surface Mounting Technology.
- Wave soldering PCB's incl. trouble shooting.
- Reflow soldering incl. trouble shooting.
- Rework and Repair according to IPC-7711 and IPC-7721.
- Acceptability criteria for electronic assemblies IPC-A-610.

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IPC-7711 / 7721 Certified IPC Trainer (CIT) – Lead-Free Rework of Electronic Assemblies & Repair and Modification of Printed Boards and Electronic Assemblies
IPC Certification

Training goal

The objective of this training is to qualify and certify the participant as a Certified IPC Trainer (CIT). In this capacity the Certified IPC Trainer (CIT) may conduct a Certified IPC Specialist (CIS) Training on the IPC-7711/7721 Rework of Electronic Assemblies/Repair and Modification of Printed Boards and Electronic Assemblies and hand out the IPC-7711/7721 Certified Application Specialist certificate. The training may be given to groups of up to 15 people. Furthermore the training will help electronic manufacturers to achieve highest quality, productivity, and cost-effective production.

IPC-7711/7721 Certified IPC Trainer (CIT) training covers common rework and repair techniques. The IPC-7711/7721 Repair and Rework of Electrical and Electronic Assemblies has emerged as the pre-eminent authority for producing high quality soldered interconnections. The standard emphasises repair and rework for a broad range of electronic products.

IPC has received hundreds of requests from companies' world-wide to support this critical standard with a formal training program that recognises individuals as qualified instructors and provides them with teaching materials.

Now, IPC has a comprehensive, hands-on solder training and certification program based on the IPC-7711/7721 that gives companies all the tools they need to increase employee skills and performance.

Information about PIEK's personal certificates and their validity

PIEK has retained the status of an IPC Approved Certification Centre for a number of years and during that time PIEK has worked with its own Master IPC Trainers (MIT) who are all IPC certified. These professionals ensure the competent execution of our trainings according to the current IPC standards. PIEK also applies its own high standards to all trainings provided.

The Master IPC Trainer (MIT) assesses the knowledge and/or competence according to the IPC-A-600, IPC-A-610, IPC-7711/21, ANSI/J-Std-001 and/or IPC-WHMA-A-620 standards or any other additional standards. The Master IPC Trainer (MIT) will be awarded in the shape of the relevant PIEK personal certificate should the knowledge and/or competence of the participant match the criteria for examination.

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IPC-A-610
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IPC J-STD-001
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IPC-7711 / 7721 Certified IPC Trainer (CIT) – Lead-Free IPC Certification

How the Certification Program works

IPC-7711/7721 Certified IPC Trainer (CIT) is built on a train-the-trainer instructional model. A company seeking to create an IPC-7711/7721 Certified IPC Trainer (CIT) sends their candidate to an IPC-7711/21 Authorized Certification Centre. The training program uses soldering labs and demonstrations as well as classroom instruction to teach the standard criteria. Certified IPC Trainer (CIT) participants who successfully complete the soldering workmanship portions of the course and the certification examination are given the instructional materials needed for training operators (IPC-7711/7721 Certified IPC Specialist (CIS) IPC-7711/7721 Certified IPC Trainer (CIT) Program provides individuals with a valuable, portable credential that recognises their understanding of the IPC-7711/7721. In the Certified IPC Specialist (CIS) training, only the introductory module, common procedures, is a required element. Other operator-level modules are taught based on company needs. IPC-7711 / 7721 Certified IPC Specialist (CIS) are certified for two years for each module taken.

Target group

- Instructors, maintenance technicians, assembly process engineers, quality managers, quality assurance supervisors, assembly technicians, anyone responsible for the quality and reliability of electronic assemblies.
- Any company that uses IPC-7711/7721 or is considering its adoption can use the program to address the training requirement identified in the standard.
- Prospective Registered Instructors should have experience not only in repair and Rework but ideally in training as well.

Prior knowledge

For this training a college degree or equivalent is recommended

Training duration

The training will be for 5 days.

Participants

A group for this combination training will consist of no more than 10 people.

Program of the training IPC-7711 / 7721 Certified IPC Trainer (CIT) (IPC-Certification) – (70% Practice).

- Product classifications, skill levels, tools and materials
- Basic surface mount and through hole component removal
- Land preparation and component installation
- Primary heating methods: conductive, convective, etc.
- Handling electronic assemblies
- Wire splicing procedures
- Through hole component removal and installation
- Chip and MELF rework procedures
- SOIC/SOT, J-lead and QFP rework
- Printed wiring board circuit and laminate repair
- Conformal coating removal

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IPC-7711 / 7721 Certified IPC Specialist (CIS) – Lead-Free Rework of Electronic Assemblies & Repair and Modification of Printed Boards and Electronic Assemblies
IPC Certification

Training goal

IPC-7711/7721 Certified IPC Specialist (CIS) training covers common rework and repair techniques. The IPC-7711/7721 Repair and Rework of Electrical and Electronic Assemblies has emerged as the pre-eminent authority for producing high quality soldered interconnections. The standard emphasises repair and rework for a broad range of electronic products. IPC has received hundreds of requests from companies' world-wide to support this critical standard with a formal training program that recognises individuals as qualified instructors and provides them with teaching materials. Now, IPC has a comprehensive, hands-on solder training and certification program based on the IPC-7711/7721 that gives companies all the tools they need to increase employee skills and performance.

Information about PIEK's personal certificates and their validity

PIEK has retained the status of an IPC Approved Certification Centre for a number of years and during that time PIEK has worked with its own Master IPC Trainers (MIT) who are all IPC certified. These professionals ensure the competent execution of our trainings according to the current IPC standards. PIEK also applies its own high standards to all trainings provided. The Master IPC Trainer (MIT) assesses the knowledge and/or competence according to the IPC-A-600, IPC-A-610, IPC-7711/21, ANSI/J-Std-001 and/or IPC-WHMA-A-620 standards or any other additional standards. The Master IPC Trainer (MIT) will be awarded in the shape of the relevant PIEK personal certificate should the knowledge and/or competence of the participant match the criteria for examination.

How the Certification Program works

The training program uses soldering labs, soldering demonstrations as well the understanding of the IPC-7711/7721.

In the IPC-7711 / 7721 Certified IPC Specialist (CIS) training, only the introductory module, common procedures, is a required element. Other operator-level modules are taught based on company needs. IPC-7711 / 7721 Certified IPC Specialist (CIS) are certified for two years for each module taken.

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IPC Certification

Target group

- maintenance technicians, operators, repair and rework engineers, repair and reworkers, quality assurance supervisors, anyone responsible for the quality and reliability of soldered electronic assemblies are excellent candidates for the program.
- Any company that uses IPC-7711/7721 or is considering its adoption can use the program to address the training requirement identified in the standard.

Prior knowledge

No prior knowledge is required for this training.

Training duration

The training will be 2 until 4 days.

Participants

A group for this combination training will consist of no more than 10 people.

Program of the training IPC-7711 / 7721 Certified IPC Trainer (CIT) (IPC-Certification) – (70% Practice).

- Module 1 Common Procedures and introduction to IPC-7711 & 7721
- Module 1 is a required element must be satisfactorily completed
- Module 1 Certified IPC Specialist (CIS) examination 20 questions Open Book.

Other IPC-7711 / 7721 Certified IPC Specialist (CIS) level modules are taught based on company needs:

- Module 2 Wire Splicing, Basic Procedures and Techniques
- Module 3 Through Hole Components according to J-STD-001 & IPC-A-610
- Module 4 Chip and Melf Procedures
- Module 5 Gull Wing Procedures
- Module 6 PLCC J-Lead Procedures
- Module 7 PCB Circuit Repair
- Module 8 Laminate Repair
- Module 9 Conformal Coating

Module 2-9 Certified IPC Specialist (CIS) Examination Workmanship Evaluation only.

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**IPC/WHMA-A-620 Certified IPC Trainer (CIT)
 Requirements and Acceptance for Cable and Wire Harness
 Assemblies
 IPC Certification**

Training goal

The objective of this training is to qualify and certify the student as a Certified IPC Trainer (CIT). In this capacity the Certified IPC Trainer (CIT) may conduct Certified IPC Specialist (CIS) Training on the IPC/WHMA-A-620 and hand out the IPC/WHMA-A-620 Certified Application Specialist certificate.

Furthermore this training will support the Cable and Wire Harness Assemblies companies within the electronic interconnection industry to achieve highest quality, productivity, and cost-effective production by ensuring their workers can correctly apply the acceptability criteria of IPC/WHMA-A-620

Information about PIEK's personal certificates and their validity

PIEK is an **IPC/WHMA-A-620 Authorized Certification Center** and therefore has IPC Certified Master Instructors who conduct the training according to IPC standards. After the student has successfully completed the final test (80% score) the IPC Certified Master Instructors may hand out the IPC/WHMA-A-620 Certified IPC Trainer (CIT) certificate. Only with this certificate a trainer may conduct IPC/WHMA-A-620 Certified IPC Specialist (CIS) training and issue IPC/WHMA-A-620 Certified Application Specialist certificates after the final test.

This certificate is valid for 24 months. After the 2 years re-certification training must to be followed.

This training does not only support your employees at their job duties, but also supports the ISO-9000F or a similar quality system.

It will give your customers more confidence and information about the way you deal with an order and how you produce and deliver your product.

Namely you can show them, on the basis of the IPC standard, how your product was inspected and according to which class.

Because the IPC standards are accepted world-wide by all electronic branches, they can be implemented into your quality system.

You will profit from the fact that you do not have to develop and maintain standards, you simply refer to the IPC standards.

Examination

The examination consists of Open Book and Closed Book questions.

A score of 80% or better is mandatory for the open and closed book examination to become certified as an IPC/WHMA-A-620 Certified IPC Trainer.

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IPC/WHMA-A-620 Certified IPC Trainer (CIT) IPC Certification

Meant for

The training is meant for instructors, quality managers, assembly technicians and process-engineers, with a great deal of experience in the cable and wire harness fabrication and installation.

Prior knowledge

For this training a college degree or equivalent is recommended

Training duration

The training will be 4 days.

Participants

A group for this combination training will consist of no more than 10 people.

Program

Module 1

- IPC Professional Policies and Procedures
- Requirements and Acceptance for Cable and Wire Harness Assemblies
- Applicable Documents
- Preparation
- Cable Assemblies and Wires
- Testing

Module 2

- Crimp Terminations (Contacts and Lugs)
- Insulation Displacement Connection (IDC)

Module 3

- Soldered Terminations

Module 4

- Connectorization
- Molding/Potting

Module 5

- Splices

Module 6

- Marking/Labeling
- Securing
- Harness/Cable Electrical Shielding
- Cable/Wire Harness Protective Coverings

Module 7

- Coaxial and Twin axial Cable Assemblies
- Cable/Wire Harness Protective Coverings

Module 8

- Solderless Wrap

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IPC/WHMA-A-620 Certified IPC Specialist (CIS) Requirements and Acceptance for Cable and Wire Harness Assemblies IPC Certification

Training goal

The goal of this training is to certify employees in the IPC/WHMA-A-620 Certified IPC Specialist (CIS). Furthermore this theoretical training will support the Cable and Wire Harness Assemblies companies within the electronic interconnection industry to achieve highest quality, productivity, and cost-effective production by ensuring their workers can correctly apply the acceptability criteria of IPC/WHMA-A-620

Information about PIEK's personal certificates and their validity

PIEK has retained the status of an IPC Approved Certification Centre for a number of years and during that time PIEK has worked with its own Master IPC Trainers (MIT) who are all IPC certified. These professionals ensure the competent execution of our trainings according to the current IPC standards. PIEK also applies its own high standards to all trainings provided. The Master IPC Trainer (MIT) assesses the knowledge and/or competence according to the IPC-A-600, IPC-A-610, IPC-7711/21, ANSI/J-Std-001 and/or IPC-WHMA-A-620 standards or any other additional standards. The IPC certificate is valid for 24 months. After the 2 years re-certification training must be followed.

Target group

- maintenance technicians, operators, repair and rework engineers, repair and reworkers, quality assurance supervisors, anyone responsible for the quality and reliability of soldered electronic assemblies are excellent candidates for the program.
- Any company that uses IPC/WHMA-A-620 or is considering its adoption can use the program to address the training requirement identified in the standard.

Prior knowledge

No prior knowledge is required for this training.

Participants

A group for this combination training will consist of no more than 10 people.

Training duration

The duration of the course: 4 consecutive days of training (24 hours).
 For all modules (module 1-8) the exam will take between 4 and 6 hours.

Training material

Every attendee will receive a hardcopy of the IPC/WHMA-A-620 standard and the

Examination

Open Book examination for the module 1 until 8.
 For each module between 5 and 20 open book questions.
 A score of 70% or better for each module is mandatory to become certified as an IPC/WHMA-A-620 Certified Application Specialist.

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**IPC/WHMA-A-620 Certified IPC Specialist (CIS)
 Requirements and Acceptance for Cable and Wire Harness
 Assemblies
 IPC Certification**

Program

- Module 1: Introduction/Policies and Procedures
- Module 2: Crimp Terminations, Insulation Displacement Connection (IDC)
- Module 3: Soldered Terminations,
- Module 4: Connectorization, Molding/Potting
- Module 5: Splices
- Module 6: Marketing/Labeling, Wire Bundle Securing, shielding, Cable/Wire Harness Protective Coverings
- Module 7: Coaxial and Twin axial Cable Assemblies
- Module 8: Solder less Wrap

Certificate is valid for 24 months. After the 2 years re-certification training must be followed.

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Lead-Free Design PIEK Certification

Training goal

During the training the participant becomes an insight into the necessary knowledge about the lead free design rules for the production and assembly of PCB's, the fabrication and assembly possibilities of the PCB industry and the trends within the electronic industry. Which elements are necessary during the design for the right quality, price and reliability so that an efficient production and assembly process can be guaranteed?

Target employees

The training is meant for all employees who design PCB's, as well for conventional components as for SMD's. Furthermore the training is suitable as an information source for designers of electronic appliances, PCB manufacturers and assembly engineers.

Target companies

- OEMs (Electronics assembly companies that assemble their own products)
- Contractors/EMS (Electronics assembly companies that assemble for customers)
- Companies that produce/supply according to military standards (suppliers to the air force, the army and the navy)

Participants

A group for this training will consist of no more than 10 people.

Prior knowledge

For this training a college degree or equivalent is recommended

Training duration

The training will be for 2 days.

Training material

Each participant will receive a hand-out Lead-Free Design.

Program (short version)

- Pad Design.
- PCB finishers which fulfill the requirements of the RoHS
- Laminates witch fulfill the requirements of the RoHS
- Component finishers which fulfill the requirements of the RoHS
- Marking of Lead-Free products which fulfill the requirements of the RoHS according The IPC-1066

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IPC-7351 Generic Requirements for Surface Mount Design and Land Pattern Standard PIEK Certification

Training goal

The objective of this training is to qualify the participant in land pattern design for all types of passive and active components, including resistors, capacitors, MELFs, SSOPs, TSSOPs, QFPs, BGAs, QFNs and SONS. The standard provides printed board designers with an intelligent land pattern naming convention, zero component rotations for CAD systems, and three separate land pattern geometries for each component that allows the user to select a land pattern based on desired component density.

The training includes also land pattern design guidance for lead free soldering processes, reflow cycle and profile requirements for components, and new component families such as numerous forms of chip array packages and "pull-back" QFN and SON devices.

Target employees

The training is meant for PCB Designers and process engineers, with a great deal of experience in the electronic assembly.

Target companies

- OEMs (Electronics assembly companies that assemble their own products)
- Contractors/EMS (Electronics assembly companies that assemble for customers)
- Companies that produce/supply according to military standards (suppliers to the air force, the army and the navy)

Participants

A group for this training will consist of no more than 10 people.

Prior knowledge

For this training a college degree or equivalent is recommended

Training duration

The training will be for 2 days.

Training material

Each student will receives a hand-out of the presentation and the IPC-7351 standard. IPC-7351 includes both the standard and a IPC-7351 land pattern viewer on CD-ROM from which to access component and land pattern dimensional data.

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Pressfit Technology PIEK Certification

Introduction

With, on the hand, the present technological changes in the electronic industry and on the other hand, the request for cost reduction per final electronic function, many technical and educational programmes are proposed to the industry.

In electronic assembly and printed board manufacturing, one strong trend consists into the need for information, for basic technological knowledge to all levels of the production organisation: workers, employees, and production, development design and purchasing engineers.

Of course, within the proposed programmes, contents and duration depend on the involved people and on the degree of formation.

Hereafter, we have summarised a programme intended to give information to the printed board users and more particularly dedicated to purchasers; the course can also be contemplated as an initial introduction to the board and assembly technology for designers and quality control.

Teamwork is becoming a mandatory issue in the industry and it means, e.g. that decision in design, quality and purchasing should be a part of a common decision and for a complete strategy, the suppliers must also be part of the team.

Target employees

The training is meant for employees which are involved in PCBA's with Press Fit Connections but could be an additional important information for designers, development engineers and quality control officers

Target companies

- OEMs (Electronics assembly companies that assemble their own products)
- Contractors/EMS (Electronics assembly companies that assemble for customers)
- Companies that produce/supply according to military standards (suppliers to the air force, the army and the navy)

Participants

A group for this training will consist of no more than 10 people.

Prior knowledge

For this training a college degree or equivalent is recommended

Training duration

The training will be for 2 days.

Training material

Each participant will receive a hand out Press fit Technology.

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**Pressfit Technology
 PIEK Certification**

Program (short version)

- Standards IPC-IEC
- Terms and Definitions IEC and IPC-T-50
- Properties
- Application
- Types of Connection
- Type of press fit connections
- Press-in connection
- Press fit versus soldering
- Manufacturer's specification
- PCB Materials Choice
- Plated Hole Diameters
- Press in Equipment
- Tooling Concept
- Press Fit for Leaded Boards and Lead Free Boards
- Types of Trough Hole Plating (Finisher)
- Press Fit connection reliability versus Board Plating
- Parameters for a good insertion
- Testing
- Rework
- Insertion Characteristics

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How to order and to receive printed circuit boards and printed circuit board assemblies in accordance with expected delivery time and cost, customer's requirements and requested reliability
PIEK Certification

Introduction

With, on the hand, the present technological changes in the electronic industry and on the other hand, the request for cost reduction per final electronic function, many technical and educational programmes are proposed to the industry. In electronic assembly and printed board manufacturing, one strong trend consists into the need for information, for basic technological knowledge to all levels of the production organisation: workers, employees, and production, development design and purchasing engineers. Of course, within the proposed programmes, contents and duration depend on the involved people and on the degree of formation. Hereafter, we have summarised a programme intended to give information to the printed board users and more particularly dedicated to purchasers; the course can also be contemplated as an initial introduction to the board technology for designers and quality control. Teamwork is becoming a mandatory issue in the industry and it means, e.g. that decision in design, quality and purchasing should be a part of a common decision and for a complete strategy, the suppliers must also be part of the team.

Target employees

The training is meant for the printed boards purchasers but could be an additional important information for designers, development engineers and quality inspectors.

Participants

A group for this training will consist of no more than 10 people.

Prior knowledge

For this training a college degree or equivalent is recommended

Training duration

The training will be for 3 days.

Training material

Each participant will receive a hand-out.

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**How to order and to receive printed circuit boards and printed circuit board assemblies in accordance with expected delivery time and cost, customer's requirements and requested reliability
 PIEK Certification**

Program

The course will cover different facets to show the interdependence between elements as organisation, manufacturing, purchasing and quality and will also give to the participants a large survey of the technology and the basic parameters to be taken into account for printed board purchasing. First, the various printed board types and the major process steps will be described and commented. The characteristics defining printed boards will complete the first part and their importance in printed board cost will be highlighted. In the second part, we shall detail the administrative elements and the technical information requested for ordering printed boards; parameters as type of board, dimensions, quantity, finish and C.A.D. information will be surveyed. On a large information base and as third facet, the printed board parameters will be compared to the supplier's capabilities summarised in a product capabilities table. Attention will be devoted to estimate the level of a design complexity influencing drastically the printed board price. To conclude, the programme will cover an issue to integrate in a general strategy for selection and follow-up of suppliers: survey of elements to verify by/with the supplier in order to determine strengths and weakness, his reliability level in quality and delivery time.

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Moisture Sensitive Device

(The use, operation, packaging and transportation of moisture sensitive (plastic) SMD components)

PIEK Certification

Training goal

The goal of the Moisture Sensitive Device training is to provide the participants with the theoretical and practical skills using the standard methods (J-std-033) for the use, handling, packaging and transportation of moisture sensitive (plastic) SMD components. Employing these methods allows you to eradicate production problems caused by the absorption of and exposure to moisture during the reflow soldering process.

Target employees

The training is meant for employees which are involved in PCBA's with Press Fit Connections but could be an additional important information for designers, development engineers and quality control officers

Target companies

- OEMs (Electronics assembly companies that assemble their own products)
- Contractors/EMS (Electronics assembly companies that assemble for customers)
- Companies that produce/supply according to military standards (suppliers to the air force, the army and the navy)

Participants

This training is intended for everyone directly or indirectly involved with the operation, packing, transportation and the reflow soldering process of SMD components. A group for this training will consist of no more than 15 participants.

Prior knowledge

For this training a college degree or equivalent is recommended

Training duration

The training will be for 2 days.

Training material

Each participant will receive:

- J-STD-020 Moisture/Reflow Sensitivity Classification for Non Hermetic Solid State Surface Mount Devices
- J-STD-033 Handling, Packing, Shipping and Use of Moisture Reflow SMD

Headoffice:

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Chamber of Commerce

South Limburg: 14038721

VAT: NL 8006 68 492 B 01

Based on article 132, 1, i, article 196 Regulation 2006/112/EG there is no VAT due.

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Postbank

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* Customer Satisfaction

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PIEK: "Training Solutions on Demand"





- Training
- Seminars
- Workshops
- Consultancy

PIEK International Education Centre (I.E.C.) BV
 info@piekiec.eu - www.piekiec.eu

Moisture Sensitive Device

(The use, operation, packaging and transportation of moisture sensitive (plastic) SMD components)

PIEK Certification

Program (short version)

- Introduction
 - Cause: moisture absorption in plastic SMD-packages
 - Problems with packaging (Reflow)
 - Dry Packing
- Requirements
 - Drying of SMD packages and carrier materials before being sealed in MBBs
 - Drying requirements - Levels 2a - 5a
- Drying
 - Post exposure to factory ambient
 - Any duration exposure
- Use
 - Incoming bag inspection
 - Upon receipt
 - Component inspection
 - Floor Life
 - Safe storage
 - Dry Pack
 - Shelf life
- Board rework
 - Component removal, rework and remount
 - Removal for failure analysis
 - Removal and remount
 - Baking of populated boards

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PCB Design
 Certification Center

IPC-A-600
 Training Center

IPC-A-610
 Training Center

IPC J-STD-001
 Training Center

IPC-7711/7721
 Training Center

IPC/WHMA-A-620
 Training Center