



## RENEX trainings

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## RENEX ELECTRONICS EDUCATION CENTRE



Training Centre is an autonomous expansion of RENEX activities.

30 years of experience in electronic industry and many years of cooperation with international association of IPC enables us to provide electronics' training at the highest level confirmed by commonly recognized international certificates. With our training programs use the most dynamic companies in the electronic industry.

From our training programs benefits the most dynamic companies in the electronic branch. We train electronics in Poland, Europe and Asia.

We invite you to learn more about our Training Centre.

### RENEX EEC



**RENEX EEC is the Training Centre in Central and Eastern Europe. It is also one of the most modern Training Centres in the world.**

Currently the company has its representatives in countries such as Serbia, Romania, Bulgaria, Croatia, Slovenia and Lithuania.

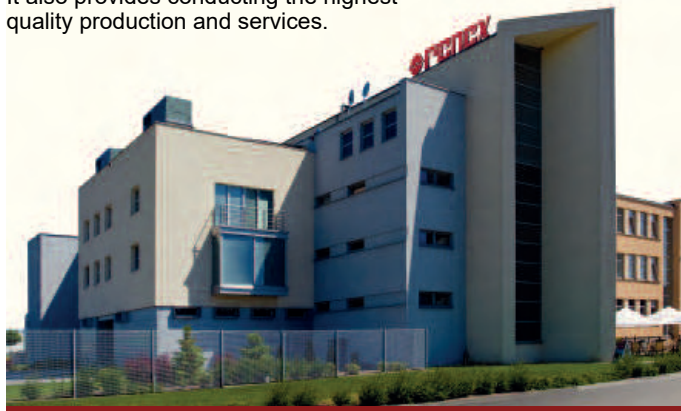
### Association Connecting Electronics Industries



**IPC is the most important, international association of manufacturers of electronic industry.**

To elite members of the IPC belongs many companies of international reputation include: Jabil, Flextronics, Delphi, Pace, Cisco, Alcatel, Motorola, Nokia, Hewlett Packard, Kimball, Lucent Technologies, Sony Corporation and many others. These companies often use subcontractors from which demand assurance of high quality work confirmed well-known and widely accepted IPC certificate.

Possession by company crew certificates by IPC standards is the best way to win new markets and partnerships with the most recognized entities in the electronics industry. It also provides conducting the highest quality production and services.



### Most important certificates in branch

- International IPC certificate, worldwide recognized for its guarantee of performed products quality and services
- IPC is a leading, international association of electronic industry manufacturers

### Didactic materials

- Training materials available in multiple languages
- Variety of teaching aids
- Multimedia training support
- Only one in Poland, demo-room with a complete production

### Well equipped training halls

- High-end audio-video equipment
- Halls tailored to groups of 15, 25, 100 students
- Halls rental - ideal for those seeking comfortable place for a conference, training, banquets, etc.

### Hotel and gastronomic facilities

- Highest class Mediterranean cuisine restaurant
- Luxurious hotel in complex
- Possibility of organizing unusual artistic and integration programs



## RENEX EEC - TRAINING CENTRE



Training Centre is an autonomous expansion of RENEX activities. 30 years of experience in electronic industry and many years of cooperation with international association of IPC enables us to provide electronics' training at the highest level confirmed by commonly recognized international certificates.

## Certificates of Renex EEC



## IPC Certificates

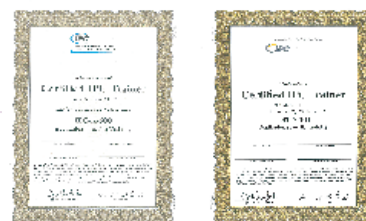
Why it is worth to have **IPC certificate**:

1. Gaining certification ensures a positive independent quality evaluation of electronic packages
2. Qualified personnel shall perform tasks of much smaller number of errors
3. International Certificates increase possibility of cooperation with other members of IPC and international corporations

## Certificates for Specialists



## Certificates for Trainers



### Advantages from training:

- international IPC certificate, accepted as a guarantee of quality products and services
- attracting qualified staff - higher quality production
- professional quality control of electronic assemblies
- cooperation with established companies that require high quality production
- raising the profile of the company
- obtaining lucrative contracts through contacts with members of the association





### Conference Centre Portofino



**We give at your disposal Training and Conference Centre as well as Hotel with PORTOFINO restaurant.**

Our Centre is one of the most modern training centres in the world, equipped with a specialized instrumentation necessary to conduct training for electronic engineers.

Training and Conference Centre is the ideal solution for companies looking for a professionally equipped training centre with a comfortable hotel and catering facilities. We offer rooms for 100, 50 and 30 person groups. The facility is equipped with all multimedia aids for performing the training in any form.

### Mediterranean restaurant "Portofino"

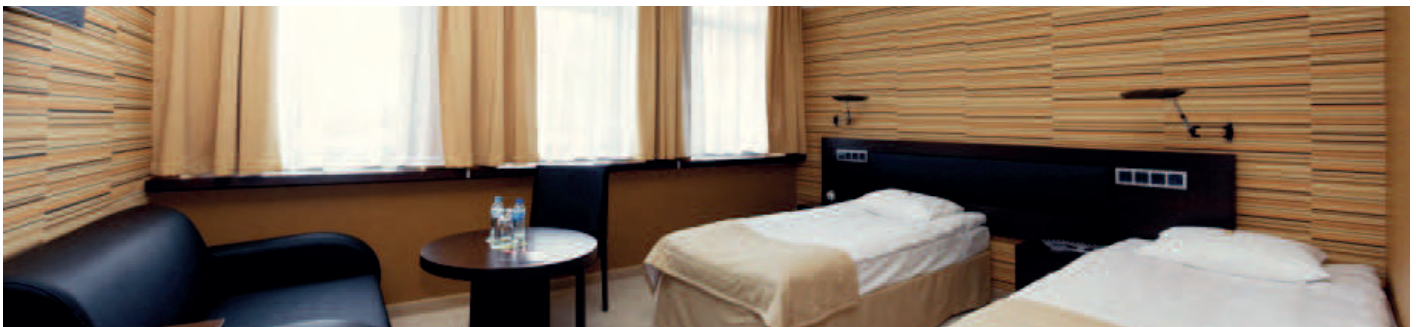


**Mediterranean Portofino restaurant located in our Centre is a magical place, boasting an attractive interior design.**

You will find here three fine dining rooms equipped with the latest sound equipment and multimedia.

Culinary travel enthusiasts surprises a unique combination of Mediterranean menu with traditional tastes of Polish cuisine. You can also enjoy a wide selection of wines from around the world. Good atmosphere guarantees club music as well as organized events and concerts. Breakfast is served in buffet form and a la carte on Guest request also to the room. Breakfasts are included in room price.

### Hotel Portofino



**For our Guests we offer 14 comfortable rooms with bathrooms, equipped with air conditioning LCD TV, safe access to the internet and safety deposit box.**

**Interior design of each room was prepared in individual tones.**



## IPC-A-610- (Specialist)

### ACCEPTABILITY OF ELECTRONIC ASSEMBLIES



#### Training purpose

Gaining knowledge related to quality requirements, installation of electronic assemblies according to IPC-A-610 standard. Latest revision.

#### Training program

- Policies and procedures of IPC.
- Product classes and conditions of acceptability by IPC.
- Electrostatic discharge - the rules of safe operation, use of equipment and electronic components.
- Detailed criteria for:
  - mechanical assembly and installation/orientation of electronic components,
  - acceptability of solder joints,
  - connection of cables and wires,
  - cleanliness of devices after assembly,
  - laminate quality,
  - quality of protective coating and markings,
  - discrete wiring,
  - assemblies mounted in through hole and surface mount, technology.
- Theoretical exams.

#### i Advantages:

- Will gain the latest knowledge on the existing international standards of printed circuit assembly made in through hole and surface mount technology
- Will acquire the ability to control quality performance of electronic packages
- Receive handbook with educational materials and gain personal, international certificate of IPC-A-610 training completion Certified IPC Specialist

## IPC-7711/21 (Specialist)

### REWORK, MODIFICATION AND REPAIR OF ELECTRONIC ASSEMBLIES AND PRINTED CIRCUIT BOARDS



#### Training purpose

Gaining theoretical and practical knowledge about modification and repair techniques of electronic devices and printed circuits according to IPC-7711 and IPC-7721 standard. Latest revision.

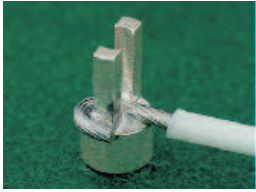
#### Training program

- Introduction: commonly used procedures.
- Wire connections by splicing.
- Disassembly/assembly of through hole components.
- Disassembly/assembly of Chip and Melf components.
- Disassembly/assembly of SOT and SOIC components.
- Disassembly/assembly of J-Lead and QFP components.
- Repair of printed circuits boards: repair of solder lands, eyelets and holes metallization, printed circuits, jumpers installing.
- Laminate repairs.
- Coating: identification, removal, repair.
- Theoretical and practical exam.

#### i Advantages:

- Will gain the latest knowledge on the existing international standards for repairs and modification of electronic packages and printed boards made in through hole and surface mount technology
- Receive handbook with educational materials
- Gain personal, international certificate of IPC-7711/7721 Certified IPC Specialist

### IPC/WHMA-A-620 (Specialist)



#### REQUIREMENTS AND ACCEPTANCE FOR CABLE AND WIRE HARNESS ASSEMBLIES

#### Training purpose

Gaining knowledge related to requirements about cables and wires harnesses assembly according to IPC/WHMA-A-620 standard.

#### Training program

- Introduction: policies and procedures of IPC, product classes and conditions of acceptability by IPC.
- Documents used in IPC/WHMA-A-620 standard.
- Wire preparation.
- Soldered terminations.
- Crimp terminations.
- Connections of insulated wires - Insulation Displacement Connection (IDC)
- Ultrasonic welding.
- Splices.
- Connections.
- Molding/putting.
- Cables assemblies and wires.
- Marking/labeling.
- Coaxial and twinaxial cable assemblies.
- Securing.
- Harness/Cable Electrical Shielding.
- Cable/wire harness Protective Coverings.
- Finished Assembly Installation.
- Solderless Wrap.
- Electrical and mechanical test.
- Exams.

#### Advantages:

- Will gain the latest knowledge about requirements on cables and wires assembly according to current international standards
- Receive handbook with educational materials
- Gain personal, international certificate of IPC/WHMA-A-620 training completion Certified IPC Specialist

### IPC-A-600 (Specialist)



#### ACCEPTABILITY OF PRINTED BOARDS

#### Training purpose

Gaining knowledge related to requirements about quality of printed circuits boards according to IPC-A-600 standard.

#### Training program

- Policies and procedures of IPC.
- Product classes and conditions of acceptability by IPC.
- Classification of printed circuit boards.
- Characteristics visible externally:
  - Edges of board.
  - Base material.
  - Solder coverage.
  - Metallized and Non-metallized holes - general requirements.
  - Printed contact pads.
  - Marking.
  - Protective layer of solder mask.
  - Dimensional characteristics of conductive layers.
  - Flatness.
- Characteristics visible internally:
  - Dielectric materials.
  - Conductive layers.
  - Metallized holes - general requirements.
  - Metallized holes - drilled, punched.
- Special types of printed circuit boards:
  - Flexible and rigid-flexible printed circuit.
  - Printed circuit boards with metal core.
  - One layer printed circuit boards.
- Testing of purity.
- Testing of solderability.
- Electrical integrity.
- Exam.

#### Advantages:

- Will gain knowledge about acceptability criteria of printed circuit boards
- Will acquire the ability to control quality of printed circuit boards
- Receive handbook with educational materials and gain personal, international certificate of IPC-A-600 training completion Certified IPC Specialist



## IPC-J-STD-001 (Specialist)



### REQUIREMENTS FOR SOLDERED ELECTRICAL AND ELECTRONIC ASSEMBLIES

#### Training purpose

Gaining a comprehensive knowledge covering theory and practical guidance regarding through hole, surface assembly as well as wires and cables.

#### Training program

##### Module I - theory

- Introduction.
- Products classes and acceptability states according to IPC.
- Classification of printed circuit boards.
- General requirements related to safety, equipment, Materials, electronic discharges.
- General requirements related to solder connections.
- General requirements for through hole, surface components, wires and cables.
- Process requirements related to cleaning of electronic assemblies.
- Requirements for coated layers.
- Assurance of production quality - testing methods, the use of statistical process control.
- Exam.

##### Module II - theoretical and practical classes

- Soldering wires to any types of terminals.

##### Module III - theoretical and practical classes

- Assembly of components made in surface mount technology.

##### Module IV - theoretical and practical classes

- Assembly of components made in through hole technology.

##### Module V - theoretical classes

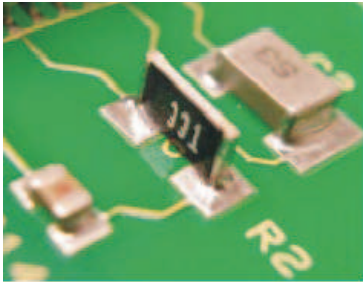
- Methodologies of inspections: requirements for assembling through hole and surface components, wires and cables.



#### i Advantages:

- Gaining knowledge about assembly criteria of printed circuits boards made in surface mount and through hole technology as well as wires and cables with consideration of current international standards
- Receive handbook with educational materials
- Gain personal, international certificate of IPC-J-STD-001 Certified IPC Specialist

### Trainings of Trainers



Trainings of trainers obtaining the rights to gain Certified IPC Trainer.

#### IPC-A-610 (Trainer)

### ACCEPTABILITY OF ELECTRONIC ASSEMBLIES



#### Training purpose

- Gaining knowledge related to quality requirements, installation of electronic assemblies according to IPC-A-610 standard.
- Obtaining qualifications of Certified IPC Trainer enabling carrying out training for Certified IPC Specialists.

#### Training program

- Policies and procedures of IPC.
- Role and responsibility of trainer.
- Product classes and conditions of acceptability by IPC.
- Documents used by IPC.
- Electrostatic discharge.
- Mechanical assembly, installation/orientation of electronic components.
- Acceptability of soldered connections.
- Connections of cables and wires.
- Cleanliness of assemblies after mounting.
- Laminate quality.
- Quality of protective layers and labelling.
- Discreet wiring.
- Assemblies made in through hole and surface mount technology.
- Development of classroom plans.
- Presentation of skills of future trainer.
- Exam.

#### Advantages:

- Will gain the latest knowledge on the existing international standards of printed circuit assembly made in through hole and surface mount technology
- Will acquire the ability to control quality performance of electronic package
- Will be eligible to train Certified IPC Specialists for their own companies needs
- Will receive:
  - IPC-A-610 norm, IPC-A-610 CIT Student Handbook
  - IPC-T-50 "Terms and Definitions"
  - trainer's instructions for performing trainings for CIS
  - personal certificate of Certified IPC Trainer
  - set of examination tests
  - CD-ROM containing: presentation, answer questionnaire, evaluations and reports forms

#### IPC-7711/21 (Trainer)

### REWORK, MODIFICATION AND REPAIR OF ELECTRONIC ASSEMBLIES AND PRINTED CIRCUIT BOARDS



#### Training purpose

- Gaining comprehensive knowledge on theory and practice about modification and repair techniques of electronic devices and printed circuits boards according to IPC-7711 and IPC-7721 standard.
- Obtaining qualifications of Certified IPC Trainer enabling carrying out training for Certified IPC Specialists.

#### Training program

- Introduction: commonly used procedures in IPC.
- Role and responsibility of trainer.
- Wire splicing.
- Disassembly/assembly of PTH components.
- Disassembly/assembly of Chip and Melf components.
- Disassembly/assembly of SOT and SOIC components.
- Disassembly/assembly of J-Lead and QFP components.
- Repair of printed circuits boards: repair of solder lands, eyelets and holes metallization, printed circuits, jumpers installing.
- Laminate repairs.
- Coating: identification, removal, repair.
- Theoretical and practical exam.

#### Advantages:

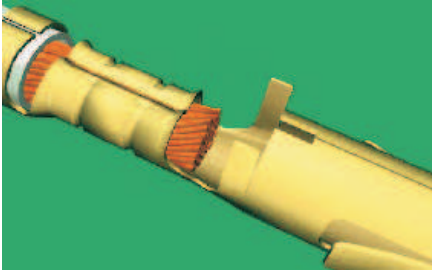
- Will gain the latest knowledge on the existing international standards for repairs and modification of electronic packages and printed boards made in through hole and surface technology
- Will be eligible to train Certified IPC Specialists for their own companies needs
- Will receive:
  - IPC-7711/ 7721 norm, CIT Student Handbook, CIT Certificate
  - trainer's instructions for performing trainings for CIS
  - personal certificate of Certified IPC Trainer
  - CD-ROM for CIS trainings



## Trainings for Trainers

Trainings of trainers obtaining the rights to gain Certified IPC Trainer.

### IPC/WHMA-A-620 (Trainer)



#### REQUIREMENTS AND ACCEPTANCE FOR CABLE AND WIRE HARNESS ASSEMBLIES

##### Training purpose

- Gaining knowledge related to requirements about cables and wires harnesses assembly according to IPC/WHMA-A-620 standard.
- Obtaining qualifications of Certified IPC Trainer enabling carrying out training for Certified IPC Specialists.

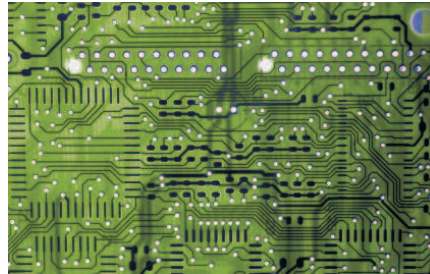
##### Training program

- Policies and procedures of IPC.
- Role and responsibility of trainer.
- Product classes and conditions of acceptability by IPC.
- Documents used in IPC/WHMA-A-620 standard.
- Wire preparation.
- Soldered terminations.
- Connections of insulated wires - Insulation Displacement Connection (IDC)
- Ultrasonic welding.
- Splices.
- Connections.
- Molding/putting.
- Cables assemblies and wires.
- Marking/labeling.
- Coaxial and twinaxial cable assemblies.
- Securing.
- Harness/Cable Electrical Shielding.
- Cable/wire harness Protective Coverings.
- Finished Assembly Installation.
- Solderless Wrap.
- Electrical and mechanical test.
- Development of classroom plans.
- Presentation of skills of future trainer.
- Exams.

##### Advantages:

- Will gain the latest knowledge about requirements on cables and wires assembly according to current international standards
- Will be eligible to train Certified IPC Specialists for their own companies needs
- Receive handbook with educational materials
- Will acquire the ability to control quality of cable and wire harnesses assembly
- Participants will receive a set materials for CIS training

### IPC-A-600 (Trainer)



#### ACCEPTABILITY OF PRINTED BOARDS

##### Training purpose

- Gaining knowledge related to requirements about quality of printed circuits boards according to IPC-A-600 standard.
- Obtaining qualifications of Certified IPC Trainer enabling carrying out training for Certified IPC Specialists.

##### Training program

- Policies and procedures of IPC.
- Role and responsibility of trainer.
- Product classes and conditions of acceptability by IPC.
- Classification of printed circuit boards.
- Characteristics visible externally.
- Characteristics visible internally.
- Special types of printed circuit boards:
  - Flexible and rigid-flexible printed circuit.
  - Plans elaboration of courses.
  - Printed circuit boards with metal core.
  - One layer printed circuit boards.
- Testing of purity.
- Testing of solderability.
- Electrical integrity.
- Development of classroom plans.
- Presentation of skills of future trainer.
- Exam.

##### Advantages:

- Will gain knowledge about acceptability criteria of printed circuit boards
- Will be eligible to train Certified IPC Specialists for their own companies needs
- Will acquire the ability to control quality of printed circuit boards
- Participants will receive a set materials for CIS training

### IPC J-STD-001 (Trainer)



## REQUIREMENTS FOR SOLDERED ELECTRICAL AND ELECTRONIC ASSEMBLIES

### Training purpose

- Gaining knowledge related to requirements about soldering process, quality of components and cables assembly according to IPC J-STD-001 standard.
- Obtaining qualifications of Certified IPC Trainer enabling carrying out training for Certified IPC Specialists.

### Training program

- Policies and procedures of IPC.
- Role and responsibility of trainer.
- Product classes and conditions of acceptability by IPC.
- Documents used in IPC J-STD-001 standard.
- Requirements related to safety, equipment, materials and electronic discharges.
- Requirements related to alignment and soldering of wires.
- Requirements related to technology of through hole assembly.
- Requirements related to technology of surface assembly.
- Acceptability criteria for solder joints.
- Process requirements related to cleaning of electronic assemblies.
- Requirements for printed boards.
- Requirements for coated layers.
- Assurance of production quality - testing methods, the use of statistical process control.
- Repair and modification.
- Development of classroom plans.
- Presentation of skills of future trainer.
- Theoretical and practical exam. electronic packets.electronic packets.electronic packets.electronic

### Advantages:

- Will gain knowledge about existing international standards of through hole and surface components assembly, wires and cables
- Receive handbook with educational materials
- Will acquire the ability to control quality of electronic packets and connections made with use of wires and cables
- Will be eligible to train Certified IPC Specialists for their own companies needs
- Will receive:
  - IPC-J-STD-001, IPC-J-STD-001 CIT Student Handbook,
  - the latest revision of IPC-J-STD-002, 003, 004, 005, 006,
  - IPC Handbook-00, IPC-9191 document
  - trainer's instructions for performing trainings for CIS
  - personal certificate of Certified IPC Trainer
  - set of examination tests
  - CD-ROM containing: presentation, answer questionnaire, evaluations and reports forms



## Copyright trainings



RENEX EEC professional copyrights trainings enabling effective and safe performing of assembly and disassembly of electronic circuits, soldering wires and cables and anti-static protection. Ensures highest quality of production and service. The trainings are based on IPC standards.

### RTC-01



#### Static electricity - for operators

#### Training purpose

Gaining knowledge needed when working with components sensitive to static discharges. The course is conducted in accordance with applicable standards which ensures, that student's knowledge will be complete and consistent with requirements applicable in modern electronics.

#### Training program

- Theory of electrification mechanisms
- Basic knowledge about electrostatic discharges
- Procedures with electronics components and modules
- Protection measures
- Identification of ESDS in equipment (devices sensitive to electrostatic discharges)
- Scope of protection
- ESDS sensitivity
- Use of new technologies, antistatic processes and equipment, creation of EPA zones
- Inconsistency with safety requirements
- Protection measures against high voltage
- Clean Room - properties, applications, construction
- Exam

#### Advantages:

- Will acquire knowledge about requirements related to protection against static electricity when working with electronic components
- Will gain personal, international certificate of IPC

### RTC-01K



#### Static electricity - for coordinators

#### Training purpose

Theoretical and practical knowledge required for position of ESD coordinator. Classes based on IPC training material, PN-EN 61340-5-1, BS EN 61340-5-2 and ANSI / ESD S.20.20-2007 norms.

#### Training program

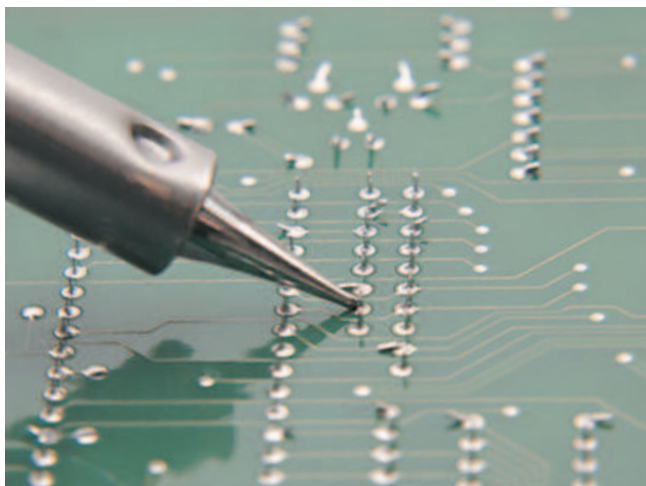
- Basic information on electrostatic discharges (ESD) and electrical over-stress (EOS)
- Theory of electrification mechanisms
- Components sensitive to electrostatic discharge (ESDS)
- Protection measures against electrostatic discharges
- Requirements for creation and use of zones protected against electrostatic discharges
- High voltage in EPA zone
- Clean Room - properties, applications, construction
- Responsibility of employees for use of protection measures
- Role of ESD Coordinator
- Training of personnel
- Instructional and teaching material of IPC
- Discussion on requirements for conducting audits of EPA zones
- Creations of reports in accordance with international recommendations
- Making measurements and editing reports
- Theoretical and practical exam

#### Advantages:

- Will acquire knowledge about requirements related to protection against static electricity, necessary on position of ESD Coordinator
- Will acquire knowledge on how to perform audits in EPA zones and edit reports
- Will receive a didactic handbook
- Will gain personal, international certificate of IPC



## RTC-02



### MANUAL SOLDERING IN THROUGH HOLE TECHNOLOGY - THT

#### Training purpose

Gaining theoretical and practical knowledge in assembly of components in through hole technology (THT). The course is based on currently applicable assembly IPC-A-610E standard.

#### Training program

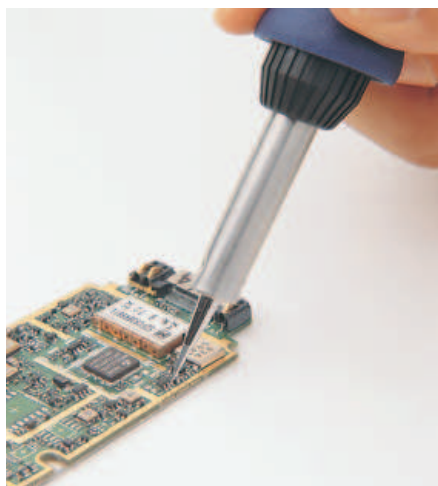
- Health and Safety at the workplace
- Protections against ESD
- Handling of soldering stations
- Basics of soldering
- Role and properties of solder and fluxes
- Types and construction of printed circuit boards
- Identification of components in through hole technology
- IPC-A-610E standard in assembly of through hole components
- Practical classes
- Theoretical and practical exam



#### Advantages:

- Will acquire the latest knowledge about assembly of printed circuit boards made in through hole technology, taking into account the existing international standards
- Will receive a handbook with didactic materials
- Will obtain personal certificate of training completion

## RTC-03



### MANUAL SOLDERING IN SURFACE MOUNT TECHNOLOGY - SMT

#### Training purpose

Gaining theoretical and practical knowledge in assembly of components in surface mount technology (SMT). The course is based on currently applicable assembly IPC-A-610E standard.

#### Training program

- Health and Safety at the workplace
- Protections against ESD
- Handling of soldering stations
- Basics of soldering
- Role and properties of solder and fluxes
- Types and construction of printed circuit boards
- Identification of components in surface mount technology
- IPC-A-610E standard in assembly of surface components
- Practical classes
- Theoretical and practical exam



#### Advantages:

- Will acquire the latest knowledge about assembly of printed circuit boards made in surface mount technology, taking into account the existing international standards
- Will receive a handbook with didactic materials
- Will obtain personal certificate of training completion

**RTC-04****MANULA SOLDERING IN MIXED TECHNOLOGY - THT AND SMT****Training purpose**

Gaining theoretical and practical knowledge in assembly of components in mixed technology (SMT and THT). The course is based on currently applicable assembly IPC-A-610 standard.

**Training program**

- Health and safety at the workplace
- Protections against ESD
- Handling of soldering stations
- Basics of soldering
- Role and properties of solder and fluxes
- Types and construction of printed circuit boards
- Identification of components in mixed technology (SMT and THT)
- IPC-A-610 standard in assembly of SMD and PTH components
- Practical classes
- Theoretical and practical exam

**Advantages:**

- Will acquire the latest knowledge about soldering of printed circuits made in surface mount and through hole technology, taking into account the existing international standards
- Will receive a handbook with didactic materials
- Will obtain personal certificate of training completion

**RTC-05****MANULA SOLDERING OF WIRES AND CABLES****Training purpose**

Gaining theoretical and practical knowledge in performing of connections with use of wires and cables. The course is based on currently applicable assembly IPC/WHMA-A-620 standard.

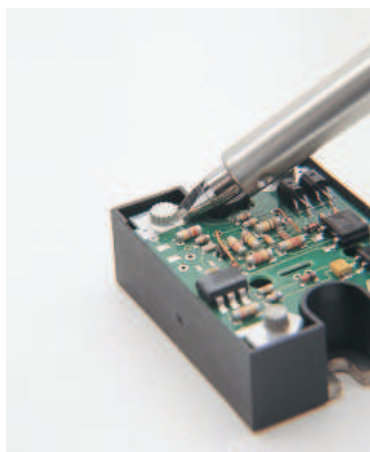
**Training program**

- Health and safety at the workplace
- Protections against ESD
- Handling of soldering stations
- Basics of soldering
- Role and properties of solder and fluxes
- Types and construction of wires and cables
- IPC/WHMA-A-620 standard of connections quality of wires and cables (crimping, soldering)
- Practical classes
- Theoretical and practical exam

**Advantages:**

- Will acquire the latest knowledge about requirements for assembly wires and cables, taking into account the existing international standards
- Will receive a handbook with didactic materials
- Will obtain personal certificate of training completion

## RTC-06



### REPAIR OF ELECTRONIC ASSEMBLIES MADE IN THT/SMT TECHNOLOGY

#### Training purpose

Gaining theoretical and practical knowledge in repairs of electronic assemblies made in THT/SMT technology. The course is based on currently applicable IPC-7711 and IPC-7721 repair standards and IPC-A-610 assembly standard.

#### Training program

- Health and safety at the workplace
- Protections against ESD
- Handling of soldering stations and repair systems
- Role and properties of solder and fluxes
- Types and construction of printed circuit boards
- Identification of components in through hole and surface mount technology
- IPC-A-610 standard in assembly of through hole and surface components
- Disassembly and assembly techniques of through hole components according to IPC-7711
- Disassembly and assembly techniques of surface components according to IPC-7711
- Practical classes
- Theoretical and practical exam

#### Advantages:

- Will acquire knowledge about requirements related to repairs of electronic packets made in THT/SMT technology, taking into account the existing international standards
- Will obtain personal certificate of training completion

## RTC-07



### REPAIR AND MODIFICATION OF PRINTED CIRCUIT BOARDS

#### Training purpose

Gaining theoretical and practical knowledge necessary for repairs of printed circuits boards (laminate, holes metallization, conductors and solder pads). The course is based on currently applicable IPC-7721 repair standard.

#### Training program

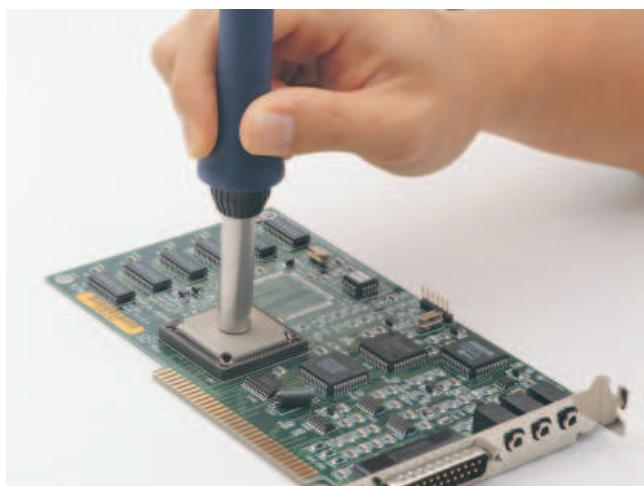
- Health and safety at the workplace
- Protections against ESD
- Technology of printed circuits production
- Types and construction of printed circuit boards
- Repair techniques of damaged printed circuits boards: laminates, holes metallization, conductors and solder pads, edge connectors
- Assembly of connecting jumper wires
- Practical classes
- Theoretical and practical exam

#### Advantages:

- Will acquire knowledge about requirements related to performing repairs of printed circuit boards, taking into account the existing international standards
- Will obtain personal certificate of training completion



## RTC-08



### ASSEMBLY, DISASSEMBLY AND REGENERATION OF BGA/CSP COMPONENTS LEADS

#### Training purpose

Gaining theoretical and practical knowledge about assembly and disassembly of BGA/CSP components as well as methods of leads regeneration and quality control of components connections. The course is based on currently applicable IPC-7711 and IPC-7095 standards.

#### Training program

- Health and safety at the workplace
- Protections against ESD
- Types and kinds of circuits with BGA/CSP components
- Assembly and disassembly with use of vision positioning systems according to IPC-7711
- Methods of inspection and proper interpretation of X-ray documentation according to IPC-7095
- Regeneration techniques of BGA/CSP components leads
- Practical classes
- Theoretical and practical exam

#### Advantages:

- Will acquire the latest knowledge about assembly, disassembly and regeneration of BGA/CSP components leads, taking into account the existing international standards
- Will receive a handbook with didactic materials
- Will obtain personal certificate of training completion



Having standards at workplace is the best way to ensure their compliance in daily work. RENEX EEC is also an Authorized Distributor of IPC Materials. Offered standards are available in several languages including: Polish, English, Russian, Czech, Hungarian, Romanian. Purchase of textbooks in RENEX EEC is associated with significantly lower costs and shorter waiting times in relation to purchase at the IPC seat in the USA.

### IPC-A-610



#### Issues of IPC-A-610 STANDARD

- introduction, product classes, terms and definitions, acceptability conditions, etc.,
- applicable documents,
- handling of electronic assemblies,
- mechanical assembly,
- soldering (general criteria),
- cable connections in configuration with various types of terminals,
- hole mounting technology,
- surface mount technology,
- component damages,
- criteria for acceptability of printed boards (laminates, markings, covering layer, pollution,
- solder mask,
- discrete wiring,
- high voltage.

### IPC 7711 / 7721



#### Issues of IPC-7711/7721 STANDARD

- introduction, product classes, terms and definitions, acceptability conditions, etc.,
- handling of electronic assemblies/cleaning,
- covering layer,
- drying and preheating,
- epoxy resins - mixing and applying,
- description/labeling,
- care and maintenance of tip,
- disassembly/assembly of through hole components,
- disassembly/assembly of connector and PGA,
- disassembly/assembly of Chip and LCC component,
- disassembly/assembly of SOT, SOIC and QFP and PLCC component,
- disassembly/assembly of BGA/CSP and PLCC socket,
- SMD solder pads preparation,
- short circuits removal,
- blistering and delamination,
- warping and twisting,
- repair of hole,
- repair of base material and edge connector,
- repair of conductors and solder pads as well as metallized holes,
- connection wires and additional components,
- repair of flexible conductor wire and wire splicing.

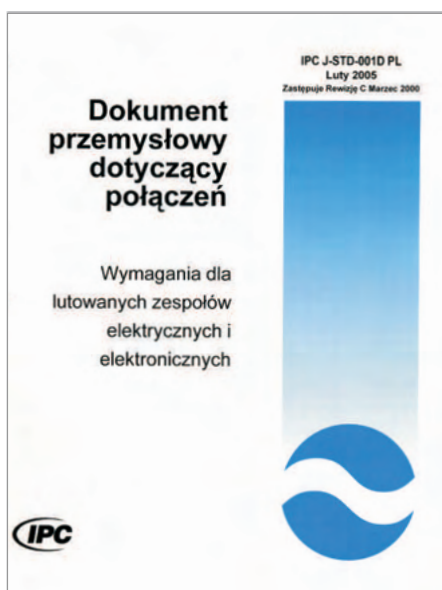
## IPC/WHMA-A-620



### Issues of IPC/WHMA-A-620 STANDARD

- introduction, product classes, terms and definitions, acceptability conditions, etc.,
- applicable documents,
- wires preparation,
- soldered terminations,
- crimped terminations (contacts and holders),
- Insulation Displacement Connector (IDC),
- ultrasonic welding,
- wire braids,
- connector assembly,
- molding/pouring,
- cable sets and wires,
- marking/labeling,
- coaxial and biaxial cable connections,
- securing wire harnesses,
- electrical shielding of cables/wire harnesses,
- protective coatings of cables/wire harnesses,
- final product assembly,
- wrapped connections without soldering,
- mechanical and electrical testing.

## IPC J-STD-001

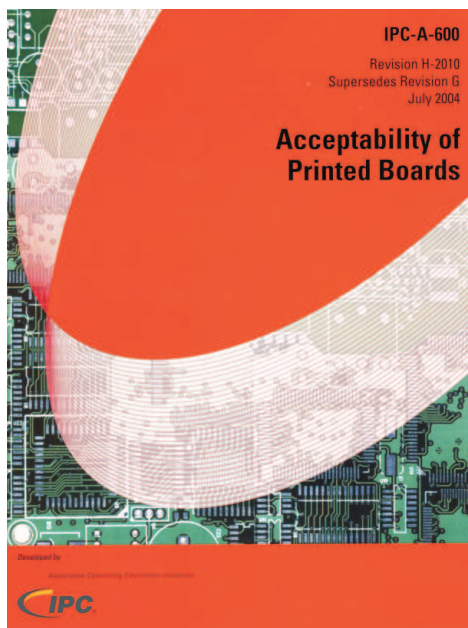


### Issues of IPC-J-STD-001 STANDARD

- introduction - general news,
- applicable documents,
- requirements for materials, components and equipment,
- general requirements for soldering and assembly,
- wire connections and connections to terminate,
- through hole assembly and terminations,
- assembly of surface components,
- requirements concerning cleaning process,
- requirements for PCBs,
- covering layers and sealing,
- product quality assurance,
- implementing of improvements and repairs.



### IPC-A-600



#### Issues of IPC-A-600 STANDARD

- introduction - general news,
- externally visible characteristics,
- plate edges,
- base material,
- subsurface base material,
- solder coating and tin-lead melt,
- metallized holes,
- non-metallised holes,
- printed contact pads,
- marking,
- solder mask,
- definition of conductive layer - dimensional characteristics,
- flatness,
- internally visible characteristics,
- dielectric materials,
- conductive layers - general requirements,
- metallized holes - general requirements,
- metallized holes - drilled or punched,
- special types of printed boards,
- flexible and rigid-flexible printed circuits,
- printed circuit boards with metal core,
- single-leaf printed circuit boards,
- purity testing,
- solder ovality testing,
- electrical integrity.

### Advantages of trainings

Benefits that result from the possession of IPC certificates or participation in IPC training, include:

- international IPC certificate, is considered as a guarantee of performed products and services
- qualified personnel means higher production quality
- professional quality control of made products
- possibility of obtaining lucrative contracts, often dependent on the possession of IPC certificates
- cooperation with recognized companies, that require high quality production
- raising the profile of company
- more attractive schools and universities offers
- facilitation of job finding for graduates of schools and universities

**Companies and institutions interested in participating in projects conducted by us, please contact us at email: [szkolenia@renex.com.pl](mailto:szkolenia@renex.com.pl)**