

关于举办“电子连接器与印制电路技术--制造、 设计规则、成本”高级培训班通知

May 17 - 20, 2016 | SHANGHAI, CHINA

Why Participate:

Connectors and PCBs are important components in all electrical devices. Both components are complex electrical devices. In many applications, the electrical properties of connectors and PCBs can no longer be neglected in the electrical circuit design. The technical and commercial requirements for these two devices have increased greatly in recent years. Requirements for a cost- and performance-optimized design of electronic components are the precise knowledge of the technological and commercial properties of connectors and PCBs. In both seminars, the main technologies, failure causes, quality requirements and cost factors for both components are presented.

Connectors are used in all electronic products: for example, in industrial electronics, consumer electronics, automotive industry, electronic communication, medical, or traffic engineering. The seminar deals with practical applications, the fundamentals of materials, contact theory and electrical engineering. Error causes are the same theme as the various connection technologies to the circuit board and cable, the qualification tests and the different requirements for different types of connectors.

The requirements on printed circuit boards have changed considerably in recent years. The PCB is now no longer merely a support element for wiring of electrical components, but a separate, complex component. The electrical and thermo-mechanical properties of printed circuit boards must therefore be an important consideration in the design of electrical components and systems. In addition, PCBs are exposed during their processing by lead-free soldering high thermomechanical stresses and when they are used, for example in the automotive sector, sometimes extreme environmental conditions. Moreover, the production of printed circuit boards by the changes in the market is subject to high cost pressure.

The seminar covers the most important parameters of materials and circuit boards as well as the manufacture of basic materials and multilayer printed circuit boards. Essential aspects and manufacturing processes in the production of complex assemblies, special technologies (microvia technology, flexible printed circuit boards), and new technologies are presented. Furthermore,

electrical characteristics and the electrical behavior are explained as well as their measurement and calculation. For the electrical circuit design, the main electrical parameters such as impedance, attenuation, crosstalk, etc., specified. For the electrical layout of PCBs practical design rules are listed. The importance of the printed circuit board market is demonstrated by current market figures and the current vendor diversity. Using concrete examples, cost-optimized circuit board assemblies and structures are illustrated.

Who Should Attend:

This course is aimed at users of connectors and connector manufacturers. As well as employees from the development, quality assurance, sales, marketing and the commercial sector who want to deepen or refresh their knowledge about connectors.

PCB-Designer, Board- and system-designer, System developers, Purchasers, Sales and Marketing

Why Lynne Consulting:

Lynne Consulting is offering advanced engineering courses in the field of analog, RF and mixed-signal IC design targeting the audience of electrical engineers, company managers and marketing engineers working in the semiconductor industry. The lecturers are leading practitioners and top experts in the area from high-technology companies and universities, who teach the most up-to-date information available at the time of the course.

Course Details:

- ◆ **Duration:** 4 days (17th-20th May 2016)
- ◆ **Venue:** Building 21, No 1388, Zhangdong Road, Pudong New District, Shanghai, China
- ◆ **Course Registration:** 8:30-am-9:00am, 17th May 2016
- ◆ **Coffee Break:** 10:30am-10:45am; 3:30pm-3:45pm;

Registration Category	Course1 : (17th-18th May) Electrical Connectors	Course2 : (19th-20th May) Printed Circuit Technology	Both Course1 and Course2 (17th-20th,May)
Regular	RMB 2500	RMB 2500	RMB 4500
Student	RMB 1800	RMB 1800	RMB 3000

- ◆ **Registration Fee** included in the fee are lecturing fee, lecture notes, daily lunches and coffee breaks.)

Registration Method:

Registration: Please fill out the registration form (in the attachment) and send the completed form to:

Email: steven.yu@lynneconsulting.com

Fax: 021-3327-5892

Deadline for registration: 10th May. 2016

Course Program:

Course1. Electrical Connectors (17th-18th May 2016)

Day 1-May 17, 2016 (Tuesday) :

1. Introduction

- Introduction to the topic
- Requirements
- Classifications of Connectors
- Applications
- Standards & Requirements
- Market Figures

2. Releasable electrical contacts

- Physical Principles
- Contact resistance and contact force
- Contact materials and surfaces
- Usable metals and metal coatings
- Physical and chemical properties
- Construction of contacts
- Layer thickness and layer structure
- Electroplating conditions
- Methods and devices
- Temperature behavior
- Fretting
- Derating-Curve
- Lubrication
- Insertion and withdrawal forces
- Contact overlap
- Pre- and trailing pins

4. Connector housing

- Ingress Protection Requirements
- Contact locking (TPA, CPA)
- Seals
- Centering

3. Interconnection Technologies

- Solid contacts
- Gas-tight contacts
- Interconnection Technologies:
 - Wrap technology
 - Screw technology
 - Crimping
 - Requirements for crimp element and cable
 - Electrical and mechanical contacts
 - Quality Control
 - Fault patterns
 - insulation displacement terminals (IDC)
 - Requirements for IDC element and cable
 - Electrical and mechanical contacts
 - Piercing
 - Soldering
 - Press-fit technology
 - Assembly method for the contact
 - Hole structure in the printed circuit board
 - Contact pin - contact sleeve
 - press-in process
 - Notes on the processing

5. Metals and plastics

- Metals
 - Overview of the materials
 - Characteristic values
 - Determination of characteristic values
- Plastics
 - Overview of the materials
 - Characteristic values

<ul style="list-style-type: none"> - Coding - Electrical Shielding - Compatibility 	<ul style="list-style-type: none"> - Determination of characteristic values
<p>Day 2-May 18, 2016 (Wednesday) :</p>	
<p>6. Fault patterns and Error causes</p> <ul style="list-style-type: none"> - Typical fault pattern - Typical error causes - Measures for avoiding errors <p>7. Basic Knowledge Electrical ENG</p> <ul style="list-style-type: none"> - Physical basic parameters - Electrical characteristics - Insulation resistance - Dielectric strength and current carrying capacity - Impedances and impedance profiles - Crosstalk, reflection, transmission - Differential transmission - Common mode and differential mode - Measurement of electrical properties - Scattering parameters - Time Domain reflectometry - Eye diagrams - Bit errors - EMC - Electrical Design Rules for the integration of connectors in the circuit 	<p>8. Qualification of connectors</p> <ul style="list-style-type: none"> - Inspection plans, assessments and audits - Development of the corrosion tests - Noxious gas tests - Examples of results of corrosion tests <p>9. Connector types</p> <ul style="list-style-type: none"> - Construction - Applications - Particularities - Requirements - Connection technology - Industrial Connectors - Coaxial Connectors - Board Connectors - High-speed connectors - Automotive Connectors - Bord-To-Bord Connectors

Course2. Printed Circuit Technology – Manufacturing - Design Rules - costs

(19th-20th May 2016)

<p>Day 3-May 19, 2016 (Thursday) :</p>	
<p>1. Introduction</p> <ul style="list-style-type: none"> - Introduction to the topic - Development of the printed circuit board technology - PCB industries and manufacturers 	<p>2. Base Materials</p> <ul style="list-style-type: none"> - Essential characteristic parameters - Preparation of standard base materials - Glass braids - Fillers



<ul style="list-style-type: none"> - Revenue figures - Trends <h3 style="color: purple;">3. Production of multilayers</h3> <ul style="list-style-type: none"> - Work preparation / data handling - Inner layer production - Outer layer production - PCB characteristics - Special PCB-Technologies 	<ul style="list-style-type: none"> - Copper cladding - Special materials - Thermomechanical behavior - High-current materials - Qualification - Environmental influences <h3 style="color: purple;">4. High Current PCBs</h3> <ul style="list-style-type: none"> - Requirements - Materials - Realizations
<p>Day 4-May 20, 2016 (Friday) :</p>	
<h3 style="color: purple;">5. Board manufacturing</h3> <ul style="list-style-type: none"> - Manufacturing processes - PCB surfaces - Resistance to heat - Thermal load - Soldering - Solder profile - Packaging / handling / storage <h3 style="color: purple;">6. Cost-optimized PCBs</h3> <ul style="list-style-type: none"> - Impact of special technologies - Optimized layer structures - Design Rules - Material selection - Cost comparisons of different technologies 	<h3 style="color: purple;">7. Electrical Properties</h3> <ul style="list-style-type: none"> - Electrical characteristics - Impedances, attenuation, duration - Measuring the electrical parameters - Calculation of electrical parameters - DC resistances - Dielectric strength and current carrying capacity - Design rules for the electrical PCB-Design

Lecturer's Biography:

Dr. Helmut Katzier



Dr. Helmut Katzier studied Communications Engineering at the School of Engineering and Theoretical Electrical Engineering at the Technical University Darmstadt. Then, he was five years assistant at the Institute for Theoretical Electrical Engineering at the Technical University of Darmstadt. After receiving his doctorate, Dr. Katzier worked at Siemens AG Munich in the field of public networks. There he worked in the fields:



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- Microwave Technology and RF-Design
 - Use of electrical Simulation tools in the development process
 - Design and development of electrical connectors
 - Coordination between the development departments and board manufacturing
 - Responsible for the PCB-Technology and head of the SIEMENS working group “PCB- Technology”
 - Auditing of PCB manufactures, especially in Asia

He was leader for the team Interconnection Technology, this means: PCBs, Connectors, Cables, Packages and High Speed Design.

Since March 1, 2012, he worked independently in the field of development, consulting and training. Since 1995, Dr. Katzier is leader and speaker of various open seminars and in-house seminars at the Technical Academy Esslingen / Germany:

- Electrical Connectors (Lecturer since 1995, Leader since 2002)
- PCB-Technology (Leader, since 2006)
- Electrical Cables (Leader, since 2012)
- High Speed Board- and System Design (Leader, since 2015)
- RF-Design (Lecturer, since 2002)
- Reliable EMC-Design of electronic Boards and Systems (Leader, since 2016)

He wrote about 80 publications and gave numerous presentations at national and international conferences. He is the author of three books about electrical connectors, electrical cables and PCB-Technology.

For many years he has worked for example with companies like Bosch, GE Germany, ERNI Electronics, EPT.

Published books:

