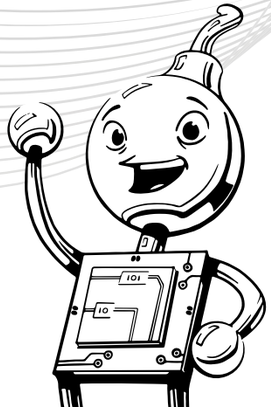
BOND-IQ

SEMINARS IN BERLIN

EXPAND YOUR EXPERTISE WITH **ADVANCED WIRE BONDING SEMINARS**

LIVE-SEMINAR IN BERLIN.

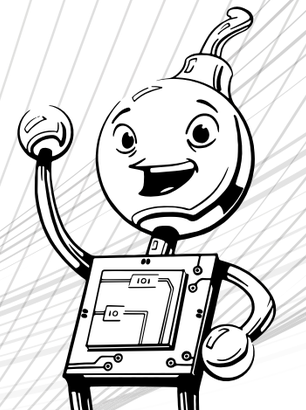
To find out more about seminars, visit
www.bond-iq.com/seminars



TRAINING AND DEEP **EDUCATION IN WIRE BONDING**

Do you train your employees regularly? Do you constantly refresh the knowledge of your specialists and do they keep their knowledge up to date? Are your measures effective and do your processes still meet all quality and stability requirements?

WIRE BONDING **SEMINARS & TRAINING**



ENHANCE WIRE BONDING

BUILD SUSTAINABLE TECHNOLOGY KNOWLEDGE

ENGINEER-LEVEL

WIRE BONDING TECHNOLOGY IN PRODUCTION AND R&D

Location: Bond-IQ GmbH, Gustav-Meyer-Allee 25 13355, Berlin

This seminar is designed for the user and the person responsible for the wire bonding process. All bonding processes (thick wire & thin wire, ball-wedge & wedge-wedge) are presented, the individual bonding parameters are highlighted and the effects of parameter settings are demonstrated. Bond formation during wire bonding is explained and the typical influencing factors for a bonding process are discussed.

The seminar provides a solid foundation of wire bonding knowledge with extensive information on the various bonding processes, machine manufacturers, materials and tools used. Participants have the opportunity to familiarize themselves with wire bonding technology in theory and practice.

You will learn about the types of quality tests that exist for bonding contacts, how they are used in industry and which methods can be used to evaluate the properties of a bonding contact in more detail. You will learn about the common industry standards for wire bond connections and see practical demonstrations of how the tests are carried out and how the test results are evaluated using a microscope or test device. You will learn how errors in production that were not detected due to an unsuitable quality test can cause assembly failures. You will receive important tips from more than 20 years of experience in the fault analysis of production and field failures.

Bonding processes are demonstrated on bonders equipped with cameras so that all attendees can follow the bonding process on the large monitor.

WHAT **SEMINAR TOPICS** CAN YOU EXPECT ?

The wire bonding seminar provides comprehensive knowledge on thick-wire, thin-wire, ball-wedge, and wedge-wedge technologies.

Get practical insights into parameter settings. Microscopes and test equipment are available to analyze bonds. Machine demonstrations allow you to follow the process closely and ask questions. Take the opportunity to bring individual topics and actively participate in discussions.

Experience wire bonding in both theory and practice!

Bonding methods

Bonding parameters

Materials and intermetallics

Influencing factors

Interconnection formation

Quality and process analysis

ENHANCE YOUR **SEMINAR** EXPERIENCE

Make your seminar more cost-effective, flexible and sustainable.

- ✓ **Weekly user calls**
  Get additional guidance in your daily practice.
- ✓ **Bring your own samples**
  Let's inspect, test or wire bond these samples (in the seminar).
- ✓ **Cost savings of up to 30% with the Bring-a-Buddy option**
  Bring one or more other people with you and get a price bonus.
- ✓ **Practice day**
  Gain more hands-on experience by working on the machines.
- ✓ **Make it even more individual**
  Tell us your ideas.

SEMINAR AGENDA: 3-DAY PROGRAM

Get out of the daily business routine and gain both theoretical knowledge and practical experience

Day 1:
Introduction and Fundamentals

- ✓ Basics and history of wire bonding
- ✓ Contamination and impurity layers
- ✓ Mechanisms of bond formation
- ✓ Influencing factors in the wire bonding process
- ✓ Process parameters and their effects
- ✓ Wedge/Wedge wire bonding technology
- ✓ Material combinations for aluminum and gold wire bonding

Day 2:
Details and Demonstration of Wire Bonding Methods

- ✓ Ball/Wedge wire bonding technology
- ✓ Thick wire bonding technology for aluminum wires 125 - 500 µm
- ✓ The role of visual inspection in wire bonding
- ✓ Pull testing of wires
- ✓ Shear testing of balls and thick wire wedges
- ✓ Practical exercises on wire bonding, testing and inspection equipment including joint discussion

Day 3:
Quality Testing and Process Optimization

- ✓ Inspection and interpretation of failure modes in pull and shear testing
- ✓ Testing standards DVS-2811, MIL-883, JEDEC, AEC, ASTM, IPC, IEC
- ✓ Advanced quality testing methods
- ✓ Process analysis by statistical methods and wire bonder integrated process monitoring (BPM, PiQC, BPC, Trace-X)
- ✓ Summarizing overview
- ✓ Discussion of open questions and individual topics
- ✓ Outlook on advanced subjects
- ✓ Continuation of demonstrations on the wire bonder

WHO IS THE SEMINAR FOR?

- ✓ You want to **acquire technology knowledge** that will significantly accelerate your start and enable you to do more than just operate machines.
- ✓ You have no experience or have only been active in wire bonding for 1-2 years and **need more guidance for your next steps.**
- ✓ Your **working field** is process support, development, quality inspection or production.
- ✓ You want to **understand** the influencing factors in your wire bonding processes even better and are looking for ways to analyze correlations efficiently
- ✓ You know the daily practice of **process optimization** in your company and you have the feeling that it could be even better

WHY PROFESSIONALS **CHOOSE US**

FEK DELVOTEC

For me, the training was exactly the right mix of theory and practice. It did a good job of conveying the complexity of individual topics and summarised them well without going into too much detail. I liked the fact that aspects relevant to sales were also included.

Account Manager

MICRODUL

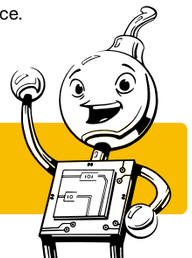
Very informative, correlations explained very well. Although I am only an operator on the bonder, it was explained in such a way that I understood it. .. also went into more detail on topics relating to our products and machines. In summary: I gained a lot of knowledge that I can apply immediately.

Operator

Endress+Hauser

This course is recommended to anyone who comes into contact with the topic of 'bonding'. I learnt a lot about the different bonding processes and quality parameters in theory and practice.

Advanced RF-Electronic Engineer



To find out more about, visit
www.bond-iq.com/engineer-level

ENHANCE WIRE BONDING

ACHIEVING ROBUST PROCESS STABILITY

PROFESSIONAL-LEVEL
PROCESS OPTIMIZATION & DOE IN WIRE BONDING

Location: Bond-IQ GmbH, Gustav-Meyer-Allee 25 13355, Berlin

This seminar is designed for professionals who already have some initial experience in wire bonding and want to deepen their knowledge of process optimization. It is ideal for participants working in development, production, or quality control who wish to better understand and systematically improve their processes. If you have basic knowledge in statistical analysis and are interested in using data to optimize your bonding processes, this seminar is perfect for you. It is also suitable for those who are familiar with basic optimization methods and are now looking to advance to more sophisticated methods like DoE, providing the right support to make this transition.

Learn more about optimizing processes in wire bonding. In this seminar, you will find out how to use methods like single-factor analysis and Design of Experiments (DoE) to make your bonding processes better. You'll take part in practical experiments and examples that will help you understand how things work and apply your knowledge using Minitab software. You will learn how to create experimental plans to study the impact of different parameters on your processes.

Additionally, you will learn how to evaluate data, identify relationships, and use this knowledge for process optimization. We will also guide you through the different steps of systematic process optimization so that you can directly apply what you've learned to your own work. Moreover, we will cover the role of statistical analysis in the entire process and how you can make informed decisions based on data.

WHAT **SEMINAR TOPICS** CAN YOU EXPECT?

The focus is on methods for optimizing process parameters using systematic approaches, i.e. single-factor methods and DoE. The methodology is applied directly to examples in small group experiments. The experiments are pre-selected to ensure that the results can be consistently applied and understood in the seminar.

In addition, the topic of FMEA will be discussed, in particular the embedding of process knowledge in the company through FMEA methods.

We recommend that you bring your own laptop to the seminar so that you can work independently with the data provided. It should be possible to install Minitab on it. If this is not possible, please let us know and we will find a solution.

Statistics & analysis

Documentation

Bonding parameters

Influencing factors

Experimental design

Testing methods

ENHANCE YOUR **SEMINAR** EXPERIENCE

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- ✓ **Make it even more individual**
  Tell us your ideas.

SEMINAR AGENDA: 3-DAY PROGRAM

Get out of the daily business routine and gain both theoretical knowledge and practical experience

Day 1:
Building the Foundations of Process Optimization

- ✓ Influencing factors during process optimization
- ✓ Basic strategies for process optimization Trial & Error, OFAT, Regression
- ✓ Documenting optimization trials, data storage and analysis, visualization
- ✓ Practical exercise on single-factor process optimization and evaluation of the results
- ✓ Introduction to Minitab, basics of statistical testing of measurement series and evaluation/visualization of analysis results

Day 2:
Introduction to Design of Experiment (DoE)

- ✓ Introduction to Design-Of-Experiment (DoE)
- ✓ DoE basics, test plans, factors and responses
- ✓ Creation and live demonstration of a DoE plan for bond parameter optimization - live at the wire bonder
- ✓ Live analysis of data from the first trial, data quality check, visualization and modelling, virtual process optimization
- ✓ Confirmation trial
- ✓ Lessons learned and error analysis of the DoE performed

Day 3:
Practical Application and Advanced DoE Concepts

- ✓ Best practice for documenting DoE results
- ✓ Advanced concepts of DoE plans and experiments
- ✓ Creation and live demonstration of response surface methodology - live at the wire bonder
- ✓ Exercises in Minitab - carried out independently by the participants - for DoE analysis, statistical data evaluation and documentation
- ✓ Summarizing overview
- ✓ Discussion of open questions & individual topics
- ✓ Outlook on advanced subjects

WHO IS THE SEMINAR FOR?

- ✓ You have at least **1 year of experience** in wire bonding and have occasionally already tried your hand at process optimization.
- ✓ **Statistics arouse your interest** and you know that data is the key to systematic process optimization.
- ✓ Your **working field** is process support, development, quality inspection or production.
- ✓ You want to understand the influencing factors in your wire bonding processes even better and are looking for ways to **analyze correlations** efficiently.
- ✓ You know the approach to **process optimization** in your company and you have the feeling that it could be even better.

WHY PROFESSIONALS **CHOOSE US**

HUAWEI

Due to the small number of participants, it was possible to focus more on individual topics and questions at this point. The mixture of theoretical explanations and practical implementation (use of Minitab) as well as live data from the bonding process was optimal.

Advanced Packaging Technician

KISTLER

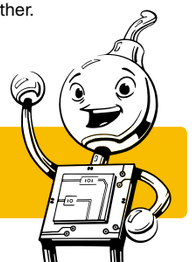
This seminar is very helpful for my department, as we have to deal with bonding problems on a daily basis and have already spent thousands of francs internally without achieving targeted solutions.

Process Technician

Webasto

It was a very pleasant and very professionally informative seminar. You had time to put what you had learnt into practice. You were also able to bring in your own topics and solve them together.

Modules Engineer Development



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ENHANCE WIRE BONDING

SEMINARS TAILORED TO YOUR DAILY CHALLENGES

YOUR WAY, YOUR SEMINAR
IN-HOUSE SEMINARS AND 1:1 TRAINING

Location: In-house or at our site in Berlin

This training is specifically tailored to your expertise and operational realities. With your own production processes as the ideal example, we'll work on practical, actionable solutions that directly apply to your everyday challenges. You'll gain advanced knowledge and skills that reflect your specific goals, ensuring every minute spent here delivers value for you and your team.

Prefer an off-site experience? We also offer personalized 1:1 training sessions at our Berlin facility, providing an immersive environment away from workplace distractions.

WHY TAILORED IN-HOUSE TRAINING

Target group-oriented presentation and review of what has been learned

Confidentiality and open discussion on all your internal topics

Simultaneous training for several of your employees

No time and money spent on organization, travel and accommodation

Practical relevance using an ideal example - your own production process

SOME OF THE **TOPICS YOU CAN CHOOSE** FROM, FOR YOUR INDIVIDUAL TRAINING

Technology Basics
- Requirements and specifications for bond surfaces
- Cleaning and surface treatment
- Basic methods for surface analysis
- Wedge/Wedge bonding process
- Ball/Wedge bonding process
- Thick wire bonding process

Process Optimization
- Data visualization and data analysis
- Materials, machines and tools
- Qualification and release of a bond process
- Parameters and bond formation
- Process optimization by Design of Experiment

Quality Testing
- Advanced methods for surface analysis
- Bond tests and bondability analysis
- Visual inspection of wire bonds and surfaces
- Mechanical testing using the pull test
- Mechanical testing using the shear test

Failure Analysis
- Characteristics of bond surfaces
- Investigation of bonding failure root cause
- Combinations of processes and materials
- Analyzing methods and strategies

CUSTOMIZE YOUR SEMINAR FORMAT

Make your seminar more cost-effective, flexible and sustainable.

- ✓ **Host a theory session right in your conference room**
  Bring expert-led theory sessions directly to your team.
- ✓ **Engage in practical exercises in your lab or production area**
  Enhance hands-on learning with practical exercises tailored to your environment.
- ✓ **Hybrid learning: Online preparation with in-house follow-up exercises**
  Start with online preparation to build your knowledge, then reinforce it with practical, in-house exercises.
- ✓ **1:1 Coaching with one of your specialists**
  Get tailored guidance and support through a one-on-one coaching session with one of your specialists.
- ✓ **Get a video recording of your training session**
  Revisit key points, review concepts at your own pace.

EXPLORE **TRAINING PROGRAMS** WE'VE CRAFTED FOR OUR CLIENTS.

Our in-house seminars are designed to be engaging and impactful, ensuring that participants gain valuable insights and practical takeaways tailored to their business size and industry needs.

Built around your goals, team, and industry challenges.

Participants | Days

Practical training on the customer's own product
2 days | 2-3 participants
- ✓ Provision of product samples to prepare for practical training
- ✓ Review defective production parts, explain faults and solution
- ✓ Work on production machine, bonding & programming practice

Technology discussion with a team of experts
2-3 days | 4-8 participants
- ✓ Submission of a list of topics and questions by the customer
- ✓ Moderation using flipchart, flexible slides, customer product info
- ✓ Work on production machine solving complex process problems

Introduction of wire bonding for a new product
0.5+1 days | 6-12 participants
- ✓ Live online basic bonding skills course for various departments
- ✓ Workshop on design, construction, materials and equipment
- ✓ First electrical test prototype assembly in Bond-IQ lab

Knowledge re-building after key employee left
3-5 days | 2-4 participants
- ✓ Training at Bond-IQ Berlin in an optimized learning environment
- ✓ Theoretical training in basics, mechanisms, quality and process
- ✓ Practical hands-on exercises on automatic bonding machines

Support for the relocation of a production site
3-6 months
- ✓ Live online basic bonding skills course for various departments
- ✓ Mentoring of key project managers including process consulting
- ✓ In-House process support for parameter setup and optimization

HOW DO YOU ENSURE THAT THE TRAINING ALIGNS WITH OUR **SPECIFIC GOALS**?

We begin by consulting with your team to understand your organization's challenges, processes, and training objectives. This information allows us to create a customized agenda that addresses your specific needs and ensures that the training delivers value that is aligned with your operational and business goals.

First consultation → **Agenda proposal** → **Fine-tuning** → **Individual Pricing Offer**

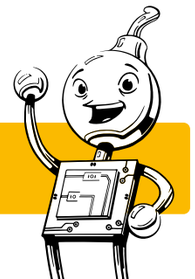
CUSTOMER VOICES

Fraunhofer IISB
The seminar was very welcoming. We were able to ask company-related bond questions in a relaxed atmosphere, which were answered in detail. The knowledge is very broadly based.

trinamiX
It was an informative seminar with new insights. Bond-IQ was a great seminar leader. All wishes discussed in advance were addressed and fulfilled.

KISTLER
The seminar was very interesting! There were numbers and expressions that I have never heard before, I think I will understand them when I work on the bonder, it was the first time this week. Didn't know what to look out for. The calm way you explained it was great! Thank you.

To find out more about, visit
www.bond-iq.com/in-house



Connect with us

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Stay connected and be a part of our growing network. Follow us on LinkedIn for industry updates, subscribe to our newsletter for expert tips and news, or join us at our virtual wire bonding roundtable to network with peers and expand your knowledge.

BOND-IQ