



PDA Mastering Automated Visual Inspection
Training Course
12-13 November 2025
Berlin, Germany

Day 1: Wednesday, 12 November 2025

9:00	Welcome and Introduction
9:30	Theory 1: Introduction to Regulatory Requirements of Visual Inspection <ul style="list-style-type: none">• USP 1, USP 788 and 1788, USP 790 and 1790• PhEur e.g. 2.9.20 • JP e.g. 6.06• Annex 1• Similarities and differences in compendial methods• 100% inspection and AQL testing• Definitions and practical examples of inherent, intrinsic, and extrinsic particles
10:45	Coffee Break
11:15	Theory 2: Introduction to Technical Principles of Automated Inspection Machines <ul style="list-style-type: none">• The functionality of automated inspection machines• Camera systems/light/motion• Image processing and database system• Interlinkage of parameters: Speed, Rotation speed, Inspection parameters, Detection probability, False reject rate• Properties, capabilities, and limitations of automated inspection systems• Scope of Automated Visual Inspection
12:15	Lunch Break
13:15	Theory 2: Introduction to Technical Principles of Automated Inspection Machines (cont.)
14:15	Theory 3: Considerations on Primary Containers and Product Properties <ul style="list-style-type: none">• Vials, Ampoules, Syringes, Blow – Fill - Seal, Viscous liquids, Air bubbles/scratches, Refrigerated product containers
14:45	Exercise 1: Developing Risk Assessment based on URS
15:45	Coffee Break
16:15	Theory 4: Selection and Purchasing of an Automated Inspection System <ul style="list-style-type: none">• Technical requirements• Integration into existing processes, lines/ machines, and systems• Cost and effort considerations• Risk Assessment
17:15	Exercise 1 (cont.): Presentation of the Results of the Sub-Groups and Discussion of the Results Q&A
17:30	End of Training Course Day 1



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Day 2: Thursday, 13 November 2025

9:00	Recap of Day 1
09:15	Theory 5: Transition from Manual Inspection to Automated Inspection <ul style="list-style-type: none">• Manual inspection as a prerequisite for transition to automated inspection• Interpretation of inspection results and validation data• Considerations on validation program for automated inspection• Performance measurement• Maintaining the manual inspection• Knapp Principle/Fixed criteria
10:15	Exercise 2: Principle Basic Image Processing Using an Open Source and Commercial Library
11:00	Coffee Break
11:15	Exercise 2 (cont.): Q&A on Image Processing
12:00	Theory 6: Qualification Test Set and Routine Test Set <ul style="list-style-type: none">• Statistical considerations on the number of objects containing defects• Particle selection, particle size, and size uniformity• Labeling of test set objects• Supply/purchase of test sets• Maintaining and lifecycle of test sets• Sampling from rejects• Defect master library• Types of defects• Quality requirements
13:00	Lunch Break
14:00	Theory 7: Visual Inspection Lifecycle and Control Strategy <ul style="list-style-type: none">• Integration of visual inspection into the overall manufacturing process• Elements of lifecycle• Particle identification/characterization• Defect libraries as dynamic database• AQL sampling principle• Control Charting



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15:00	Theory 8: Operation and Maintenance of Automated Inspection Systems <ul style="list-style-type: none">• Spare part list• Predictive maintenance• First-line maintenance• Calibration
15:30	Coffee Break
16:00	Theory 9: Future Trend of Automated Visual Inspection <ul style="list-style-type: none">• Moving toward deep learning
16:15	Wrap-up Training Course <ul style="list-style-type: none">• Evaluation• Q&A Discussion
16:30	End of Training Course