

QUALITY

IN CAMERA PRODUCTION



BASLER[®]
the power of sight



TRUST MATTERS

At Basler, we consider customer trust to be one of our greatest assets. We trace that trust back to several sources. It all starts with our people, their teamwork and passion, as well as with the high standards we pursue. It continues with our ability to combine superior performance with superior value, our long experience in camera manufacturing, the quality and breadth of technical support we provide, and most importantly, the manufacturing practices and quality assurance processes we employ faithfully in our production facilities.

No other industrial camera manufacturer employs so extensive a series of quality assurance measures to ensure reliably high product performance and in turn, high satisfaction among its customers. Basler's reputation for quality speaks for itself.

N. Basler

Norbert Basler
Founder & Chairman of Supervisory Board

Dietmar Ley

Dr. Dietmar Ley
CEO

WE RELY ON **PROVEN PRINCIPLES**

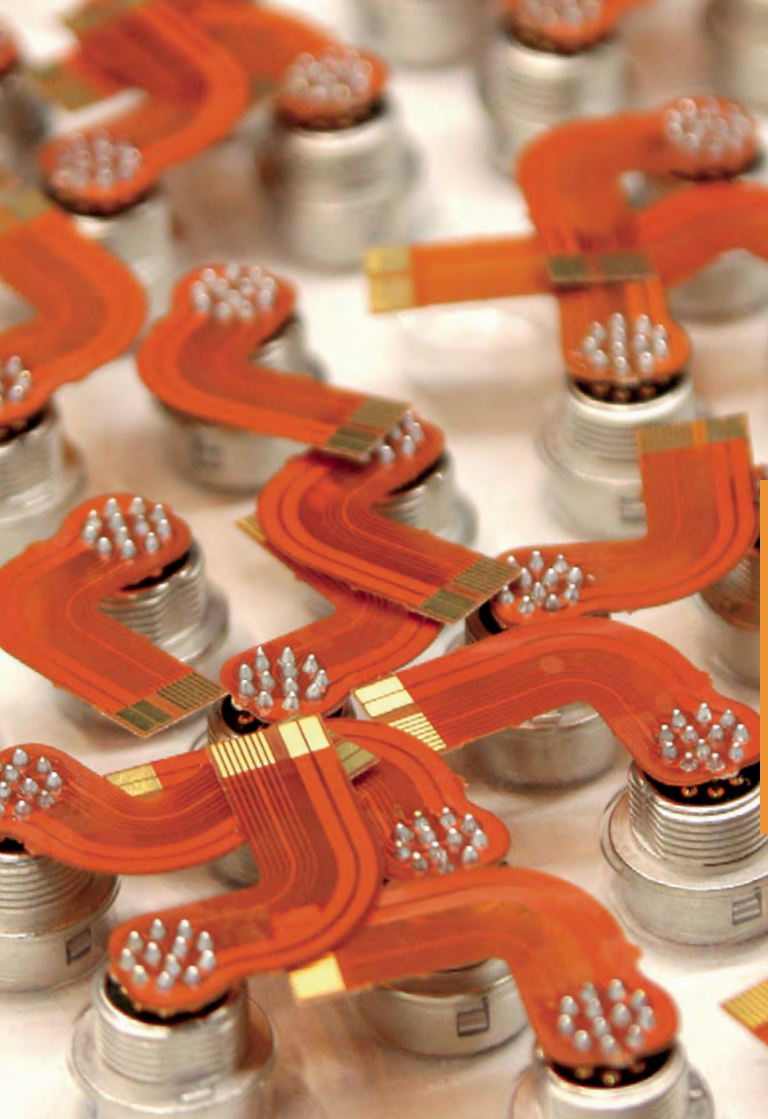
Basler is a longtime proponent of the Kaizen method of continuous improvement. We engage all of our employees' creativity in an effort to reduce waste—both in terms of materials and manpower—in order to achieve the leanest possible manufacturing and eliminate errors directly at their roots. The savings gained through lean manufacturing directly benefit customers, as witnessed by the superior price/performance ratio of cameras like the ground-breaking Basler ace.

Similarly, we have borrowed and adapted elements of Toyota's Production System to bring greater efficiency to our business. Our production team assembles weekly to evaluate progress against existing key performance indicators and select new areas of focus for improvement. As an example of the results created by this approach over the past 5 years, our average monthly output of finished cameras has quadrupled. In the past two years, individual employee productivity has doubled as well.



Peter Hoernke
Technician Repair & Analysis

Ivon Papke
Team Leader Board Assembly



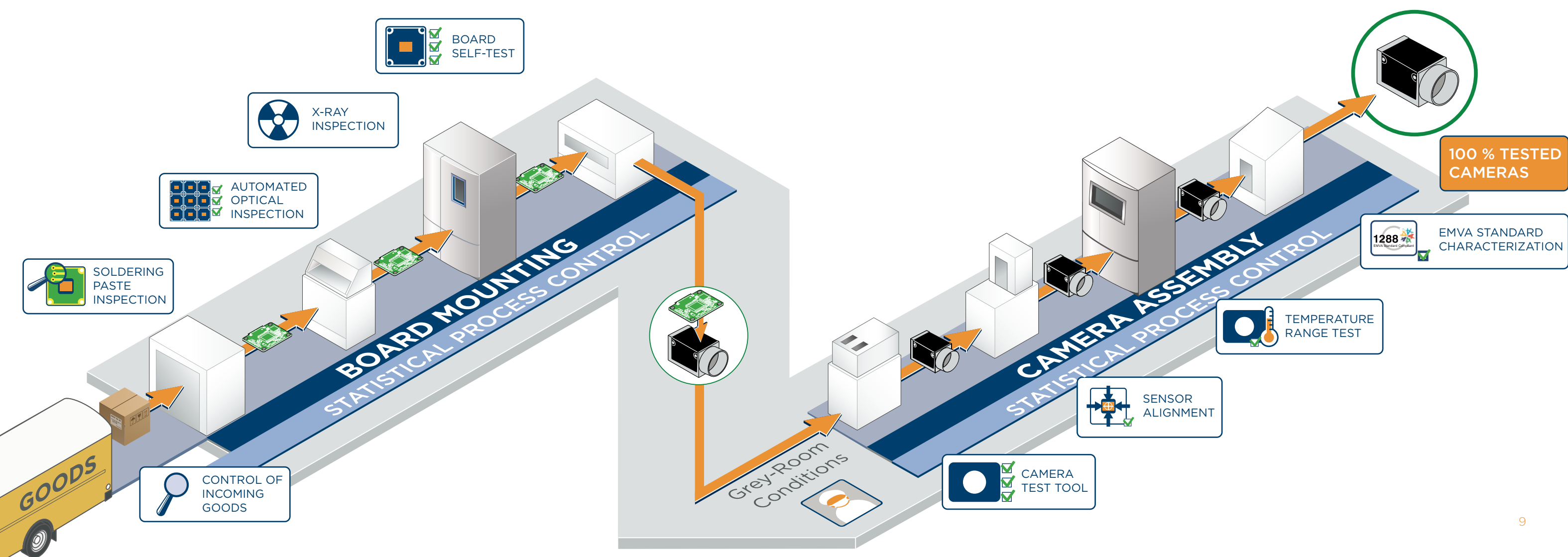
QUALITY STARTS AT THE MATERIALS LEVEL

Basler sources over a thousand different components, provided by nearly 150 suppliers, to manufacture some 500 products (totaling 220,000 cameras per year). Each supplier is carefully vetted to ensure that they share the same commitment to consistent high quality that customers expect from Basler; we evaluate their quality control procedures as carefully as we do our own.



IT TAKES A PERFECT MACHINE TO MAKE A PERFECT MACHINE

Camera components are only as precise as the machines that make them. That's why Basler engages in strict Statistical Process Control: making sure that the machines that create our cameras are operating according to carefully considered standards of performance, which we have validated through years of test data analysis.



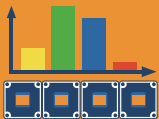
CAMERA PRODUCTION

BOARD PRODUCTION

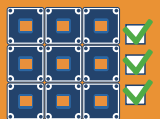
Board production consists of three steps: solder paste printing, pick-and-place, and curing in the reflow oven. During board production, Basler employs Statistical Process Control measures to ensure manufacturing machinery is operating at optimum levels, then performs an automatic optical inspection of each board.

After the boards have been populated, a board self-test determines that the board is functioning properly at the end of the process. Any boards that are not properly functioning are sent to the “Board Doctor” for repair or removal from the production line.

BOARD PRODUCTION TESTS



STATISTICAL
PROCESS CONTROL



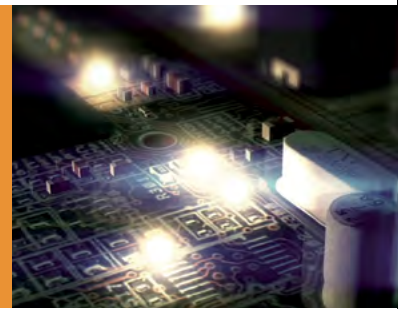
AUTOMATED
OPTICAL INSPECTION

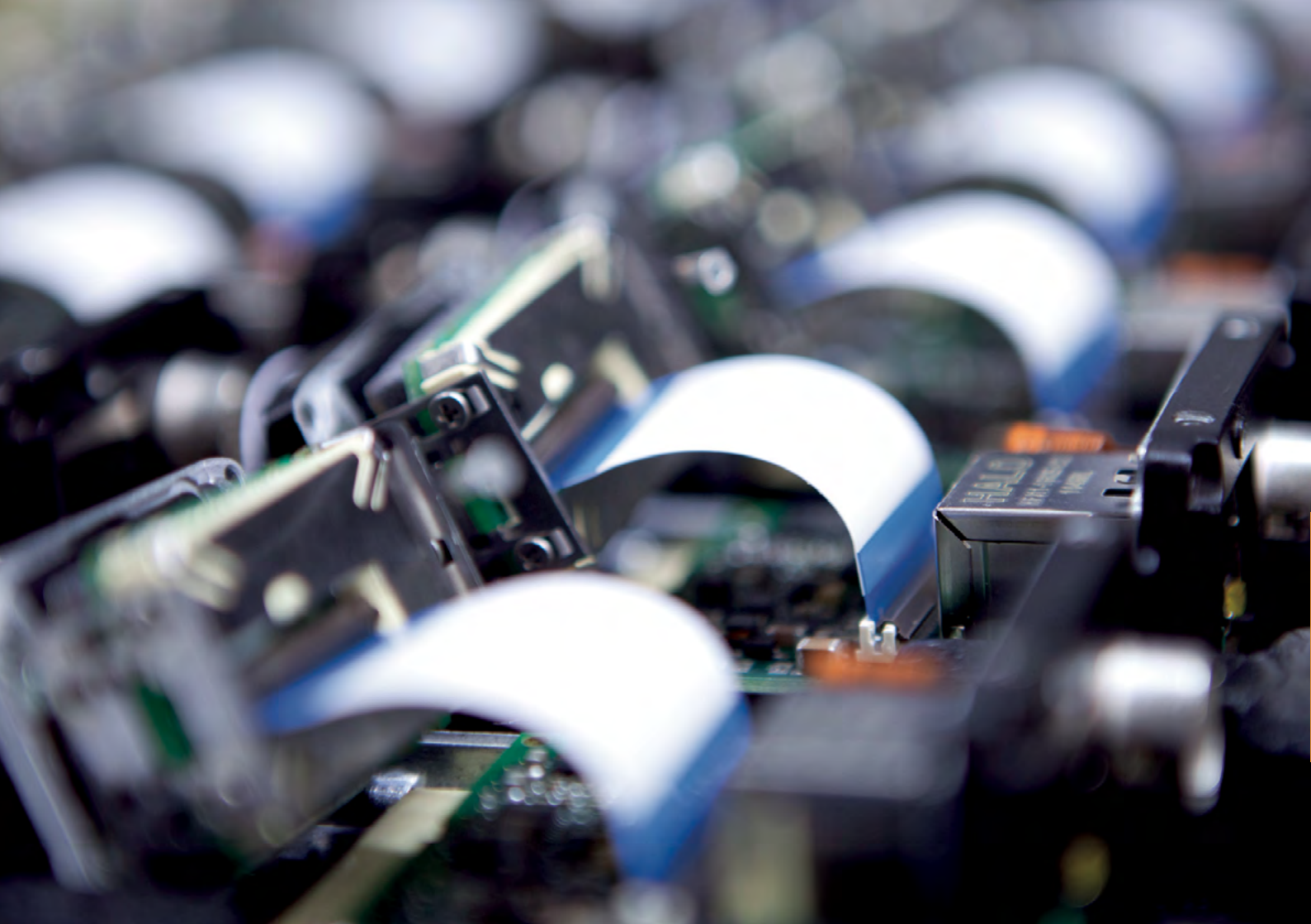


X-RAY
INSPECTION



BOARD
SELF-TEST





CAMERA PRODUCTION

CAMERA ASSEMBLY

Camera assembly consists of several steps: Each step is undertaken under very clean grey-room conditions. A fully automated test carried out by a Camera Test Tool loads the firmware, calibrates the camera and checks all critical parameters. Another automated test, the ATS,

checks for sensor alignment. These tests are customized per Basler camera platform. For selected camera models, a special temperature range test is then carried out.

CAMERA ASSEMBLY TESTS



GREY-ROOM
CONDITIONS



CAMERA
TEST TOOL



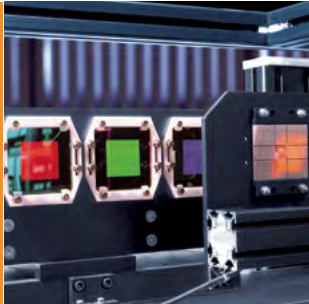
SENSOR
ALIGNMENT



TEMPERATURE
RANGE TEST



EMVA CAMERA
CHARACTERIZATION





CAMERA PRODUCTION

EMVA STANDARD CAMERA CHARACTERIZATION

EMVA Standard Camera Characterization is the final measure we take to ensure the consistent utility of our cameras once they leave our facility. By testing our cameras against EMVA Standard 1288 (which covers such performance characteristics as spectral

sensitivity, color, and signal-to-noise ratio) and including comparative performance data on our data sheets, Basler simplifies the camera selection process for you and ensures you'll get the performance you need from your system.





OUR **100% TESTED** STANDARD

Every camera and every Basler Lens we manufacture undergoes comprehensive mechanical, electrical and optical testing as well as precise calibration before it leaves our facility. The results of every camera test are stored in a database. This is how we ensure traceable test results and consistent quality of every single camera that we produce. That's how we can ensure that it will perform as promised in your system and why we had the confidence to offer the vision industry's first 3-year camera warranty.





PREDICTABLE PERFORMANCE **WORLDWIDE**

Our production and quality assurance processes are applied rigorously in both our production facilities, in Germany and Singapore. Basler has ramped up its camera production capacity by a factor of 10 in the past 5 years, including investments in machines and processes that in turn have contributed to reliability, value and shorter delivery deadlines. Our expansion to Singapore brings a host of customer benefits, including increased capacity, shorter lead times and far less risk of interruption of production. Each Basler camera, regardless where it is produced, corresponds to the highest quality standards and is subject to an exclusive 3-year warranty.



WANT TO LEARN MORE?

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