

Baumer Vision Competence Center

Digital industrial cameras and vision sensors



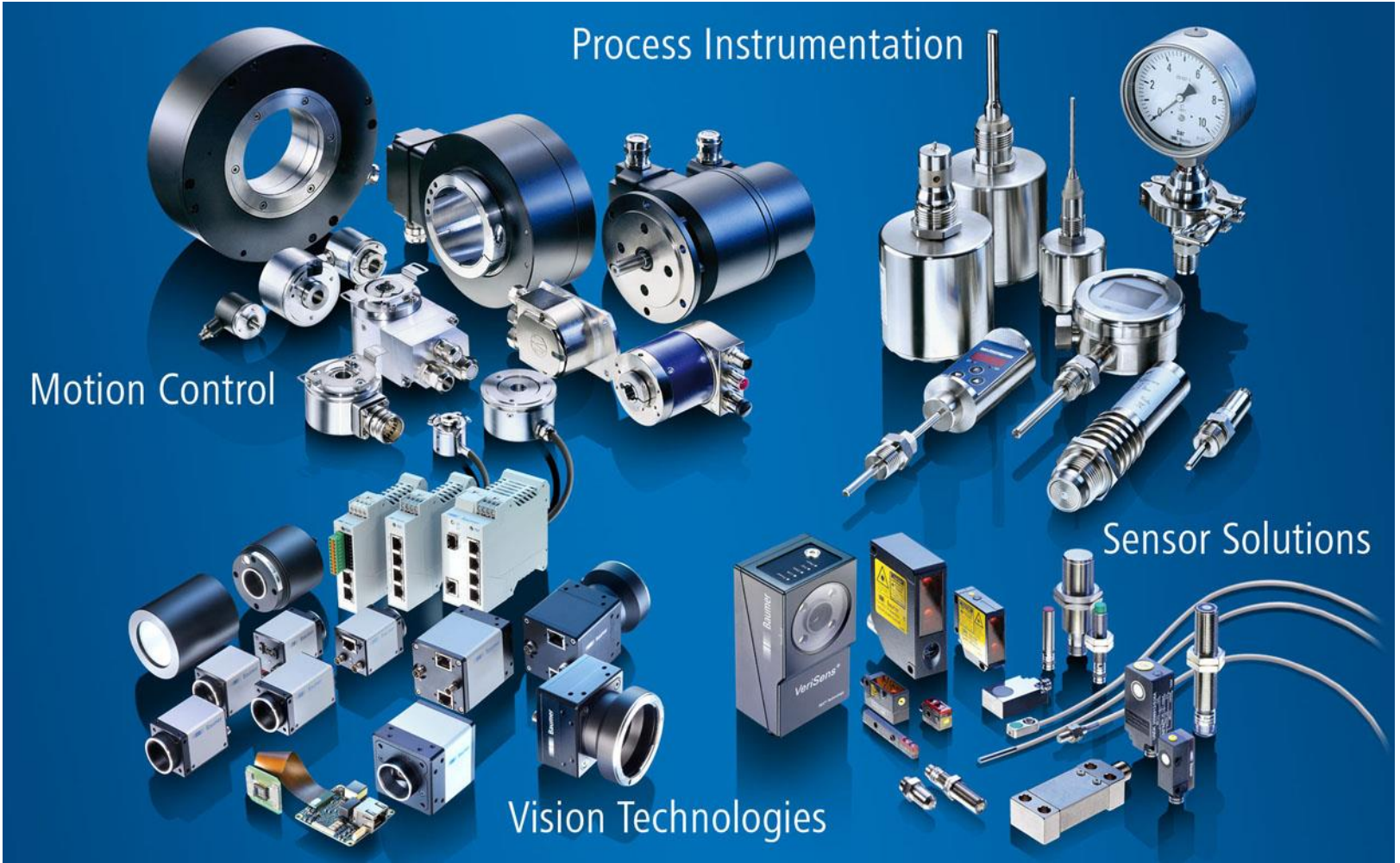
An international family-owned enterprise



- Headquarter in Frauenfeld, Switzerland
- About 2.300 employees worldwide
- 37 locations in 19 countries
- Turnover about 400 Mio CHF
- D&B Rating Certificate:
 - Financial stability
 - Highest credit rating
- Executive Board: (from left to right)
 - Christoph Kluser, Sensor Solutions
 - Severino Bruno, Finance & Controlling
 - Dr. Oliver Vietze, CEO & Chairman
 - Dr. Johann Pohany, Motion Control
 - Dr. Alf Zips, Process Instrumentation

Extensive product range

The appropriate technology for every application



Baumer Vision Competence Center

The vision expert

Slide: 5



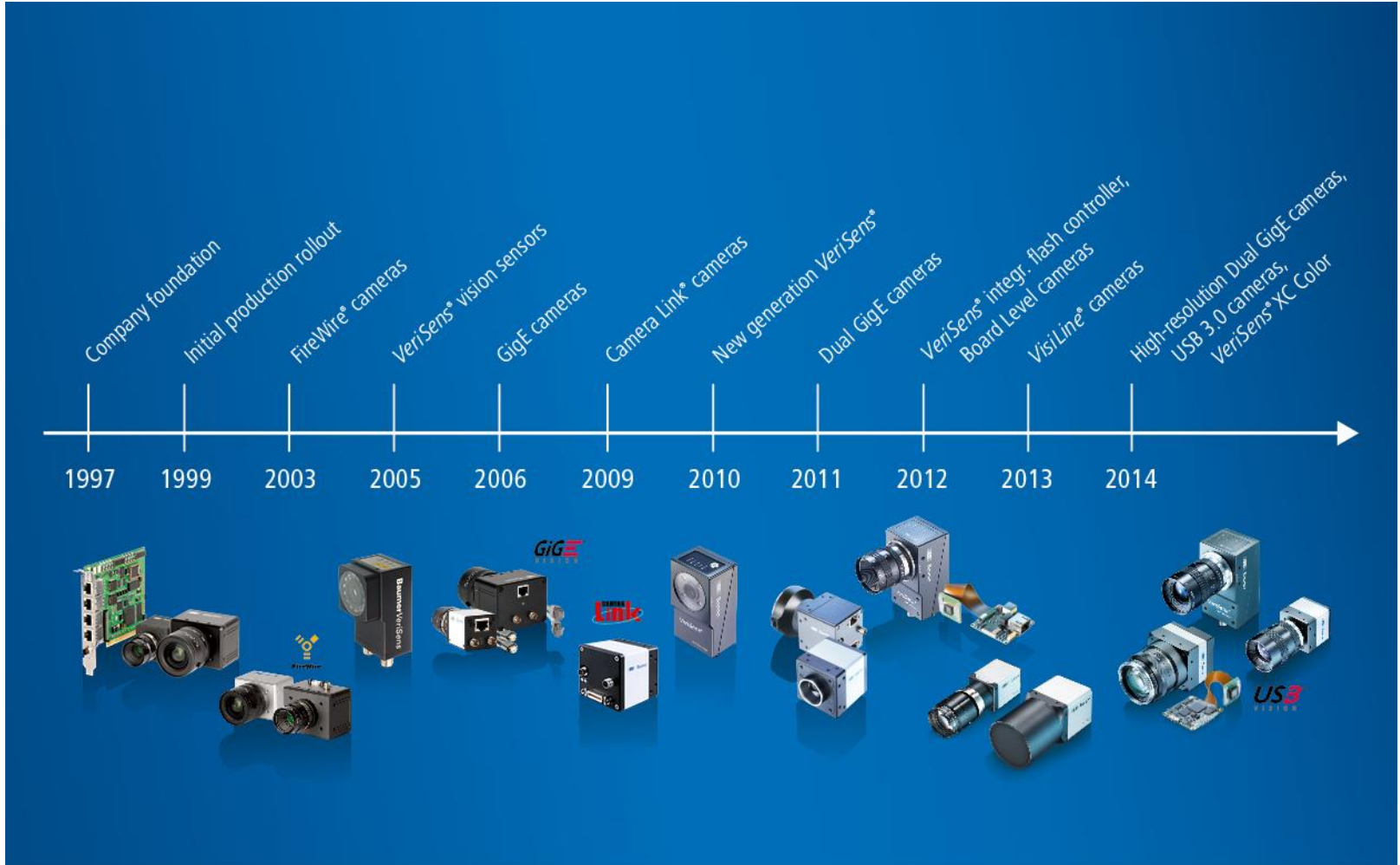
Digital industrial cameras,
vision sensors and customized
products from a single source:

- Based in Radeberg, Germany
- R&D and production under the same roof
- 130 employees, 30% in R&D
- More than 15 years of vision competence
- Made in Germany

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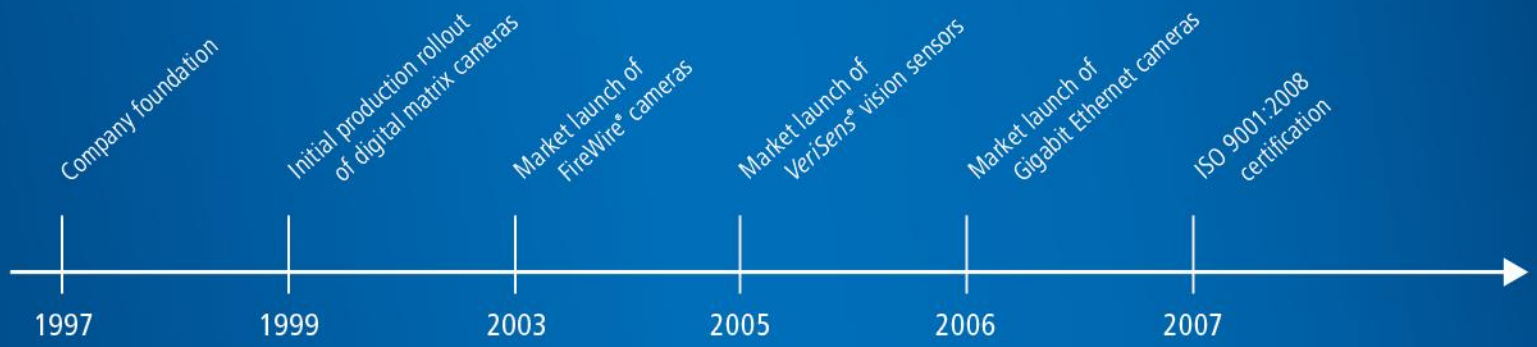
Baumer Vision Competence Center

More than 15 years of vision competence



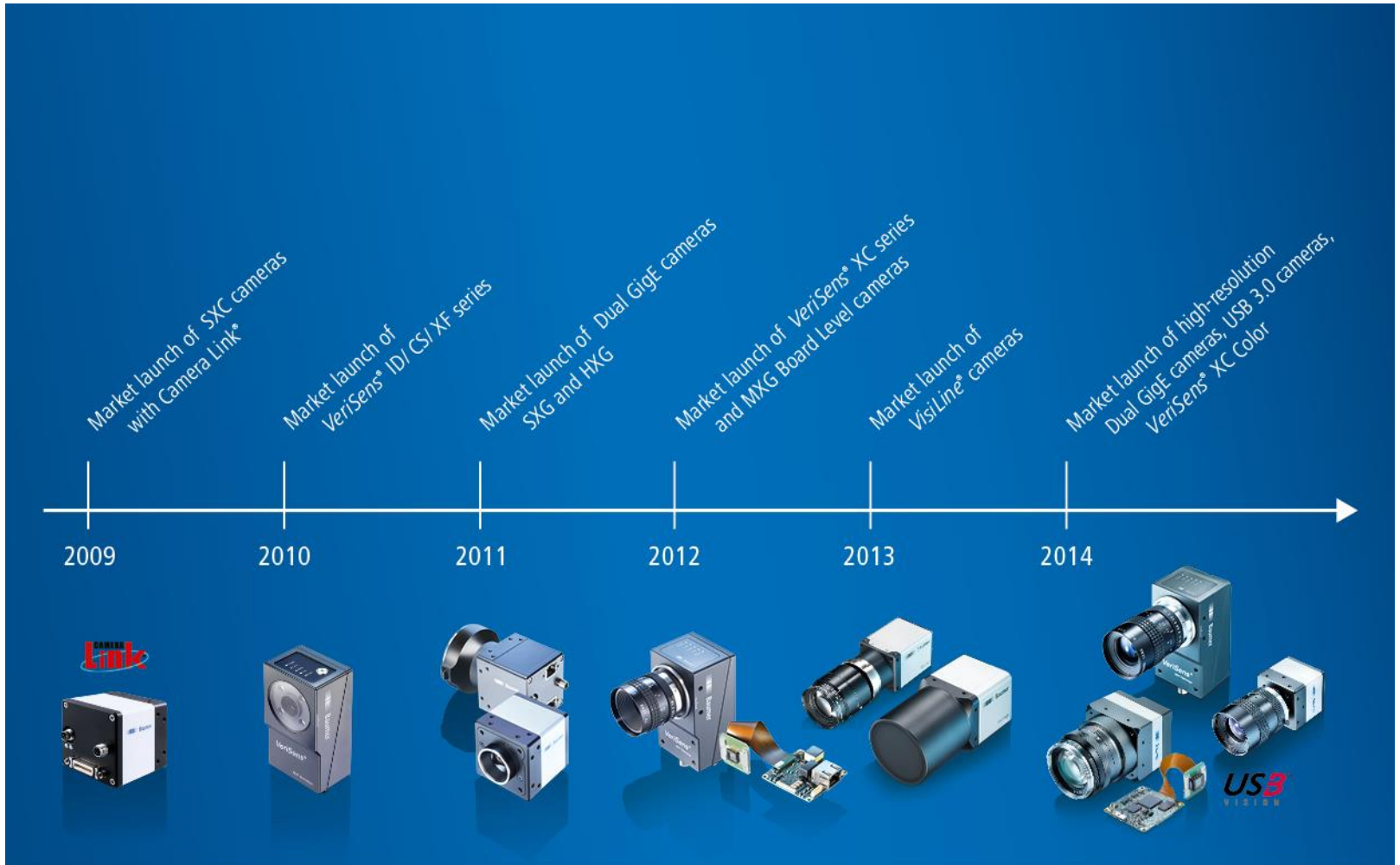
Baumer Vision Competence Center

More than 15 years of vision competence



Baumer Vision Competence Center

More than 15 years of vision competence



Baumer Vision Competence Center Operational Excellence



«Operational Excellence»

- Mandatory quality
- Guaranteed delivery times
- High degree of flexibility



Our background:

- Value stream orientated production processes
- One Piece Flow
- Professional Lean Six Sigma organization
- KANBAN logistic system
- Expert support



Baumer Vision Competence Center

Machine Vision in cross-industry applications



Pharma



Automotive



Print



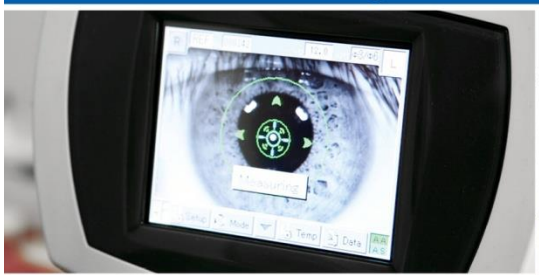
Food & Beverage



Packaging



Traffic



Medical



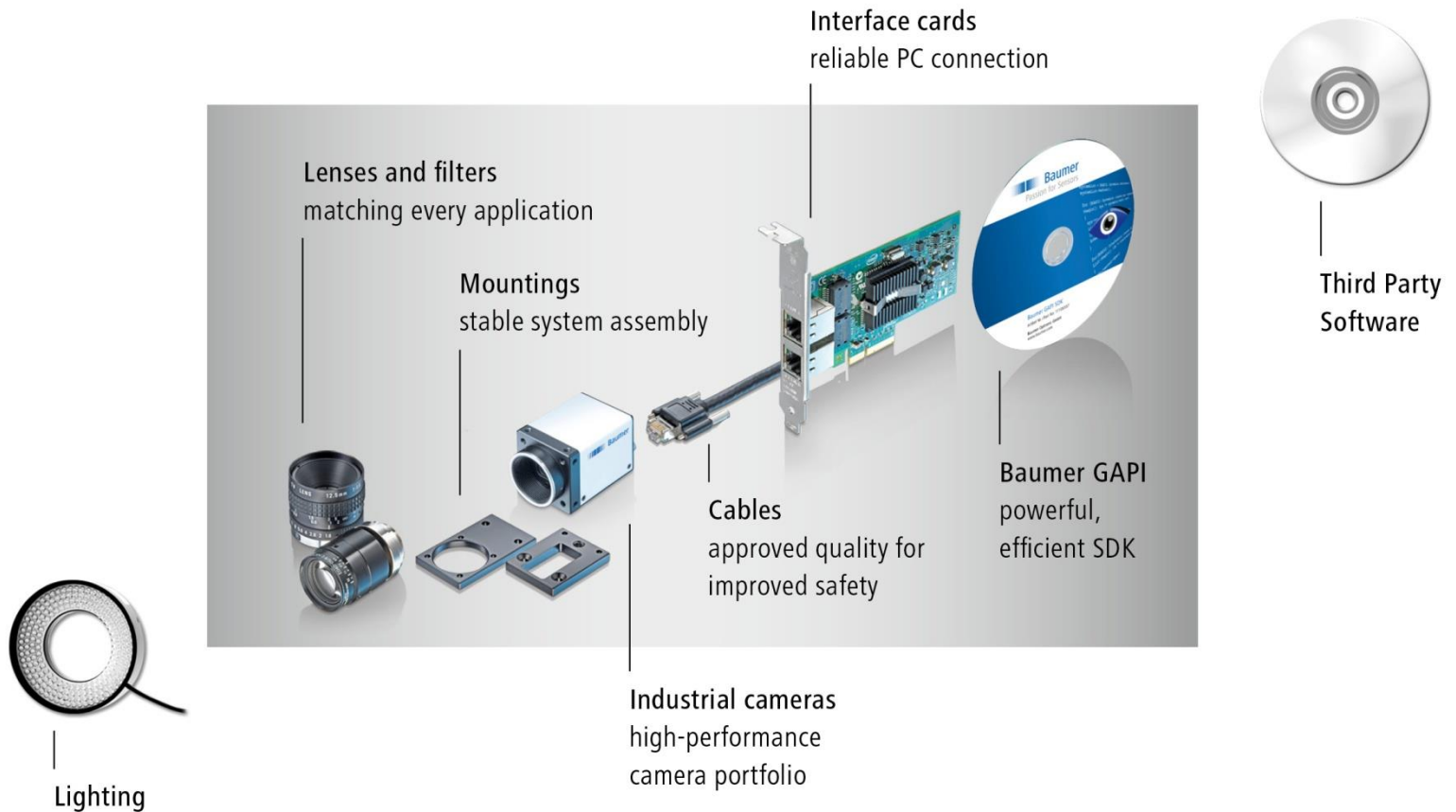
Robotic



Solar

Baumer Industrial Cameras

Everything from one source



Baumer Vision Competence Center

For any application the right product

High-performance industrial cameras



Intuitive vision sensors

Customer-specific hardware
and software design



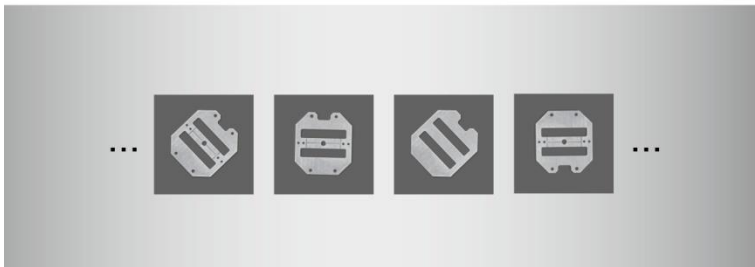
Matching accessories

Baumer Vision Competence Center

Performance capabilities at a glance

- **Industrial camera**

External image processing
and image output



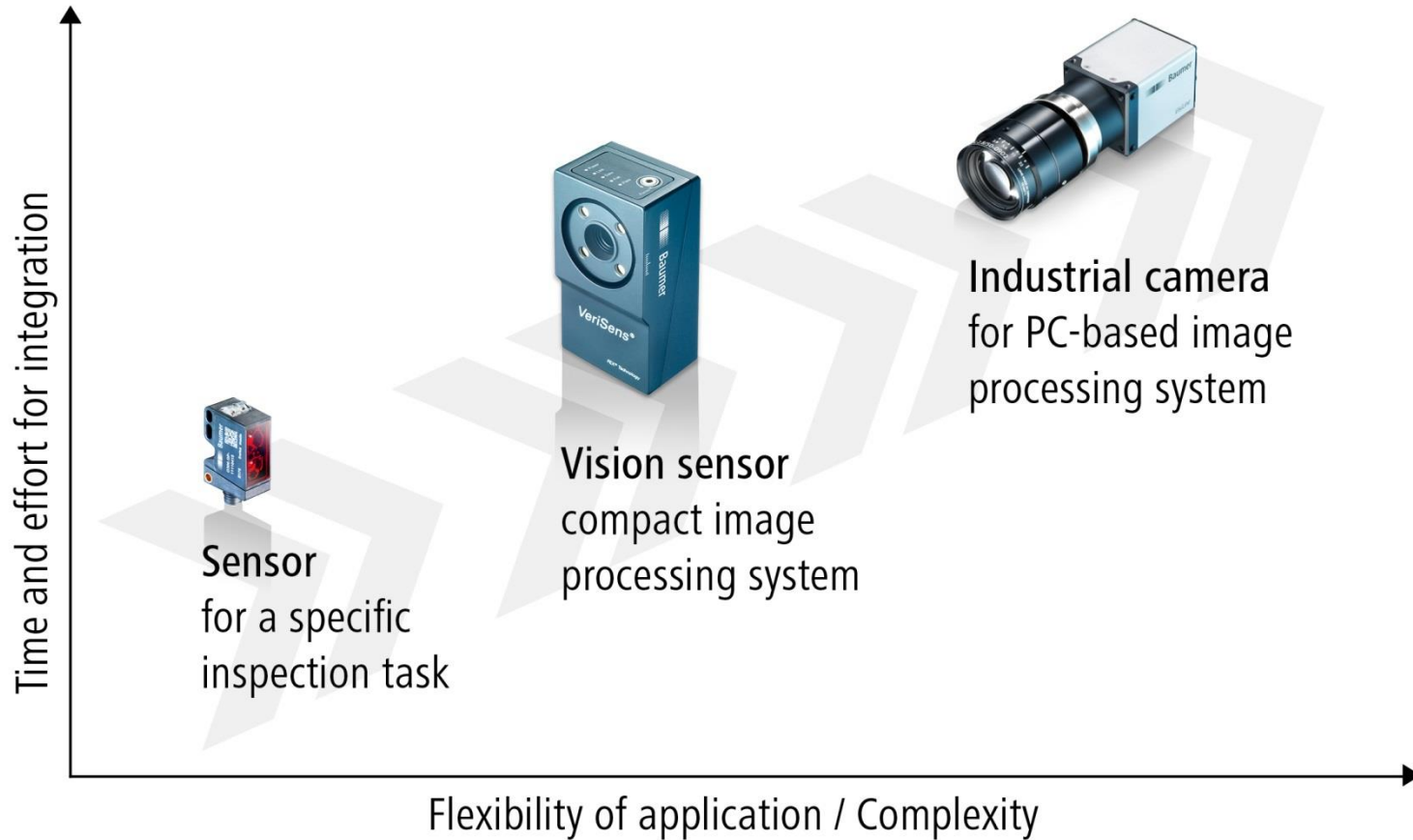
- **Vision sensor**

Internal image processing
und result output



Baumer Vision Competence Center

Performance capabilities at a glance



Baumer Industrial Cameras

CCD and CMOS matrix cameras

High Performance digital industrial cameras
Cross-industry application versatility



Baumer Industrial Cameras

LX series



- Up to 20 megapixel for capturing fine details with excellent image quality and sensitivity
- High throughput thanks to very high speed via Burst Mode, Multi ROI and Dual GigE
- Easy integration thanks to Multi I/O, PoE and modular lens mount

CMOS, 8 - 20 MP, max. 29 fps

GIG[®]
VISION

Baumer Industrial Cameras

PX series



- SONY quad-tap CCD sensors with up to 12 megapixel and high frame rates
- Excellent homogeneity, dynamic range and linearity for brilliant image quality
- USB 3.0 interface enables high bandwidth and easy integration

CCD, 2.8 - 12 MP, max. 50 fps

USB[™]
VISION

Baumer Industrial Cameras

VisiLine[®] series



- Compact all-in-one camera
- Easy integration thanks to Multi I/O, PoE, 12 V or 24 V, flexible mountings
- Well-conceived electronics design for high image quality at frame rates up to 373 fps

CCD & CMOS, VGA - 4 MP, max. 373 fps

GiGE[®]
VISION

USB[™]
VISION

Baumer Industrial Cameras

VisiLine[®] series with IP protection



- IP 67 compliant housing for deployment under harsh conditions
- PoE and wide-range input for ultimate flexibility in power supply
- Resistant to shocks and vibrations for specialized tasks in robotics

CCD & CMOS, VGA - 4 MP, max. 160 fps

GIG[®]
VISION

Baumer Industrial Cameras

MX board level series



- Especially developed for embedded systems
- Remote sensor circuit board for more mechanical flexibility
- Multi I/O, PoE, 12 V or 24 V power supply

CCD & CMOS, VGA - 4 MP, max. 373 fps

GIGE[®]
VISION

USB[™]
VISION

Baumer Industrial Cameras

SX series



- Resolutions from 1 to 8 MP with the same optical performance
- Excellent image quality thanks to dynamic tap adjustment
- High flexibility by Dual GigE with PoE or Camera Link[®] and Multi I/O

CCD, 1 - 8 MP, max. 120 fps

GIG[®]
VISION

CAMERA
Link[®]

Baumer Industrial Cameras

HX series



- Very high speed and sensitivity – also in NIR range
- Optimum exploitation of band width by Multi ROI and Burst Mode
- Reliable image evaluation thanks to FPN correction and HDR

CMOS, 1.3 - 4 MP, max. 500 fps

GIG[®]
VISION

CAMERA
Link[®]

Baumer Industrial Cameras

TX series



- Sensor variety up to 5 MP in a compact housing
- Vast application potential thanks to Multi I/O, PoE and IP 67 variants
- Sophisticated design ensures thermal stability and high image quality

CCD, VGA - 5 MP, max. 210 fps



Baumer Industrial Cameras

EX series



- Cameras with 5 MP Aptina CMOS sensor
- Cost-effective alternative for CCD cameras

CMOS, 5 MP, max. 13 fps

GIG[®]
VISION

Baumer Industrial Cameras

Network components: Switch



- Enables easy setup of multi-camera systems
- Power supply to cameras via PoE for reduced cabling effort
- Fast device installation by 24 V power supply and DIN rail mounting

PoE, max. 6 ports

GiGE[®]
VISION

Baumer Industrial Cameras

Software: Baumer GAPI SDK



- GenICam™ conform implementation
- Intuitive Camera Explorer tool to ease camera evaluation
- One SDK for GigE Vision®, USB3 Vision™, Camera Link®, FireWire®

Supporting Windows® and Linux (32/64 bit),
Programming languages: C++, C#



Baumer *VeriSens*[®] vision sensors

Image-based quality control

Slide: 27

Intuitive vision sensors

Compact image processing systems in the shape of a sensor.



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Baumer *VeriSens*[®] vision sensors

ID series: Text and code reader



- Plain text reading and evaluation without font training (OCR/OCV)
- Reading 1D and 2D codes
- Configurable web interface for user operation via the system's HMI



Identification
(text, code)

Baumer *VeriSens*[®] vision sensors

CS series: Check and sort products



- Especially developed for check & sort applications
- High degree of process tolerance thanks to patented Baumer *FEX*[®] contour processor
- Encoder interface for path-based triggering and ejection

Inspection
(presence, completeness, position, rotation)

Baumer VeriSens[®] vision sensors

XF series: Quality inspection and identification



- 19 powerful feature checks:
 - Part location
 - Geometry
 - Feature comparison
 - Identification
- High degree of process tolerance thanks to patented Baumer *FEX*[®] contour processor
- Valuable features such as process interface, result linking, FTP client



Inspection, positioning, identification
CMOS, VGA

Baumer *VeriSens*[®] vision sensors

XF series with IP 69K protection



- 19 powerful feature checks:
 - Part location
 - Geometry
 - Feature comparison
 - Identification
- High degree of process tolerance thanks to patented Baumer *FEX*[®] contour processor
- First vision sensor for sensitive areas without need for an additional protective enclosure

Inspection, positioning, identification
CMOS, VGA

Baumer *VeriSens*[®] vision sensors

XC series: Maximum flexibility



- Easy implementation thanks to integrated flash controller, C-mount with modular lens protection
- Maximum functionality with enhanced flexibility
- CCD technology with resolution up to 2 MP



Inspection, positioning, identification
CCD, VGA to 2 MP

Baumer *VeriSens*[®] vision sensors XC series with color recognition



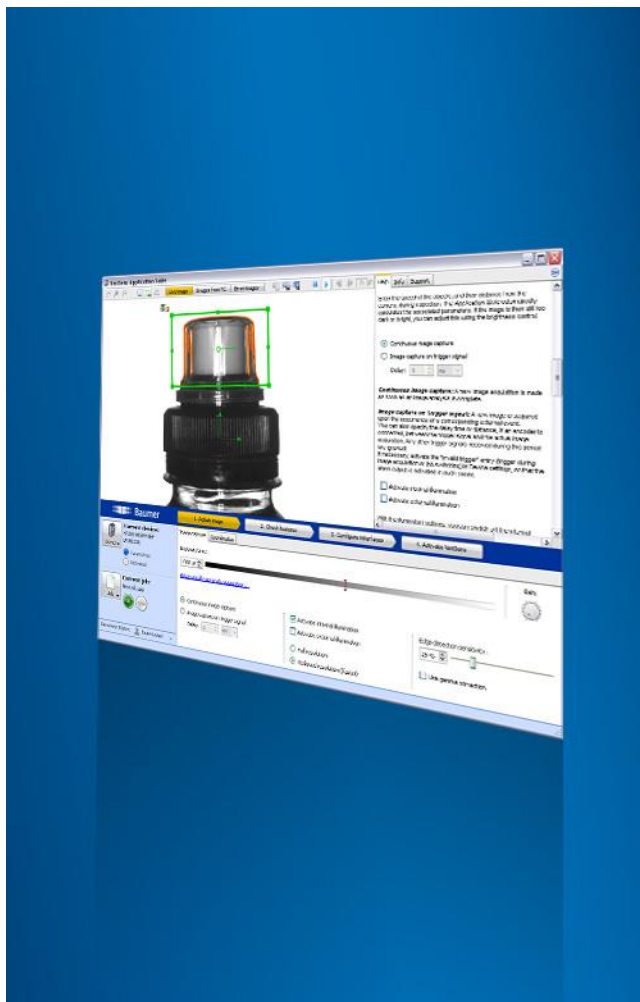
- *Color FEX*[®] 3D color assistant :
Teaching the object colors simply by
mark and click
- Easy implementation thanks to
integrated flash controller, C-mount
with modular lens protection
- CCD technology with resolution
up to 2 MP



Inspection, positioning, identification
CCD, VGA to 1.2 MP

Baumer *VeriSens*[®] vision sensors

Intuitive Software: Application Suite



- Standardized throughout all series – just a one-time effort in getting to know
- Easy to operate thanks to clear and slimmed-down user interface
- Verification of inspection tasks by integrated simulation and test functionality

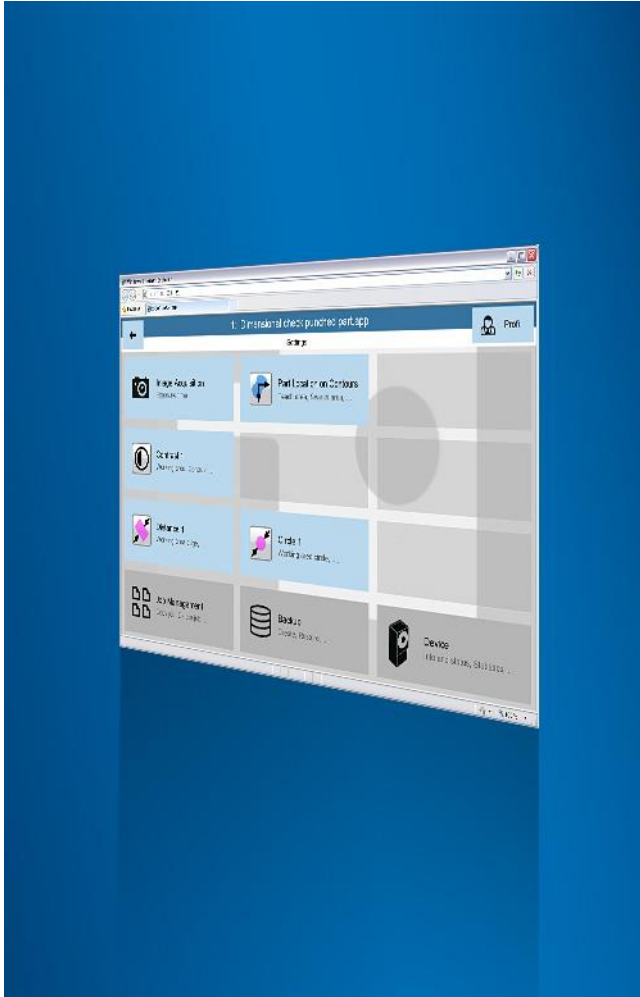


User-orientated, product simulators,
test function

Baumer *VeriSens*[®] vision sensors

Web Interface: Individually configurable

- Re-configuration via existing machine user interface
- Application-specific configuration within 3 minutes
- User level for safe operation



Configurable, user-friendly,
touch-optimized

Baumer Vision Competence Center Summary



«Operational Excellence»

- Mandatory quality
- Guaranteed delivery times
- High degree of flexibility

«Standard conformity»

GiGE[®]
VISION

USB[™]
VISION

CAMERA
Link[®]

FireWire

GEN<i>i>CAM

We at Baumer thank you for your attention

Slide: 37



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