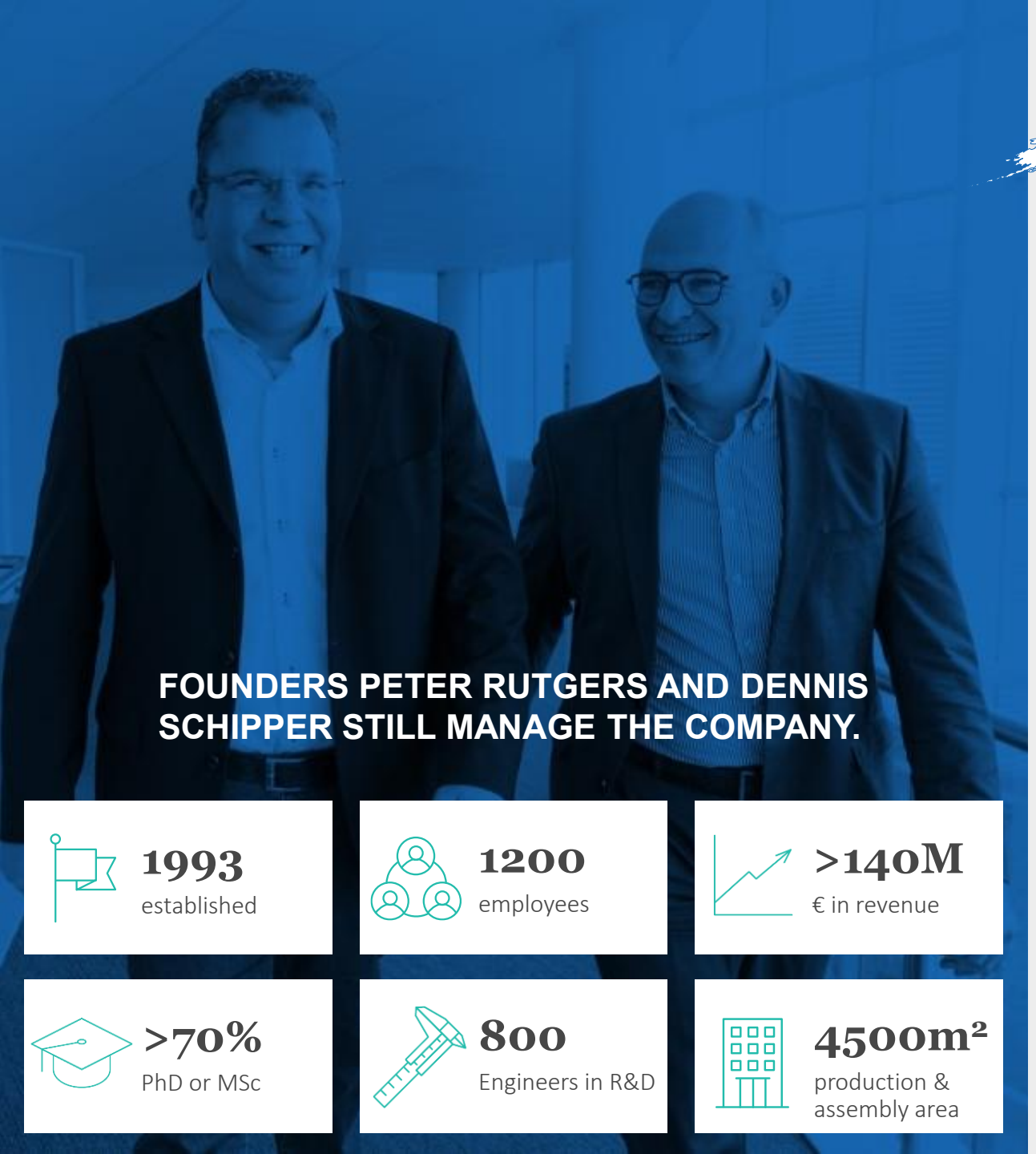

high-end solutions
to social challenges.
DEMCON


DEMCON
high-end technical solutions
to societal challenges.
DEMCON

DEMCON | HIGH-TECH SYSTEMS

developer and manufacturer of customized mechatronic modules and equipment.

- We are specialized in design and engineering of tailor-made mechatronics modules and equipment, for markets such as Semicon, Aerospace and Quantum
- Our System Engineers design innovative solutions to meet the most demanding functional requirements
- We have a multidisciplinary approach to engineering to ensure an optimal performance of the product, in mechanical terms but also in terms of thermal management, optics, electronics, control, etc.
- The customer owns the IP – always.



FOUNDERS PETER RUTGERS AND DENNIS SCHIPPER STILL MANAGE THE COMPANY.

1993
established

1200
employees

>140M
€ in revenue

>70%
PhD or MSc

800
Engineers in R&D

4500m²
production & assembly area

DEMCON HIGH-TECH SYSTEMS DIVISION

our capabilities.

mechatronic system engineering

SYSTEM INTEGRATION

- Mechatronics
- Mechanics
- Electronics
- Software
- Firmware
- Usability
- Motion Control

MODELLING & SIMULATION

- Dynamics
- CFD
- PlasmaPhysics
- Thermal
- Superconductivity
- Electro-Magnetics
- Cleanliness

OPTICS & VISION

- Vision systems
- Optical assemblies
- Laser beam delivery
- Adaptive optics
- Visual Inspection
- Machine Learning
- System assembly

THERMAL MANAGEMENT

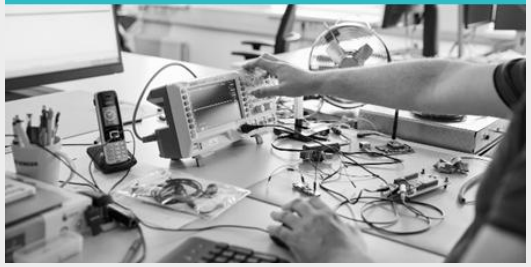
- Lumped Elements
- Finite Elements
- Cooling techniques
- Cryogenics
- Temperature control
- Vacuum solutions

DEMCON HIGH-TECH SYSTEMS DIVISION

our facilities.

DESIGN & ENGINEERING

PROTOTYPING

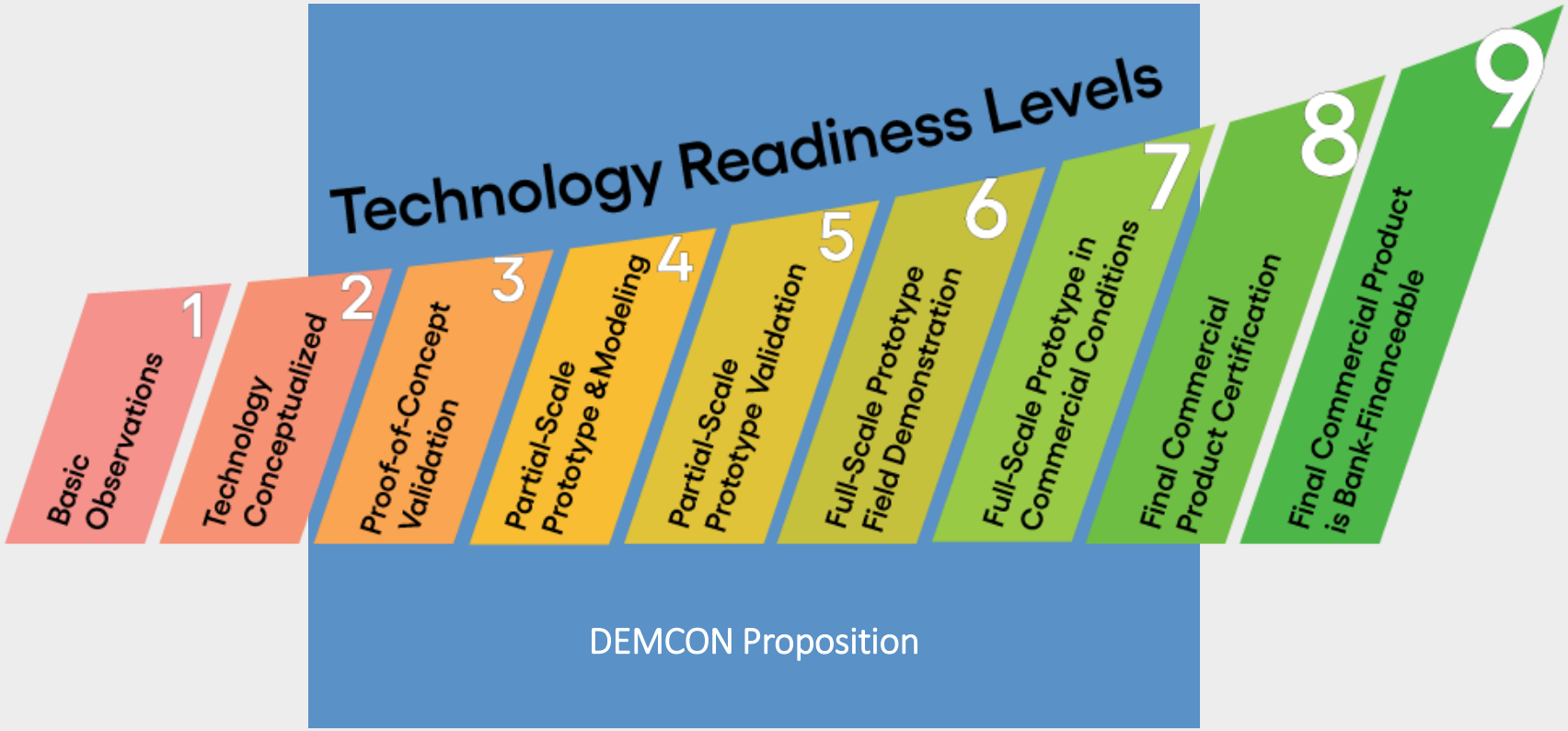


CLEANROOM

MANUFACTURING

ORGANIZATION

Proposition of Demcon High-Tech Systems



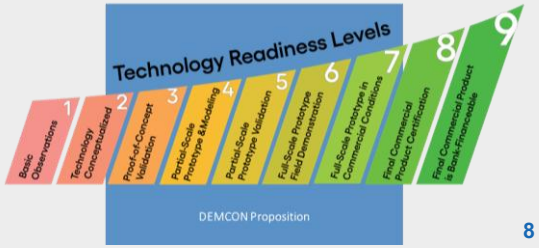
ORGANIZATION

Proposition of Demcon High-Tech Systems

- World-Class Mechatronic Systems Engineering
- Multi-Disciplinary Approach
  - *Mechatronics*
  - *MultiPhysics*
  - *Thermal Management*
  - *Optics & Vision*
  - *Data Management*
- Large Teams available
  - *Three locations in the Netherlands*
  - *Close to 300 highly educated engineers*

Customer Value

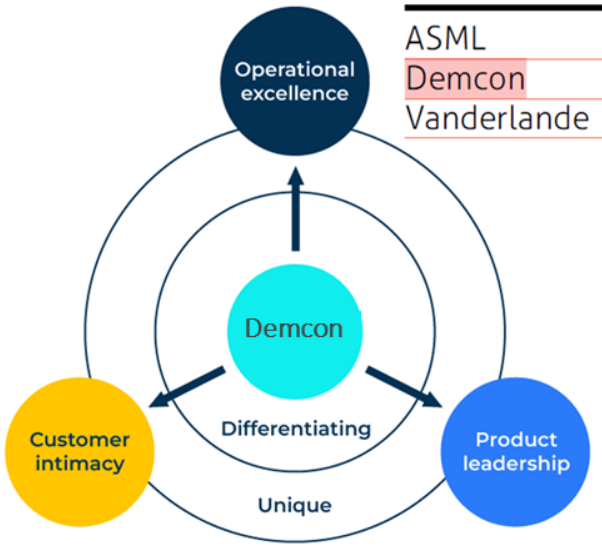
- Faster Time-to-Market
  - *extension of your own R&D team with Demcon engineers*
- Improved Product Performance
  - *complement your own R&D competences with in-depth expertise of Demcon engineers*
- Control over IP
  - *you own the foreground IP, no lock-in to manufacturing partner*



ORGANIZATION

Testimonials and References

ASML	★★★★
Demcon	★★★★
ASM International	★★★



ASML	★★★★★
Demcon	★★★★
Vanderlande	★★★★

ASML	★★★★★
Lely	★★★★
Vanderlande	★★★
Thales Nederland	★★★
Demcon	★★★

- The MT500 is an annual ranking by **MT/Sprout** that highlights the 500 companies with the strongest reputation in the Netherlands, based on feedback from thousands of business decision-makers.
- Rankings are within the peer-group Machine-building and Electronics
- *Demcon is the absolute #1 Engineering Partner in the Netherlands*

AEROSPACE

thermal systems & control.

- Extreme cold prevails in space and major temperature differences can occur in the surroundings of airplanes and satellites. Controlling thermal system behavior in aerospace is crucial.
- Knowledge of processes, materials, construction and models.
- We have a great deal of experience applying both passive and active cooling and in developing and building (cryogenic) (micro) cooling systems.

thermal management

detailed modeling and predicting

satellites and transport containers used in aviation

AEROSPACE

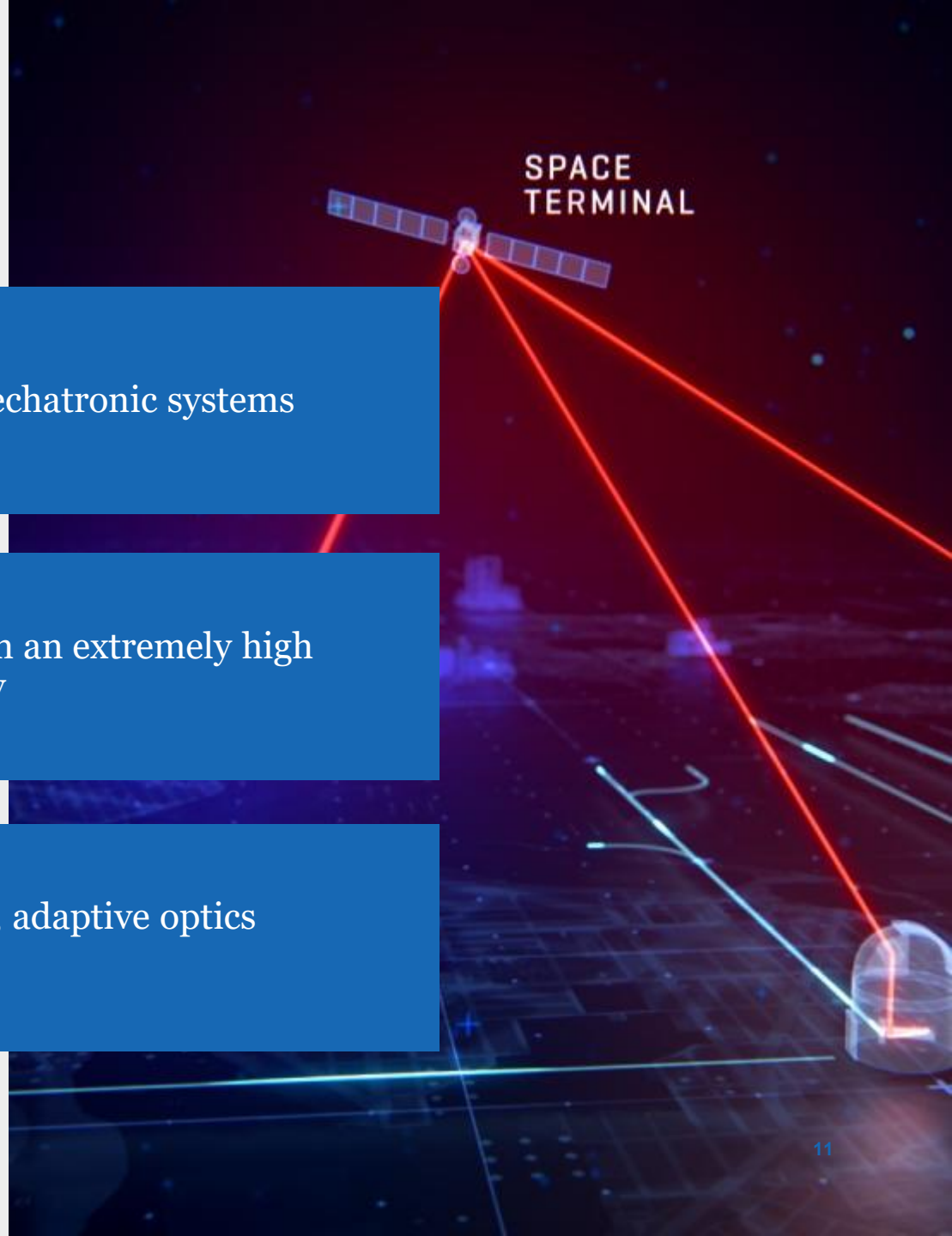
free-space optics.

- The quality of optical instrumentation is the Achilles' heel of many aerospace applications.
- Challenges include the extreme conditions, volume and mass limitations and the atmospheric disturbance of light rays.
- Reliable, broadband communications among satellites en satellites and ground stations creates a complex challenge due to the movement of the earth, satellites and atmosphere.

advanced optomechatronic systems

laser systems with an extremely high pointing accuracy

pointing systems, adaptive optics and laser beams



DEFENSE & SECURITY

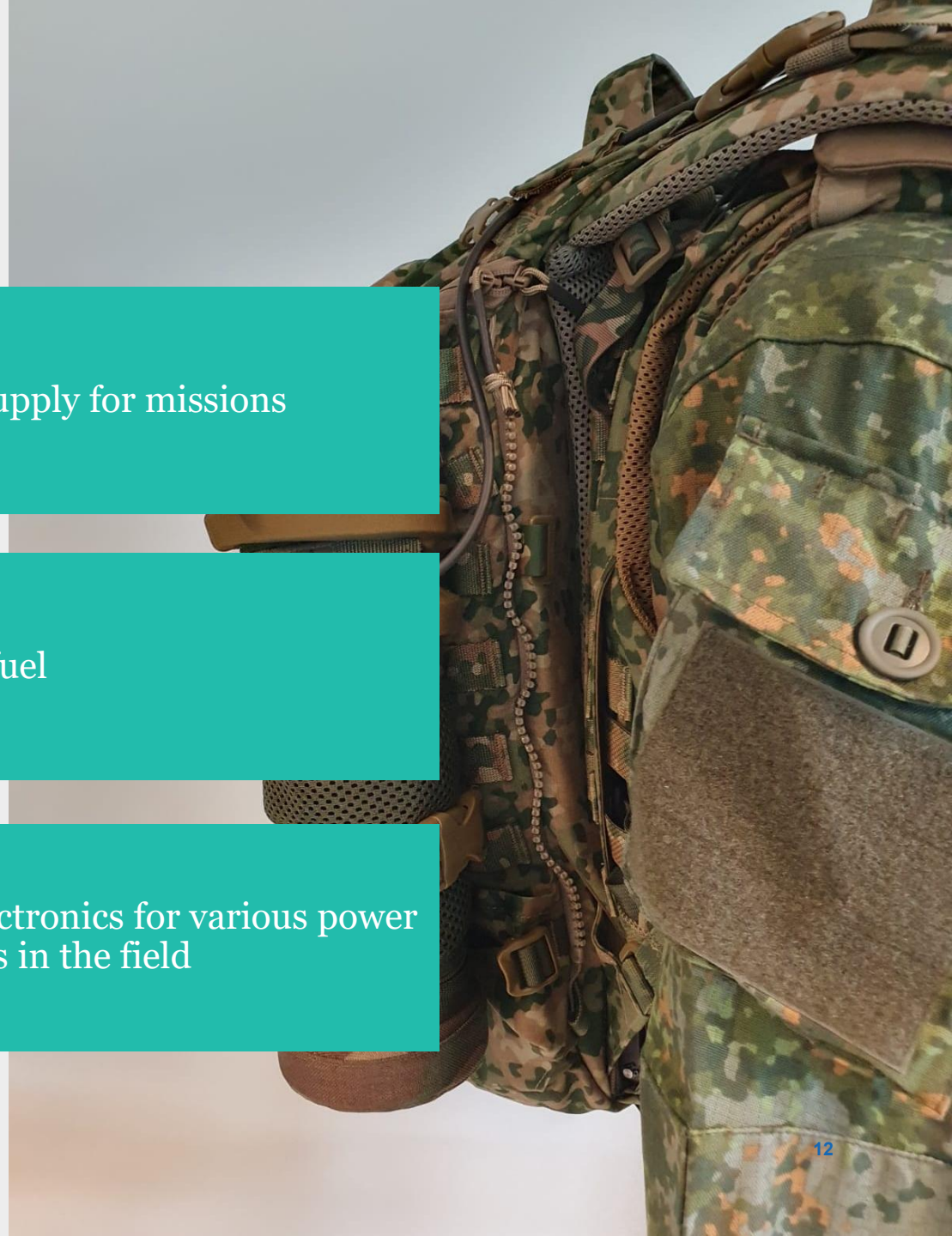
mobile power systems.

- Defense is acquiring more and more electric operations and communication systems. This makes supplying power for missions in the field a challenge but the need increases.
- There is a need for solutions that prevent overload and that make the transportation of large numbers of spare batteries superfluous.
- In addition to compact systems for personal equipment, we also develop larger vehicle systems suitable for a variety of missions.

effective power supply for missions

locally available fuel

custom-made electronics for various power and voltage needs in the field



DEFENSE & SECURITY

energy & cooling systems.

- There is an increasing demand to equip military vehicles and installations with high-power systems such as lasers, requiring a high-capacity energy supply. This inevitably involves the generation of heat, requiring reliable cooling to safeguard their continued operation.
- Personnel, vehicles and installations are increasingly equipped with electric devices and systems for operational tasks and communications.
- As a result, electric power supply and cooling needs are increasing.

safe solutions for effective equipment

high-capacity energy supply within a small footprint

detailed energy-flow simulations to develop reliable systems for operations

DEFENSE & SECURITY

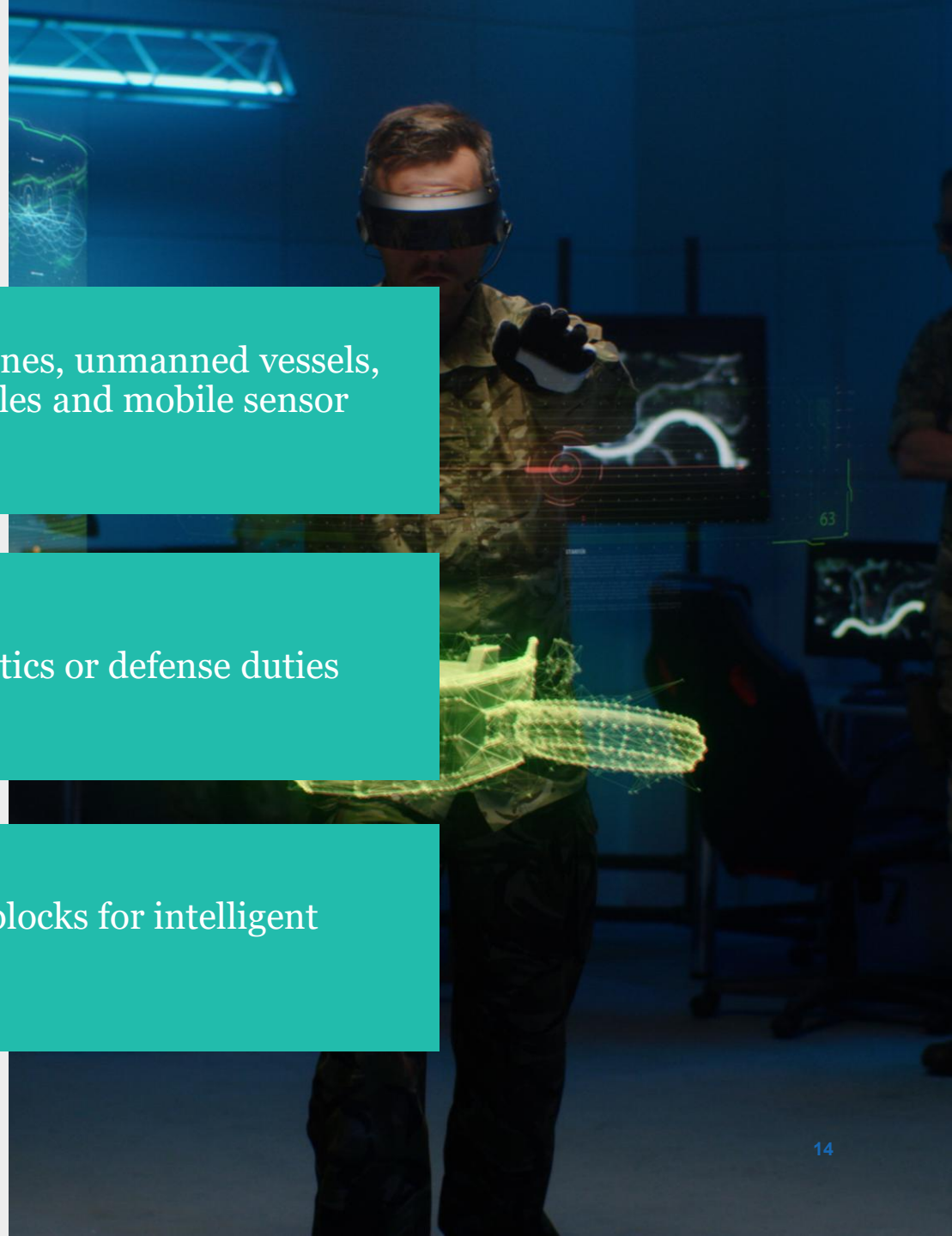
unmanned systems & artificial intelligence.

- Unmanned system technologies can help defense organizations increase the effectiveness and safety of operations and people.
- Unmanned systems must process knowledge of their surroundings intelligently to be able to function autonomously.
- The future vehicles used by defense organizations will increasingly consists of modular platforms with a high level of autonomy. Our solutions are developed for this purpose and can be integrated into larger (sub)systems, or complete platforms.

smart robots, drones, unmanned vessels, self-driving vehicles and mobile sensor systems

exploration, logistics or defense duties

proven building blocks for intelligent autonomy



DEFENSE & SECURITY

virtual & augmented reality.

- Modern technology can help defense organizations increase the effectiveness and safety of missions.
- Personnel must quickly make well-founded decisions under chaotic conditions and high pressure. Modern technology and artificial intelligence can help, for example through the early detection and identification of suspect objects.
- We develop advanced mission support systems and build realistic training environments for these systems.

smart systems, artificial intelligence and realistic simulations

in the field and for training purposes

better field support

DEFENSE & SECURITY

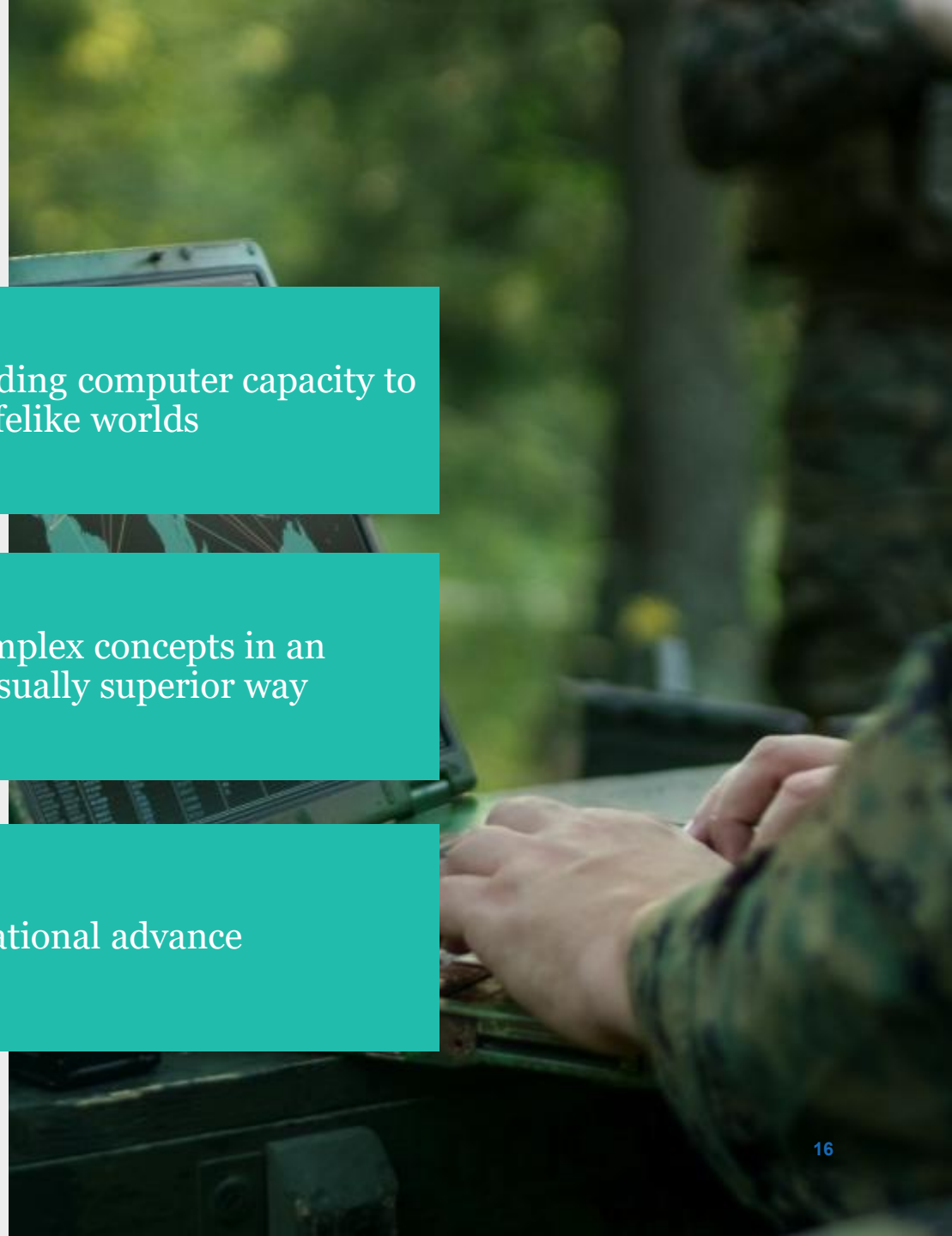
3D animation of complex environments.

- The challenge for defense operations is that it is difficult to prepare for the associated exceptional circumstances. Realistic simulations can help in that respect.
- We use advanced 3D animation techniques to create realistic, high-information-density environments to plan defense operations and train military personnel or decision-support algorithms.
- We have mastered the art of storytelling through clear and impactful visuals for complex processes and situations.

using ever-expanding computer capacity to create complex lifelike worlds

communicate complex concepts in an expressive and visually superior way

tactical and operational advance



HIGH TECH SYSTEMS & MATERIALS

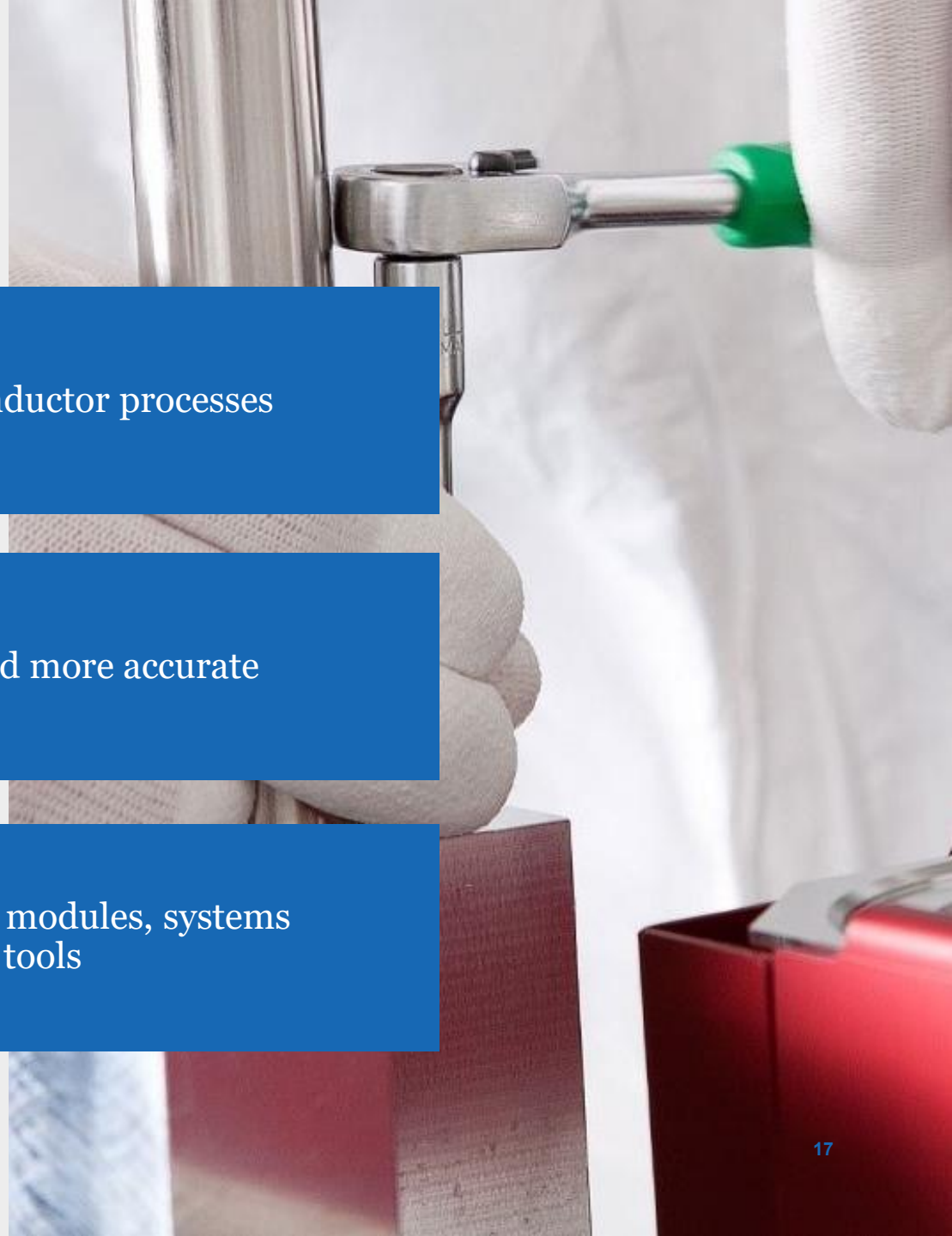
semiconductors.

- We develop (opto)mechatronic systems for the semiconductor industry with challenging specifications.
- Advanced solutions for this purpose that also meet cost specifications.
- Besides classicial mechatronics we deploy additional technologies, such as optics and simulations. Data analysis helps us realize better products and services even faster.

optimize semiconductor processes

smaller, faster and more accurate

global delivery of modules, systems and qualification tools



HIGH TECH SYSTEMS & MATERIALS

qualification.

- High-tech systems must deliver complex functionality and therefore must meet strict requirements. To demonstrate they do so, OEMs qualify their systems/subsystems with the help of qualification tooling that in turn is subject to even stricter specifications.
- Strict specifications, smart checks.
- We build complex qualification equipment and possess in-depth knowledge of the systems to be qualified, their interfaces and the complex operating system software.

system- and process validation

development of production tools that execute qualification processes and are able to replace certified operators

turnkey basis

HIGH TECH SYSTEMS & MATERIALS

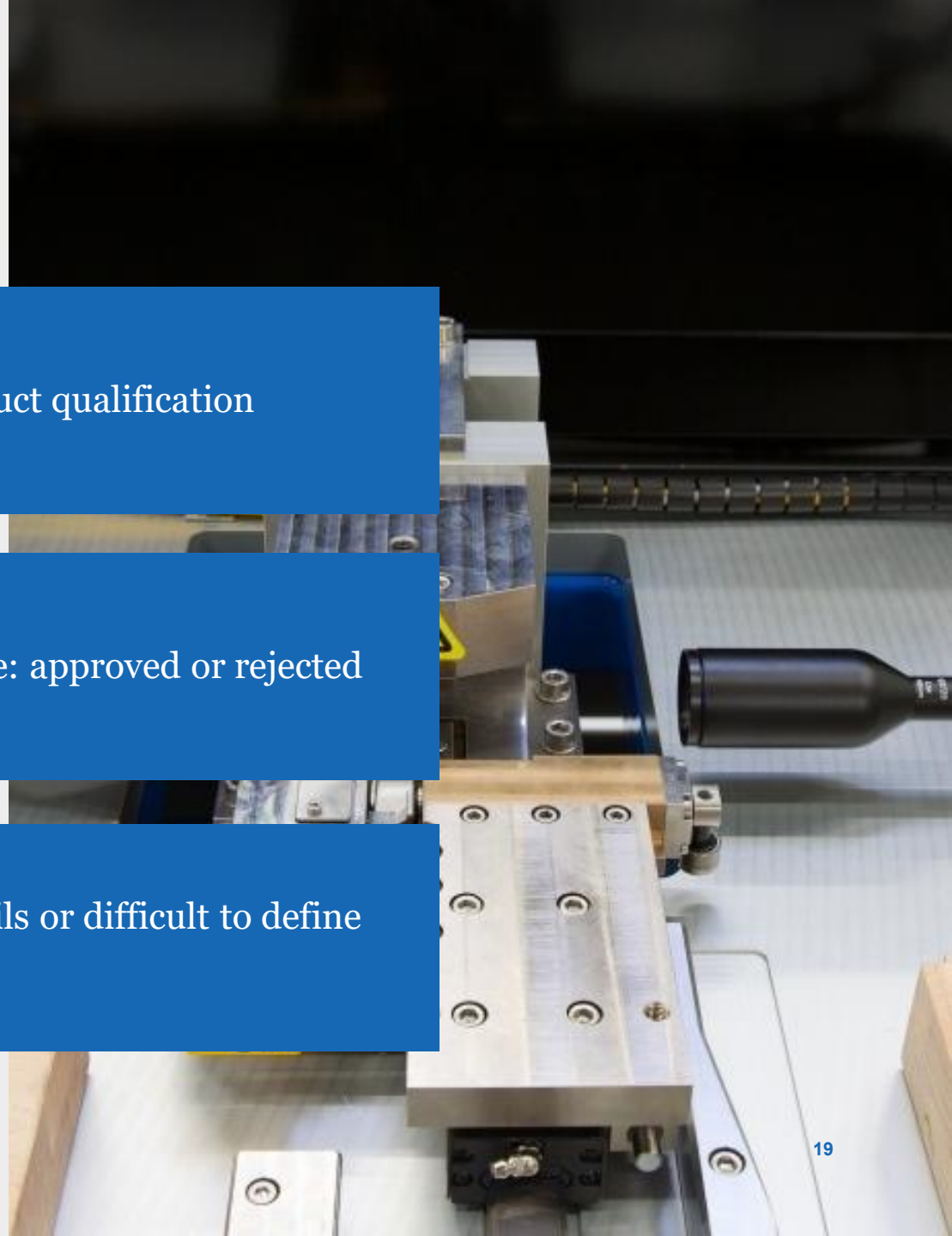
inspection.

- Inspection plays an increasingly larger role in monitoring the quality of production. We develop efficient and reliable inspection solutions by using our comprehensive expertise.
- From laboratory setups to robust inspection systems.
- We support the image analysis with artificial intelligence and are able to train the inspection algorithm with synthetic data.

challenging product qualification

quick and reliable: approved or rejected

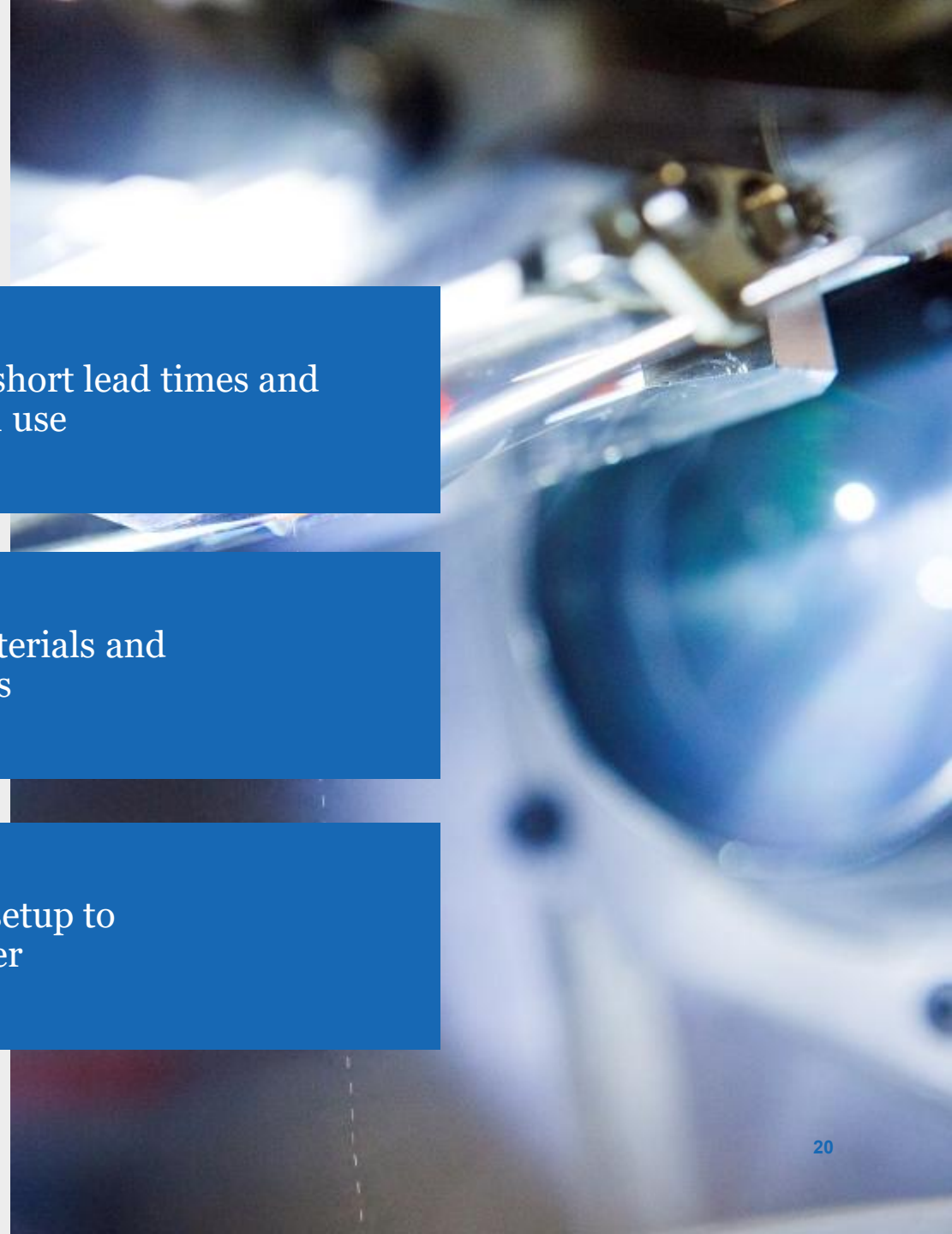
microscopic details or difficult to define properties



HIGH TECH SYSTEMS & MATERIALS

additive manufacturing.

- The creativity offered by additive manufacturing must be translated into consistent print quality.
- We develop customer-specific 3D print technology.
- As technology developer we release our inventiveness on the 3D printing, even more so when they are difficult to print due to high melting temperatures. We are able to compensate thermal effects, such as shrinkage, and know how to preserve the favorable properties of bulk materials.



design freedom, short lead times and minimal material use

knowledge of materials and optomechatronics

from laboratory setup to production printer

SMART INDUSTRY

manufacturing process automation.

- We develop tailored automation solutions for innovative applications. Our expertise enables us to design custom production systems that align with the specific production needs of our clients.
- Our proprietary SmartMachineBase (SMB) platform can be used as a reliable and robust base. This accelerates the development process, while ensuring high reliability and performance.
- Our customers are supported from the very beginning, by co-developing innovative concepts for their production challenges. This is followed by the detaildes design, realization, validation and installation of production equipment. All completely tailored to their specific needs.

tailored automation solutions for innovative applications

platform technology for efficient development, high flexibility and performance

from concept to implementation

WATER & MARITIME

unmanned & autonomous vessels.

- Unmanned and autonomous vessels make it possible to perform activities remotely, cost efficiently and in automated and digitalized ways.
- Unmanned vessel platform systems and high-tech autonomous navigation technology.
- The modular platforms are suitable for diverse applications and environments such as, inland narrows and shallows, rivers and up to rough offshore conditions.

monitoring waterways, surveying soil profiles and determining environmental quality

robust, compact sailing platforms

from data acquisition to an operational tool

WATER & MARITIME

monitoring & control

- The strain on water systems is rising due to the increasing urbanization, climate change, dried out or polluted water sources, and ageing infrastructure.
- We develop innovative sensor technology for monitoring water quality and deliver and manage complete sensor networks.
- Current insight into water quality is crucial for safeguarding water safety.

water safety is of increasing international importance

autonomous inspection systems for water pipeline networks

sensor systems and sensor newtorks

thank you
for your attention.

DEMCON | HIGH-TECH SYSTEMS

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