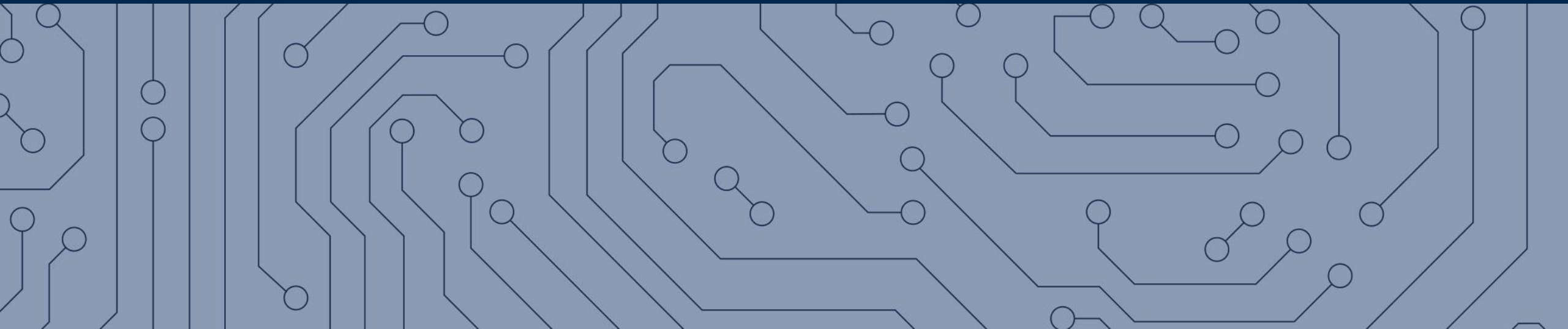

WE LEAD THE FUTURE

2020 - EPIC ONLINE TECHNOLOGY PHOTONICS PACKAGING AND TESTING

GEORG.HEGEWALD@FIRST-SENSOR.COM



OUR COMPANY

We are a leading provider of sensor technology

Short facts



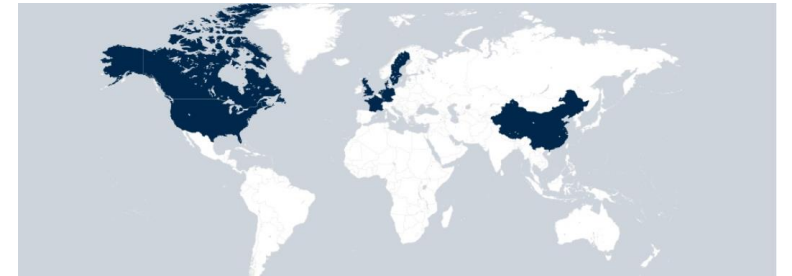
- Founded 1991 in Berlin, Germany
- 1.000 employees
- € 162m sales revenues in 2019
- Stock-listed in Germany

Capabilities



- 7 clean room production sites: wafer fab and assembly facilities
- Automotive, medical and aerospace certifications
- Development and production of customized and standard sensors
- Complete sensor value chain in one company

Markets & Products



- 3 target markets: industry, automotive, medical
- Sensor products for optical, pressure, flow, inertial, radiation applications
- Integrated manufacturing services for imaging sensors

CORE TECHNOLOGIES

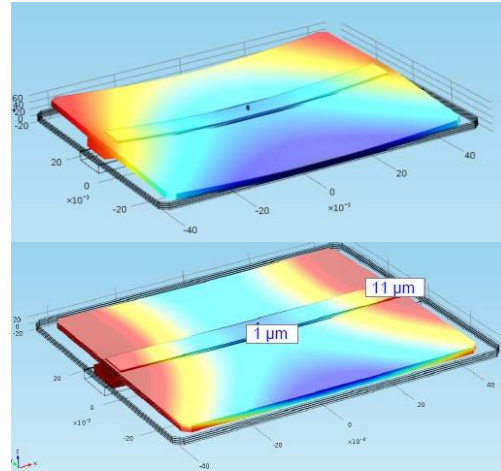
Applied to customer specific image sensor solutions

Wafer dicing



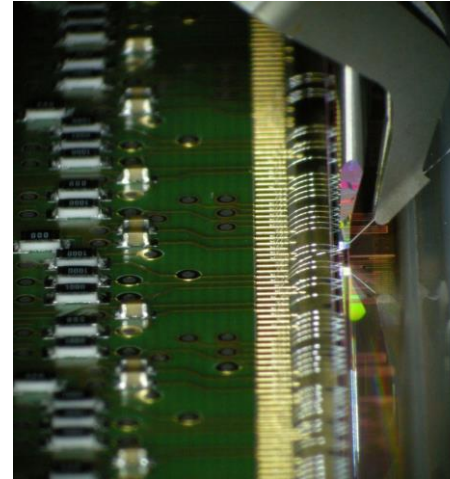
- SI wafer up to 300mm diameter (2"-12")
- Wafer with μ Lenses have special process to ensure cleanliness (dicing residue)
- Cleaning post dicing process

Die Bonding



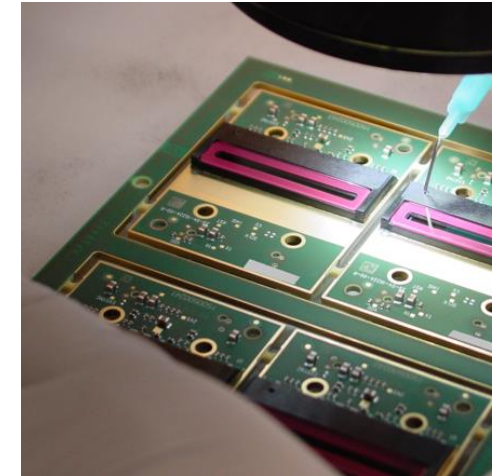
- Dies in Ceramic Packages/PCB covered by Glass Lids or Filter-Glass under **Cleanroom conditions (class 100/ 1.000)**
- High die placement accuracy
- Minimal Die warpage
- Optimized thermal management

Wire Bonding



- **Thinwire 15-25 μ m bonding**
- Aluminum and Gold wire as standard
- Specialized loop capability
- Reliability and environmental test capability

Coverglass Attach



- Dies on COB Substrate (PCB) covered by Glass-Frame combinations or Filter-Glass
- **Conformal Coating**
- Substrate optimized die warpage/Cover attach
- Cost efficient approach for sensors

WRAP UP

First Sensor Microelectronic Packaging in Dresden

- Engineering interfaces for complex custom designs between customer and supplier
- Prototype assembly to validate expectation
- **Applied material knowledge to provide design and assembly inputs to achieve build targets**
- Verification of requirements and specification
- Sample build phase process and **process qualification for serial production**
- Supply Chain Management and material procurement
- **Serial production to achieve quality level and cost expectation**
- **Automotive IATF 16494 certified (since 2009)**

- Achieving high yields through materials interconnection expertise and robust assembly processing
- Enabling a great level of communication between customer and supplier to achieve common goals

- **Our way of working results in high yield + high reliability = cost efficient**

THANK YOU

We empower the future – Company Capability Opto Packaging

April 2020

Hegewald, Georg

First Sensor AG

www.first-sensor.com