



Customized or standard  
**Your supplier and partner**  
for physical, chemical and biological sensors

# About us

- 
- 500 employees worldwide
  - In-house design and manufacturing
  - Production of small quantities to high volume manufacturing
  - Flexible and responsive project management with short turn-arounds
  - ~200 new customized sensors per year
  - Part of the Endress+Hauser Group (>16'000 employees) since 2005





Founding of  
IST AG in  
Wattwil,  
Switzerland



IST  
in Roznov,  
Czech  
Republic

**Endress+Hauser**   
People for Process Automation

Acquisition of IST AG  
by Endress+Hauser



IST in Las Vegas,  
USA



IST AG  
moves to  
Ebnet-Kappel



Acquisition  
of Jobst  
Technologies  
Freiburg,  
Germany



Acquisition of  
Innuscreen,  
Berlin,  
Germany



Acquisition of  
Infrasolid  
Dresden, Germany



Acquisition of  
Senstech  
Fehraltorf, Switzerland

1991



TEMPERATURE

1994



FLOW

1995



HUMIDITY

1999



CONDUCTIVITY

2004



TECHNOLOGY PARTNER

2005

2007



DEVELOPMENT  
GAS SENSORS

2010



GAS

2012



BIO

2015



MICROFLUIDIC  
ACTUATORS

2017



DNA/RNA  
EXTRACTION

2020



MICRO-  
HEATERS



INFRARED  
EMITTERS

2021



IR

2022



FORCE

COMPANY HISTORY

**IST USA**  
Las Vegas  
Sales

**IST USA**  
Greenwood, IN  
Heater Production

**IST Innuscreen**  
Berlin, Germany  
R&D, Production  
Molecular Diagnostics

**Infrasolid**  
Dresden, Germany  
R&D, Production  
Infrared Emitters



**Jobst Technologies**  
Freiburg, Germany  
R&D, Production  
Bio Sensors



**IST Roznov**  
Roznov, Czech Republic  
Production, R&D, Pastes



**IST AG Headquarters**  
Ebnet-Kappel, Switzerland  
R&D, Production, Sales



**Senstech**  
Fehraltorf, Switzerland  
R&D, Production, Sales  
Pressure & Force Sensors



**● Sales Offices**

China, France, Germany, India, Ireland, Finland  
USA: Boston, Las Vegas

TEMPERATURE



MICRO-HEATERS



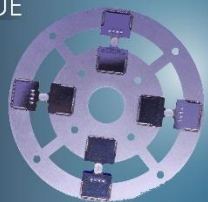
CONDUCTIVITY



FLOW



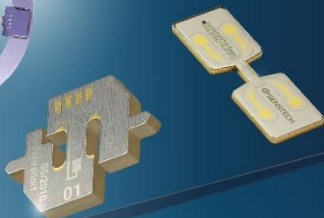
TORQUE



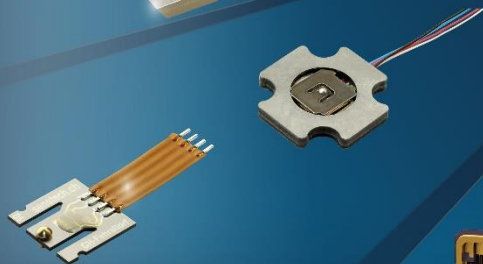
HUMIDITY



SURFACE STRAIN



FORCE



THERMAL INFRARED EMITTERS



DNA/RNA EXTRACTION



BIO







# TEMPERATURE SENSORS



- Smallest footprint: BondSens
- Fastest responding Platinum RTD
- Most accurate Class A Pt-sensor
- Wide temperature range  
-200 °C up to +1000 °C
- Best in class for ESD stability
- Large range of customization options
- Calibrated digital sensor
- The only manufacturer of  
Nickel and Platinum RTDs



AEROSPACE



APPLIANCE



AUTOMATION



AUTOMOTIVE



BIOTECHNOLOGY



HVAC



HANDHELD DEVICES



MEDICAL



PROCESS CONTROL



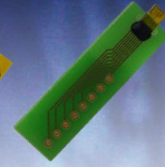
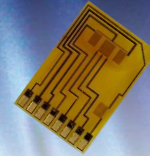
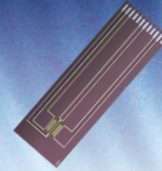
SUSTAINABLE  
ENERGY





# FLOW SENSORS





- Thermal-based flow sensors
- For gas and liquid flow measurement
- Highly sensitive at low flow rates
- Components for design-in OEM system integration
- Wide dynamic range
- Detection of flow direction
- Low power consumption



APPLIANCE



AUTOMATION



AUTOMOTIVE



OIL, GAS &  
CHEMICAL



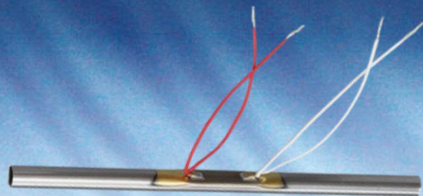
HANDHELD DEVICES



HVAC



PROCESS CONTROL



- Out of liquid (OOL) sensor for liquid flow measurement
- High chemical resistance
- Suitable for aggressive and corrosive liquids



- Modules for resistive and conductive loads
- Highly sensitive at low flow rates
- Drip detection
- Bubble detection



APPLIANCE



AUTOMATION



AUTOMOTIVE



OIL, GAS &  
CHEMICAL



HANDHELD DEVICES



HVAC



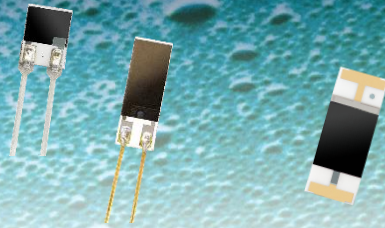
PROCESS CONTROL





# HUMIDITY SENSORS AND MODULES





- Capacitive humidity components for design-in OEM system integration
- Low drift
- High chemical resistance
- Short response times

- Fully calibrated humidity modules with high chemical resistance
- Analog and digital versions
- Temperature compensated
- High chemical resistance



AEROSPACE



APPLIANCE



AUTOMATION



AUTOMOTIVE



BIOTECHNOLOGY



HVAC



HANDHELD DEVICES



MEDICAL



METEOROLOGY

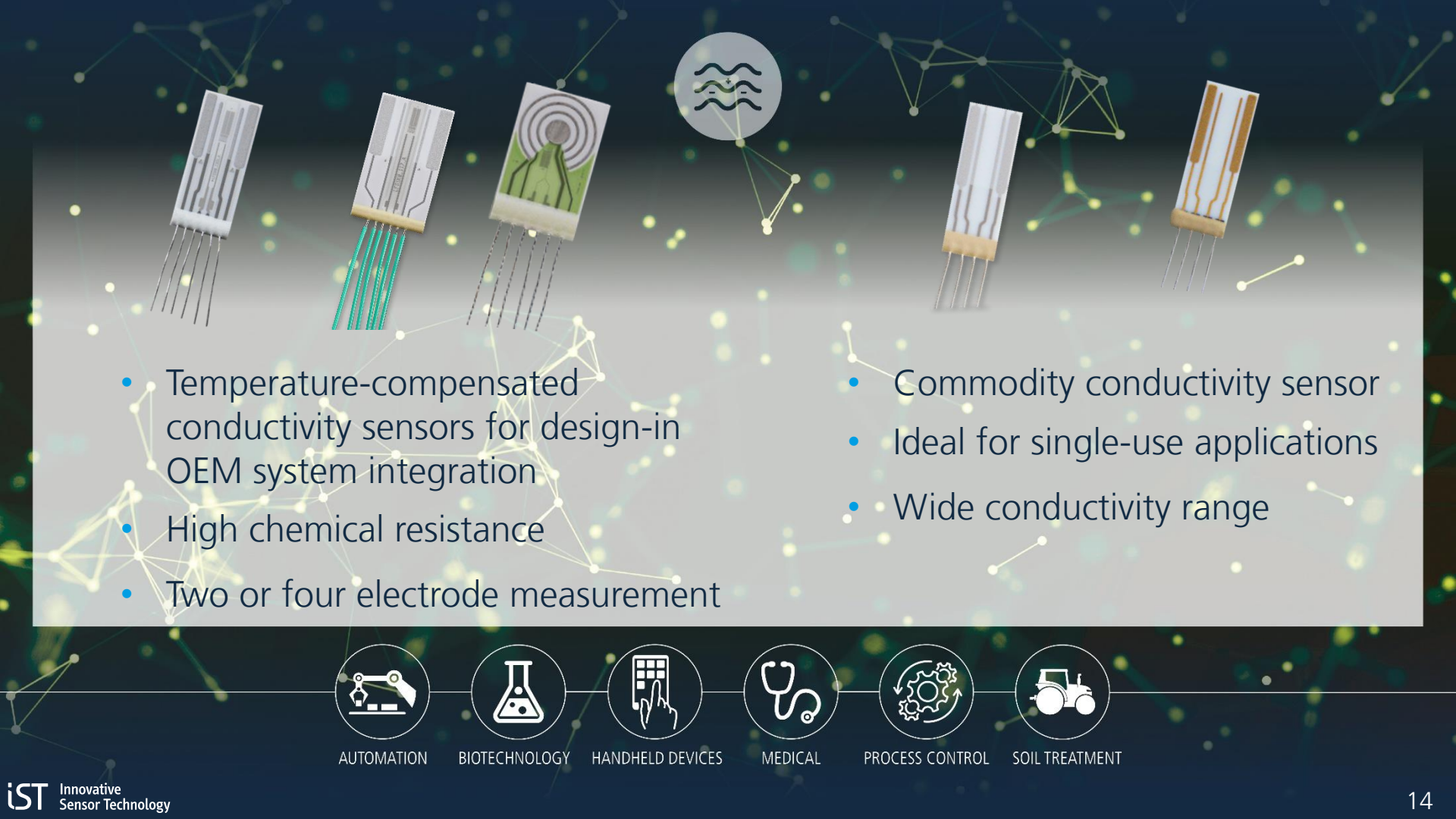


SUSTAINABLE  
ENERGY





# CONDUCTIVITY SENSORS

- 
- Temperature-compensated conductivity sensors for design-in OEM system integration
  - High chemical resistance
  - Two or four electrode measurement

- Commodity conductivity sensor
- Ideal for single-use applications
- Wide conductivity range



AUTOMATION



BIOTECHNOLOGY



HANDHELD DEVICES



MEDICAL



PROCESS CONTROL



SOIL TREATMENT





# BIOSENSORS



- Extracorporeal measurement of: Glucose, lactate, glutamine and glutamate
- Suitable for analyzers, single-use applications and bioreactors
- Single/multiple parametric measurement
- Application Development
- Microfluidic systems and accessories
- Instrumentation and actuators

*jobst technologies*



BIOTECHNOLOGY



CONSUMER  
HEALTHCARE



ENVIRONMENTAL



MEDICAL



SAFETY  
ENGINEERING

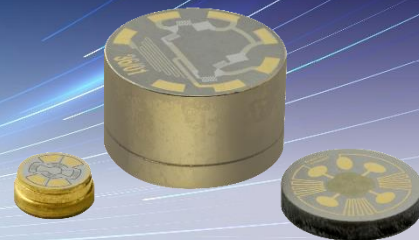
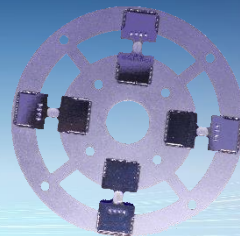
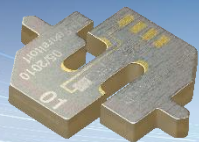


SUSTAINABLE  
ENERGY





# FORCE, TORQUE, SURFACE STRAIN, PRESSURE SENSORS



## Force Sensors

- Measuring ranges up to 10 kN

## Surface strain sensors

- Indirect measurement of large forces on machine surface parts

## Torque Sensors

- Shear force
- Cage
- Measuring flange

## Pressure Sensors

- Measuring from 0..1 to 0..4000 bar



MEDICAL  
APPLICATIONS



MEASURING  
INSTRUMENTS



TEXTILE  
MACHINERY



MECHANICAL  
ENGINEERING



RESEARCH



WATCH  
MAKING

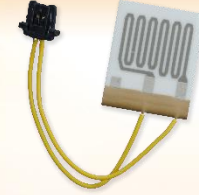
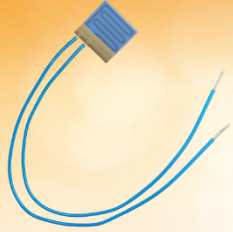


MACHINE  
MONITORING





# MICRO HEATERS



- Fast response times
- High temperature stability
- Overheating protection
- Precise temperature control

- Targeted heating of small spaces
- Various substrate materials available
- Tailor-made to fit application's needs



MEDICAL  
INSTRUMENTS



HUMIDIFICATION  
UNITS



APPLIANCES



AUTOMOTIVE



LIFE SCIENCE



LASER  
MANUFACTURING

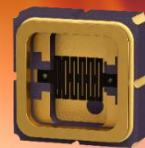
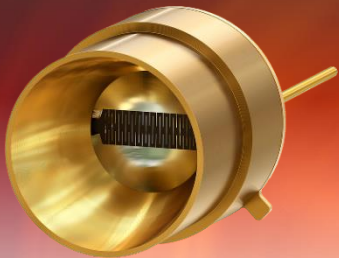


3D-PRINTING





# IR-EMITTERS



- Pulsable thermal black-body infrared emitters
- Patented nanostructured radiating element increases efficiency
- Mounted in industry standard TO and SMD packages
- High operating temperatures
- High reliability and lifetime
- Wide wavelength range
- Monolithic emitter structure

**INFRA**SOLID®



MEDICAL  
APPLICATIONS



CONSUMER  
HEALTHCARE



OIL, GAS,  
CHEMICAL



EMISSION  
MONITORING



SMART HOME

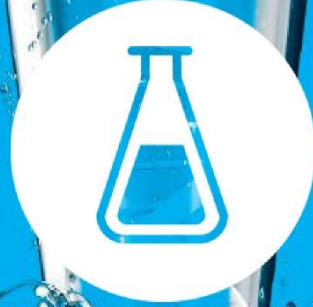


ELEMENTAL  
ANALYSIS



ENVIRONMENTAL  
PROTECTION





# NUCLEIC ACID EXTRACTION KITS



## Spin Filter

- Binding of Nucleic Acids to solid spin filter membranes



## MAG Beads

- Separation of Nucleic Acids by magnetic particles



## SmartExtraction

- Binding of Nucleic Acids to Smart Modified Surfaces



## Polymer-Mediated Enrichment (PME)

- Fast enrichment of residual Nucleic Acids for sensitive downstream applications

**IST** Innuscreen GmbH



HEALTHCARE



MEDICAL



LIFE SCIENCE



ENVIRONMENTAL  
ANALYSIS



WASTE WATER  
ANALYSIS



BIO-  
TECHNOLOGY



PHARMA  
INDUSTRY



# How to build your own Sensor



## Consulting

Define customer's requirements and specifications



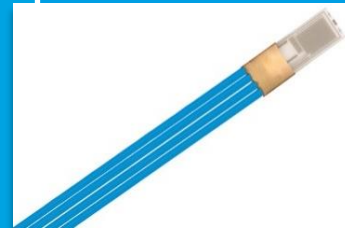
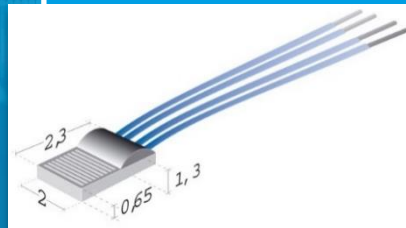
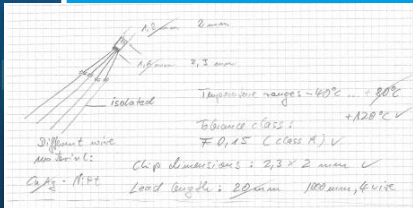
## Development

Ensure feasibility  
Testing of sensor layout and specifications



## Production

Low and high volume  
Production time  
4-6 weeks



# Sensors tailored to specific applications

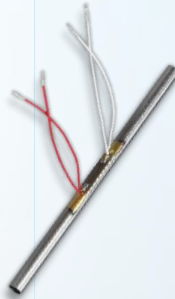
## Requirements

- Sensitivity
- Response time
- Accuracy
- Space constrictions
- Operational conditions
- Interfaces

## Parameter

- Temperature
- Humidity
- Mass Flow
- Leakage
- Level, Foam
- Bubbles
- Density
- Viscosity
- Conductivity
- Calorific value

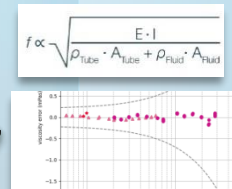
## Element



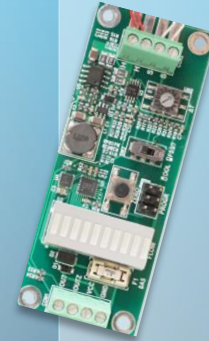
## Assembly



## Modelling



## Electronics



## Calibration



Co-create your next sensor with IST AG

Industrialized production with a reliable partner



## 1 Design

- Concept
- Material choice
- Technology choice
- Design of layout



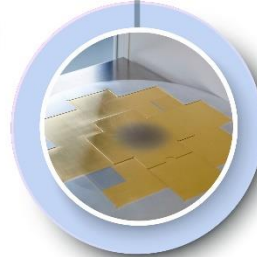
## 2 Substrates

- Alumina
- Zirconia
- Sapphire
- Steel
- Copper
- Polyimide
- Aluminum nitride
- Silicon wafer



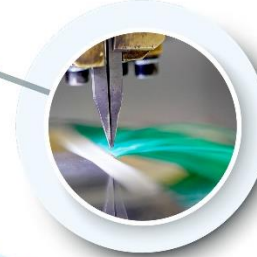
## 3 Coating

- Metal thin film (Pt, Rh, Ti, Ni, Cr, Ag, Au, Al, W, Mo and alloys)
- Dielectric thin film ( $\text{SiO}_2$ ,  $\text{Si}_3\text{N}_4$ ,  $\text{Ta}_2\text{O}_5$ , polyimide)
- Metal Thick film (Pt, Ag, Au and alloys)
- Dielectric thick film (glass or organic polymers)
- Polymers, gas membranes and enzymatic layers for different sensor principles<sub>27</sub>



## 5 Assembly

- Dicing
- Bonding
- Glass coating
- Soldering
- Electric final testing
- Optical final testing
- Packaging
- Additional assembly



## 4 Patterning

- Photolithography
- Laser trimming
- Dry and wet etching



# Sensor Production Process



Thin film deposition



Photo lithography



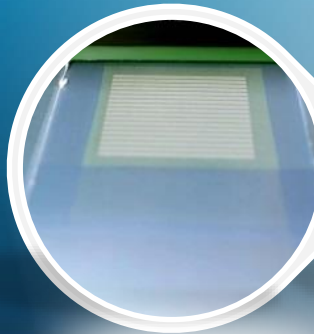
Etching



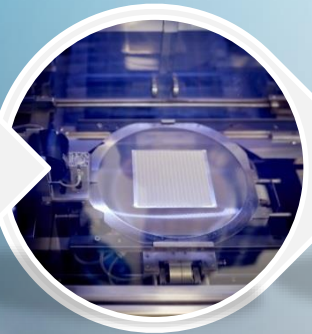
Laser trimming



Thick film / polymer



Screen Printing



Dicing



Welding



Measuring



Final inspection



# Quality

## Operational Excellence

- FMEA, MSA, Kaizen, 5S, PPAP, Process Capability Study
- Most of our engineers have Six Sigma Green Belt level, resulting in significant systematic improvement of processes and technologies
- Regular reviews evaluate and control the achievement of strategic goals
- Certified according to ISO 9001:2015 and ISO 14001:2015

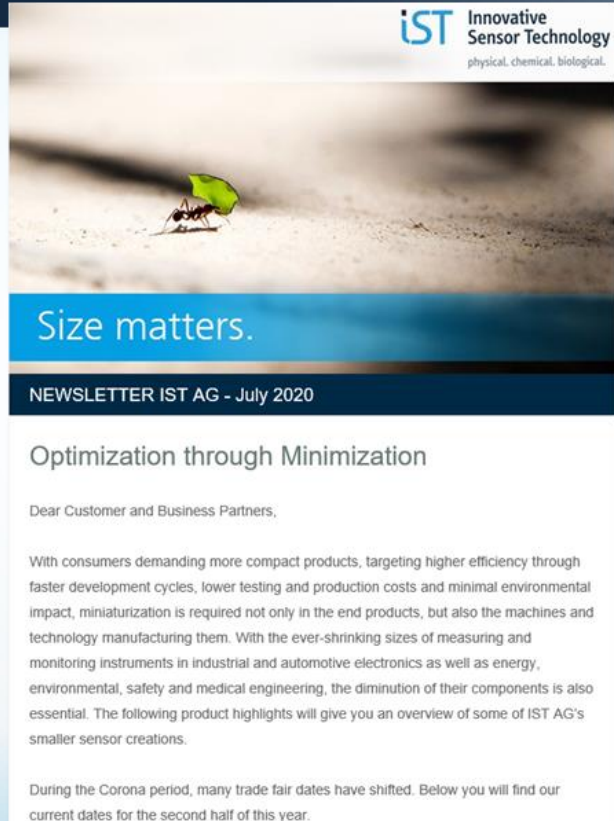
## Consulting & Service Quality

- Over 30 years of application experience across a wide range of industries
- Analysis support using SEM, EDX, X-ray

## Production Quality

- Comprehensive process and product control
- Qualified materials from reliable suppliers

# Stay updated and informed



- Subscribe to our newsletter and stay on top of new product developments

- Follow us on social media



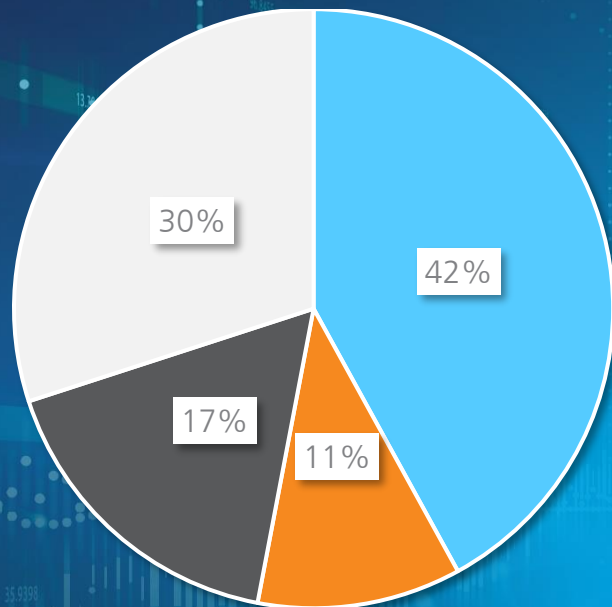
- Watch our webinars, tutorials and product videos on our YouTube channel





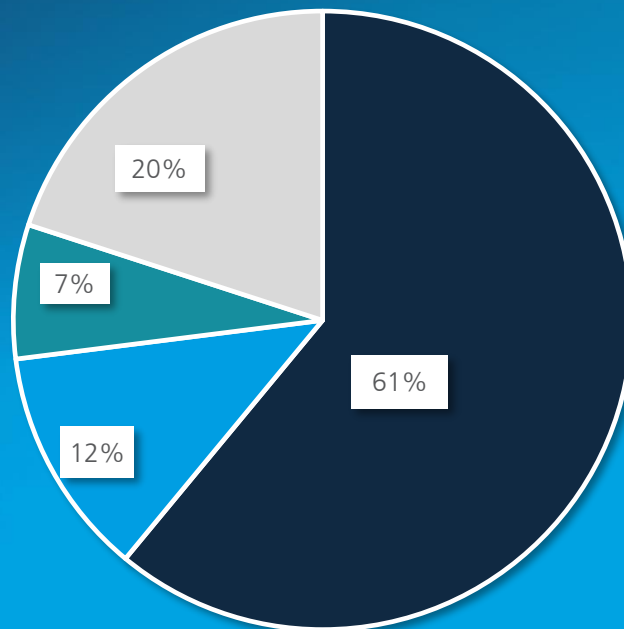
# Sales statistics 2022

## Customers per Region



■ Europe ■ Switzerland ■ Americas ■ Asia/Africa

## Sales shares by product areas



■ Temperature  
■ Flow  
■ Humidity  
■ Others  
(Conductivity, Biosensors, Gas, Force, IR emitters, NA extraction)

# Network & Collaboration



Universities and Universities of Applied Science

Institutes



**IST** Innovative  
Sensor Technology  
physical. chemical. biological.

*Thank you!*

## Contact

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