



IL Metronic  
Sensortechnik GmbH



# Hermetical Glass and Ceramic Feed Throughs for Special Sensoric Applications

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# Company



- Location Ilmenau /Thur.
- Since 1992
- 44 employees, 3 trainees
- DIN- certified since 1996
- 2 company buildings
- „Company of the year 2010“- (IHK Südthüringen)
- Key aspects:
  - Development of products and technologies
  - Professional development (graduation, master, technician)





# Core competencies

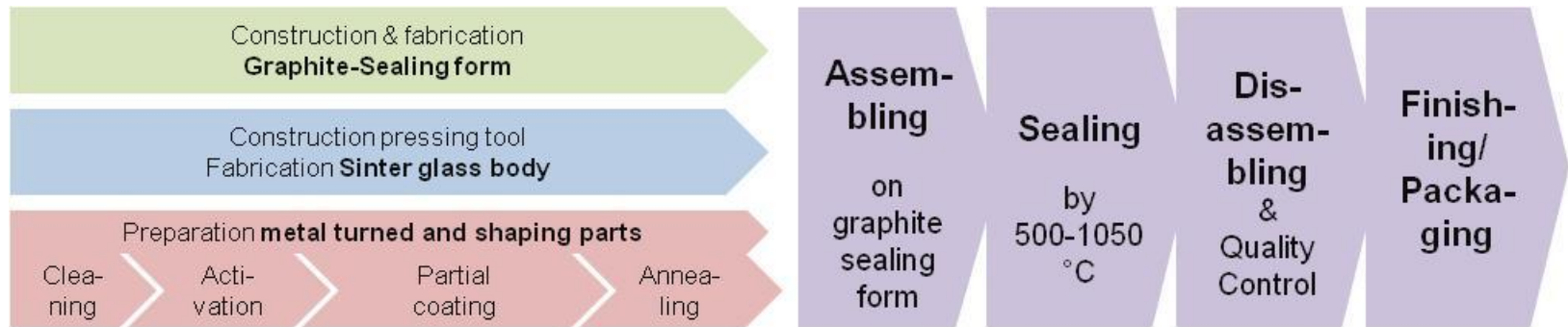
- Sensors, measuring windows, probes and reference measuring instruments for UV drinking water and air disinfection (according to DVGW and Ö-Norm)
- Customized glass and ceramic-to-metal seals
- Sensors, probes and measuring instruments/hygrometers for humidity measuring technique (relative and absolute)
- partial gold plating with bondable gold layers
- Housing development for applications of sensors with functional housing components, like windows, thermoelectric cool or heating elements, filter elements, plug connectors etc.
- adapted packaging with sticking, soldering, bonding, filling and dispensing
- Sensor evaluation and amplifier boards in hard and software
- Development of modules and assembly units for sensors

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# Sealing process technology



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# Parts for sealing process



Sinter glass body



Graphite sealing form



Turning parts



Plates



Wires

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# Technique for sealing process



automatical  
fabrication



pressing  
machines



debinding  
furnace



quartz tube  
sealing furnace



Ni/Au  
galvanic



dispensing &  
filling automat

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# Quality control process



3D-zoom-  
microscopy



roughness-  
measurement



pressure-  
test



high voltage-  
test



surface  
thickness control



leakage  
test



insulation  
resistance test

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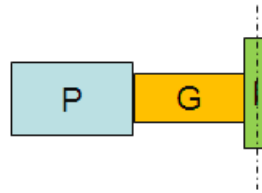


# Systematization

## Glass feed through - GFT

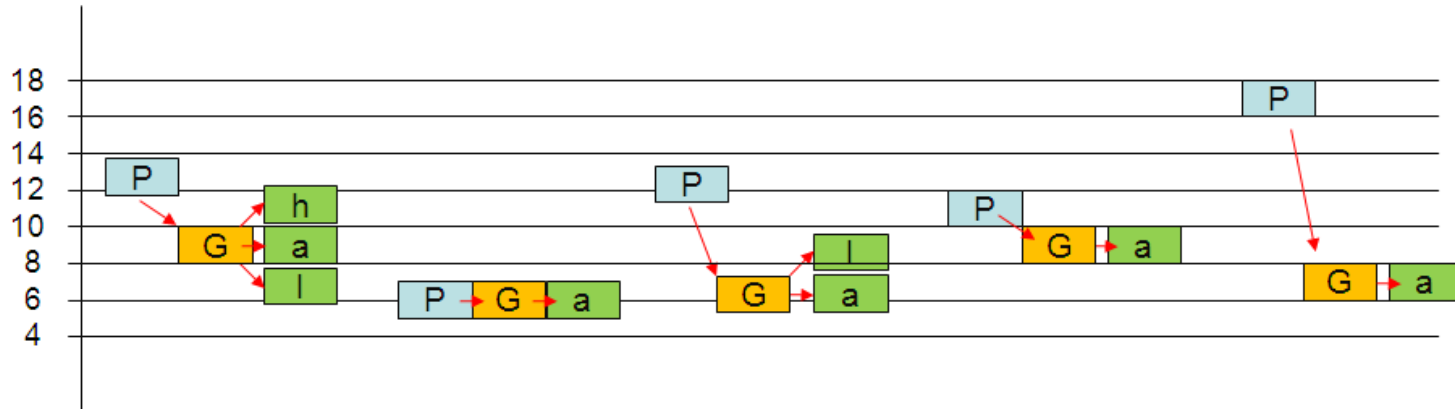
pressured GFT      adapted GFT      forced GFT      deeper GFT      austenitic GFT

low putted GFT      high putted GFT



P .. press. ring (metallic turned and milled part)  
 G .. glass (standard glass, glass solder)  
 I .. inner conductor (tube, wire, plate)

CTE ( $\times 10^{-6} K^{-1}$ )

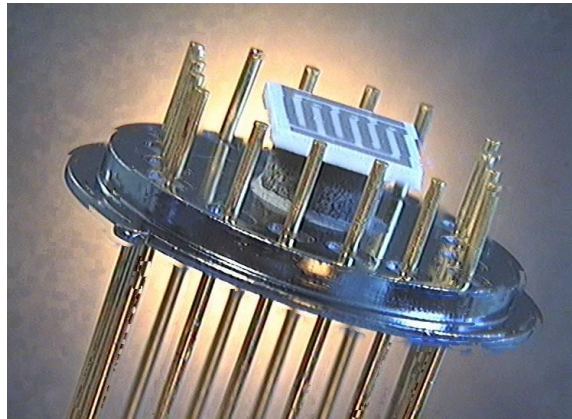


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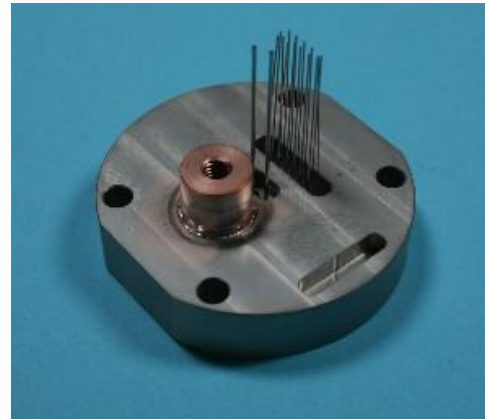




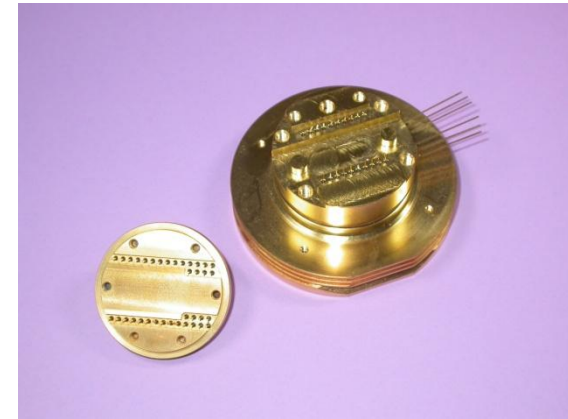
# Functional GFT



with heater



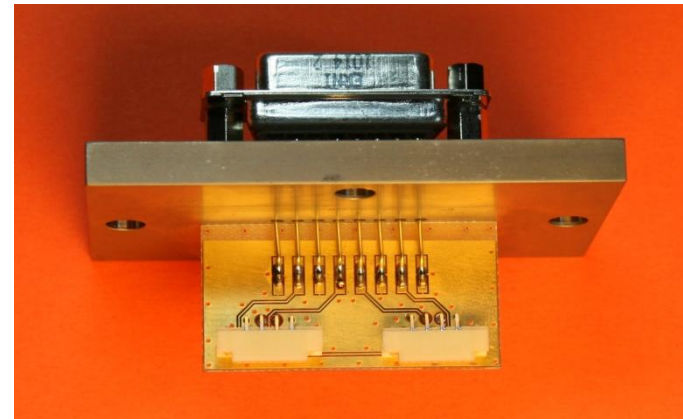
with cooling core



for high speed CCD



for endoscopy



for cantilever sensors

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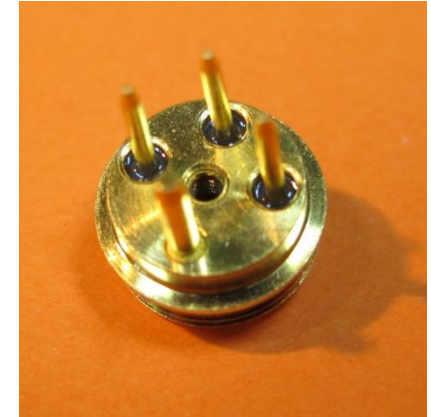




# Ennobled surfaces GFT



tin-coated



full gold plated



.. cooling; IR reflection



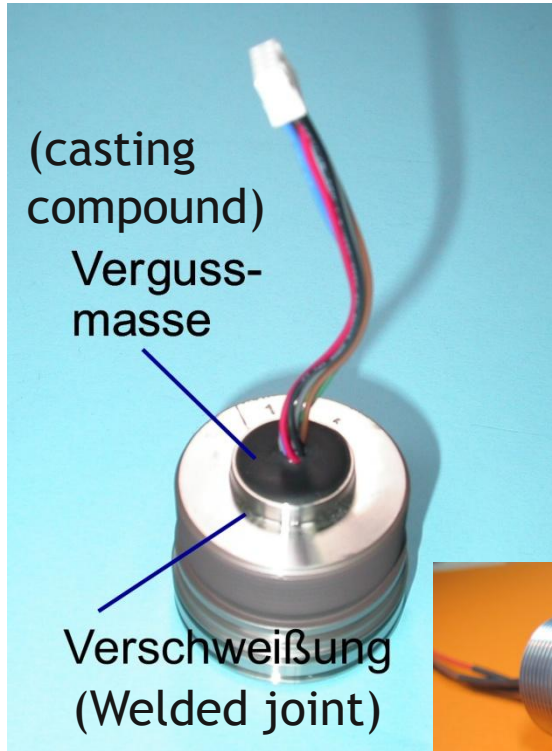
.. aseptic treatment

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# Pre-fabricated GFT





# GFT applications



for camera technology



for medical technology



for vacuum technology



for aerospace technology



for endoscopy technology



for mineral oil technology





# Ceramic feed through CFT



for high pressure (5000 bar, RT)



for high temperature (425 °C)

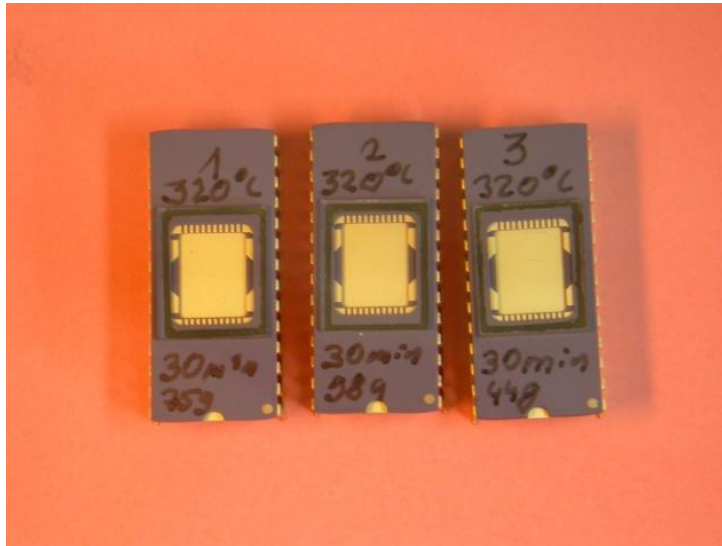


for subsea condition

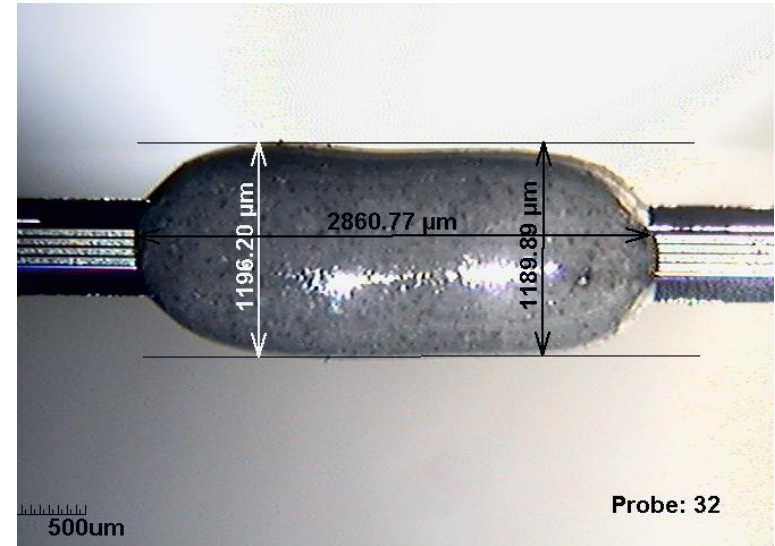




# glass solder application



for optical units



with pressure sensor





# Future trends

- New materials, alloys, fibre glass
- Miniaturisation
- Glass ceramic sandwich bodies
- Integrated sensors
- Limit application (pressure, temperature, safety)





Thanks for your attention

