

Attracting Tomorrow



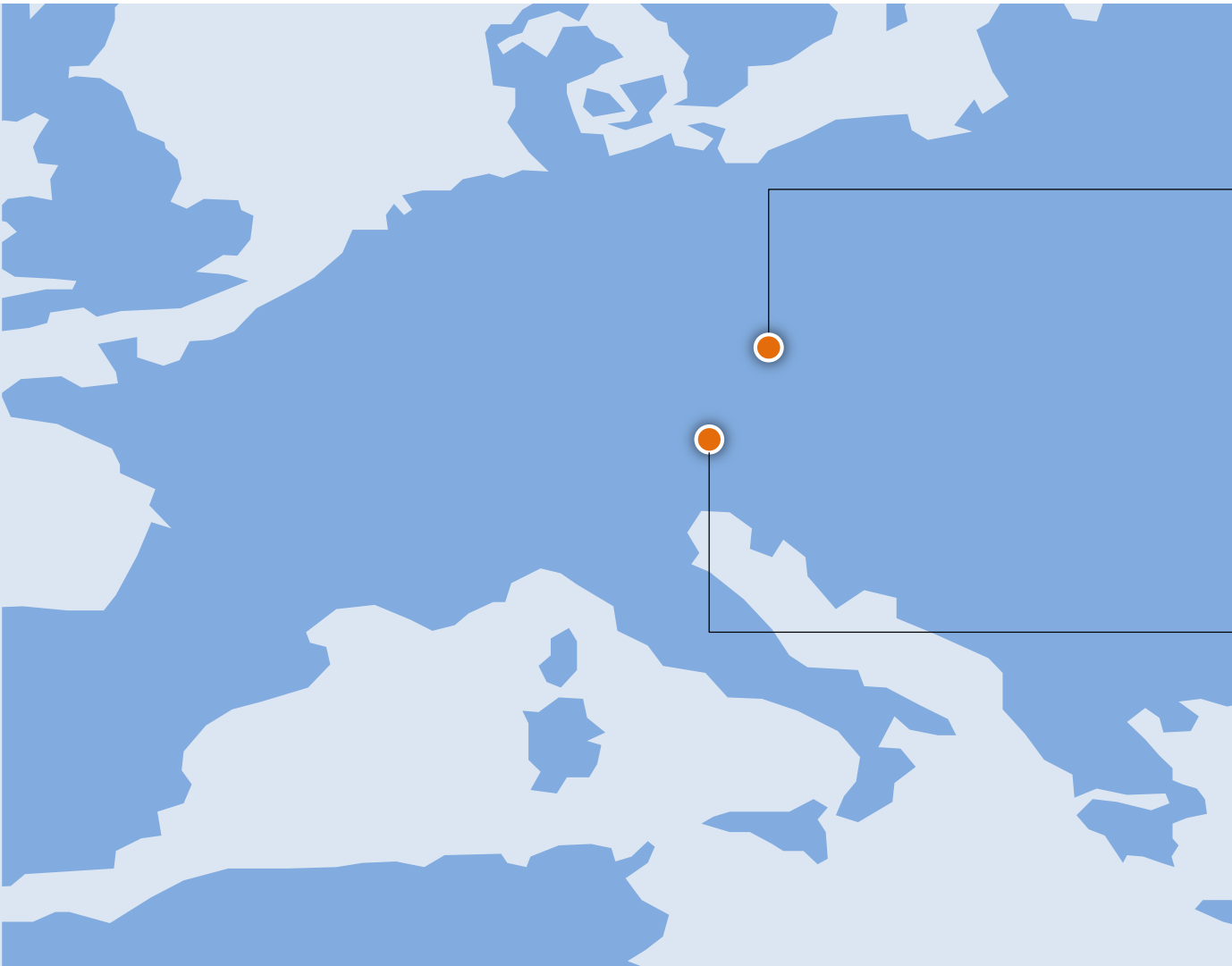
# Ultrasonic Sensor Disks

## Touchless Sensing

**TDK Electronics AG**  
Piezo and Protection Devices Business Group  
Product Marketing PTC Thermistors  
Munich, Germany  
February 2020



# Production plants



## Šumperk, Czech Republic

Front-end, back-end

- Pressing
- Sintering
- Metalization
- Poling
- Electric Inspection
- AOI
- Outgoing Inspection

## Deutschlandsberg, Austria

Powder

- Powder production

# Description of piezoelectric effect

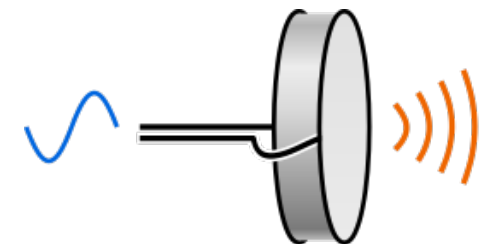
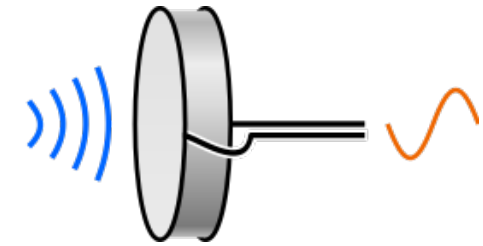
- **Direct:** Pressure → voltage



- **Indirect:** Electric field → Expansion / contraction

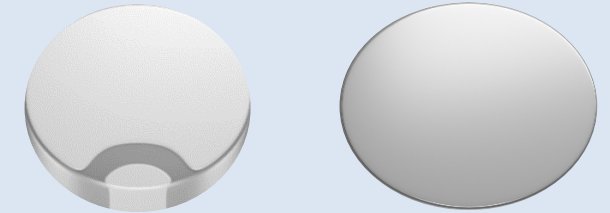


## Ultrasonic sensor disk



# Ultrasonic sensor disks technology advantages

- Touchless sensing
- Emitting and sensing of ultrasonic waves possible
- Compact dimensions
- Usable for gases, liquids and for bulk materials





# Company advantages ultrasonic sensor disks

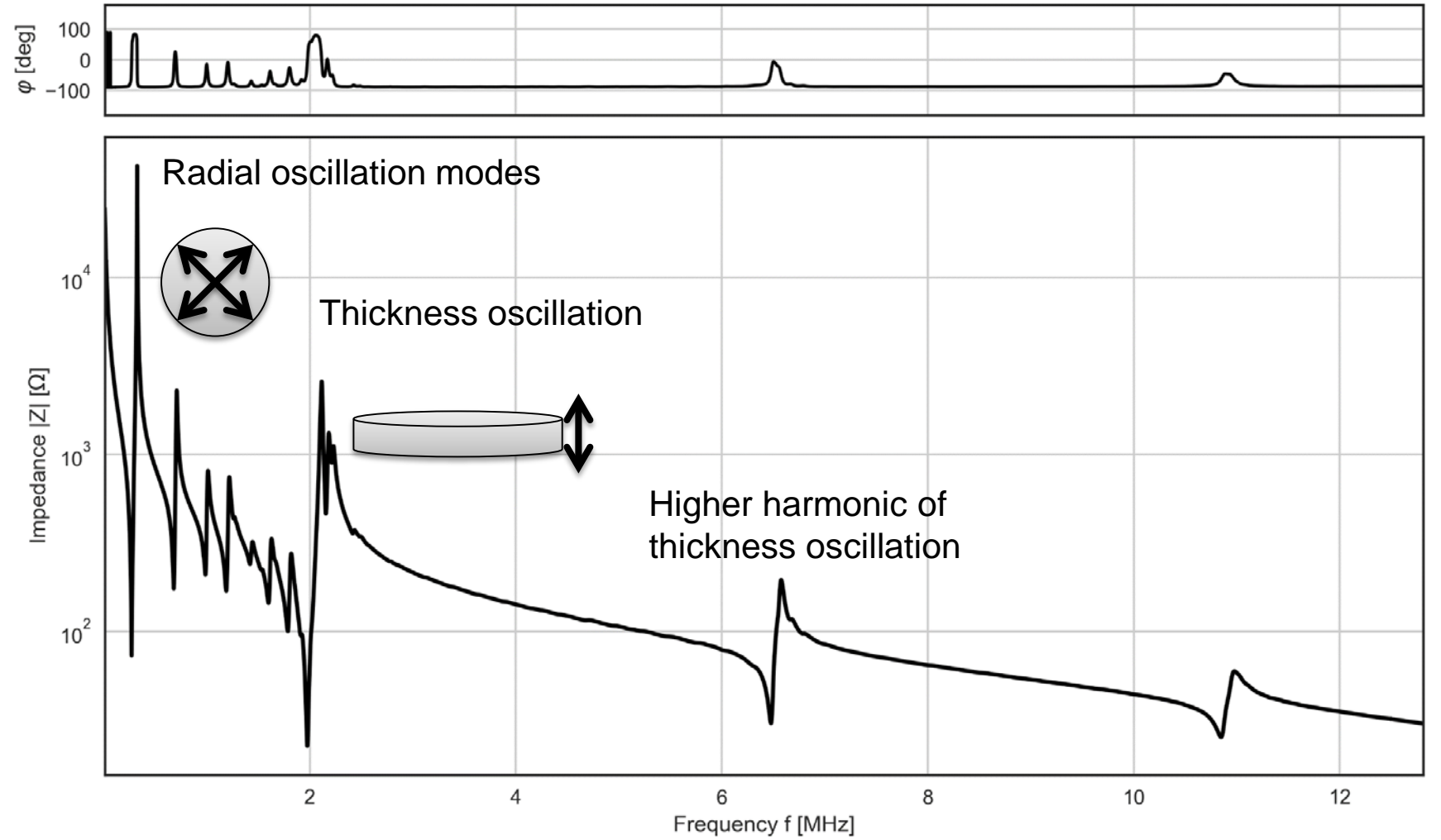
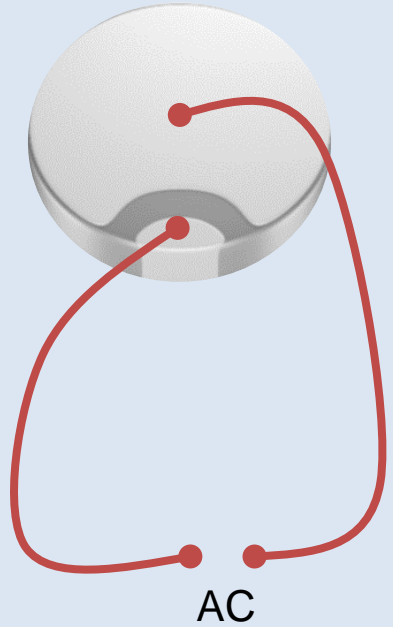
- Customer specific geometries available
- Strong customer support during development
- Electrode shape with superior adhesion force
- Metalization process with superior product quality
- Allowing both contacts on the same side
- Production certified to automotive standards IATF 16949



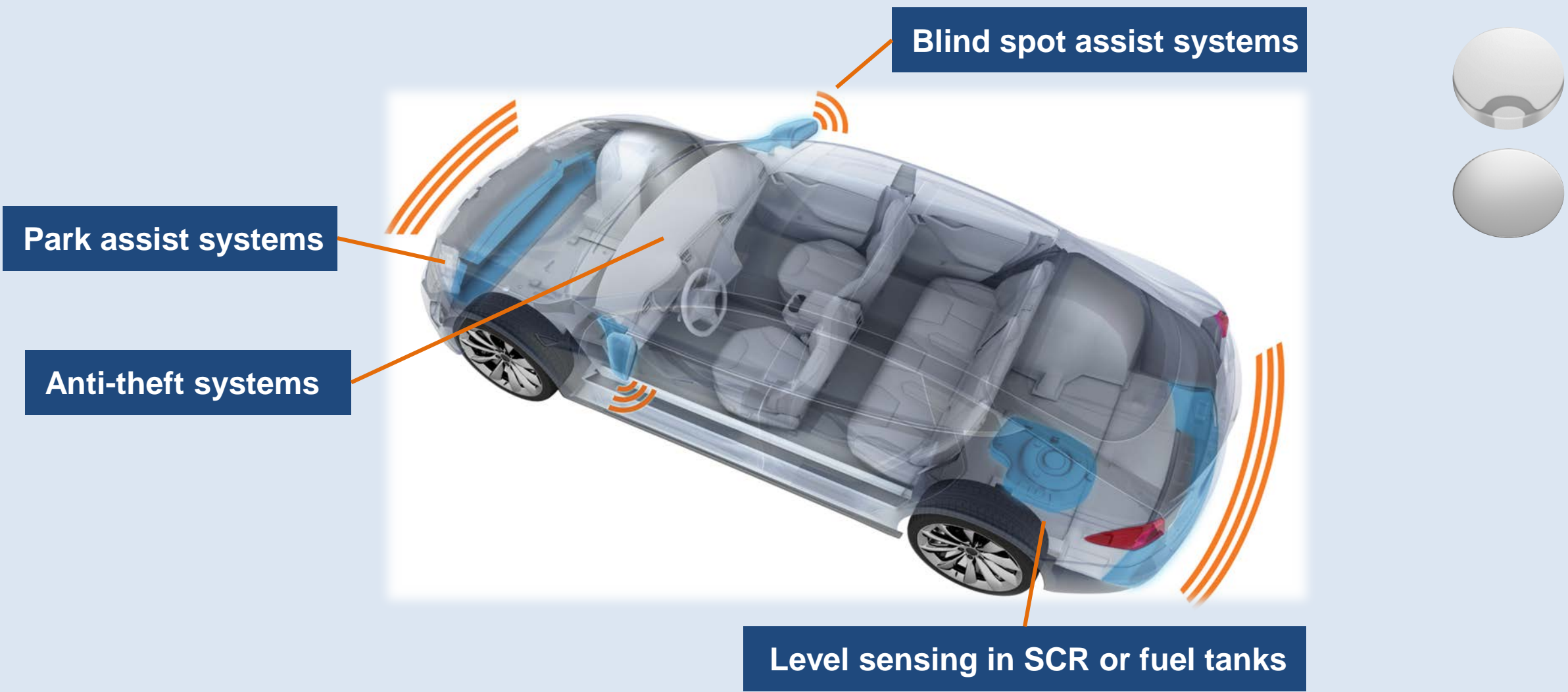
# Ultrasonic sensor disks portfolio

Part number	B59070Z0285D12*	B59050Z0206A030
Type		
Diameter [mm]	7.0	5.0
Thickness [mm]	0.195	1.02
Serial resonance frequency [kHz]	285	2000
Capacitance [pF]	2000	300

# Ultrasonic sensor disks oscillation modes



# Automotive applications for ultrasonic sensor disks



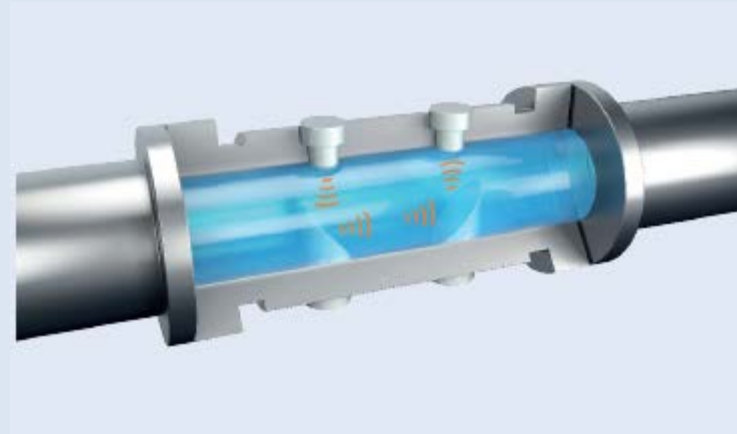


# Industrial applications for ultrasonic sensor disks

Level sensing systems for fluids or bulk materials in silos



Flow metering systems in gas or fluid tubes



Collision avoidance systems in industrial transport robots



# Checklist of design inputs

Mechanical parameters	Electrical parameters	Others
Dimensions (Dxth)	Operating voltage (min, max)	Application medium (gas, fluid, bulk material)
Contact method	Operating current (min, max)	Packaging
Contact material	Preferred serial resonance frequency	
Preferred electrode	Preferred capacitance	



[www.tdk-electronics.tdk.com](http://www.tdk-electronics.tdk.com)