

# Common Industrial Applications for Ultrasonic Sensors

Ultrasonic sensors are widely used in industrial automation to detect the presence, distance, or position of objects without physical contact. By emitting sound waves and measuring their reflection, ultrasonic sensors can reliably detect targets regardless of color, transparency, or surface finish.

Because of this operating principle, ultrasonic sensors are often selected for applications where other sensing technologies may struggle due to dust, glare, reflective surfaces, or variable target materials. Ultrasonic sensors from manufacturers such as Microsonic are commonly used in these applications due to their reliability, consistency, and suitability for demanding industrial environments.

## Presence Detection and Object Sensing

Ultrasonic sensors can detect a wide range of target materials, including plastics, metals, glass, liquids, and irregularly shaped objects, making them suitable for mixed-material environments.

- Detecting parts on conveyors
- Confirming object presence at assembly or inspection points
- Monitoring transfer points in material handling systems

## Level Measurement and Fill Monitoring

Non-contact sensing allows sensors to be mounted above the material being measured, reducing wear, contamination, and maintenance.

- Monitoring liquid levels in tanks or reservoirs
- Detecting fill height in bins or hoppers
- Confirming container fill levels during packaging

## Detection of Transparent or Reflective Objects

Because ultrasonic sensing is independent of optical properties, it provides stable detection where photoelectric sensors may be affected.

- Detecting clear glass or plastic containers
- Sensing transparent films or sheets
- Identifying highly reflective surfaces

## Position and Distance Monitoring

Consistent sensing across varying target materials supports repeatable process control.

- Monitoring part position relative to a reference point
- Measuring distance for alignment or spacing control
- Detecting approach or clearance in machine movements

## Harsh or Contaminated Environments

Ultrasonic sensors continue to operate reliably in conditions that may degrade light-based sensing technologies.

- Dusty manufacturing environments
- Areas with oil mist or coolant spray
- Applications where optical sensor lenses may become contaminated

## Applications in OEM Equipment Design

Ultrasonic sensors are frequently integrated into OEM-designed machinery and automated systems.

- Reliable detection across different product variants
- Reduced sensitivity to color or surface changes
- Simplified sensor selection in mixed-material processes

## Applying the Right Ultrasonic Sensor

While ultrasonic sensors offer broad applicability, proper selection remains important. Factors such as sensing range, target size, mounting constraints, and environmental conditions should be considered during system design.

Photos, drawings, or brief descriptions of the sensing task can help clarify detection needs early in the design process.

## Conclusion

Ultrasonic sensors provide a reliable, non-contact solution for a wide range of industrial sensing applications.

From presence detection and level monitoring to transparent object sensing and operation in harsh environments, ultrasonic technology supports consistent performance where other sensing methods may be challenged.

## For More Information

Ultrasonic Sensors: <https://ibisep.com/product-category/sensors/ultrasonic/>

Contact IBIS: <https://ibisep.com/contact/>

Additional Resources: <https://ibisep.com/resources/>