

COMPANY NAME

ZUMMO INNOVACIONES MECÁNICAS S.A.U.

**CHALLENGE SHEET****CHALLENGE CODE**

05.1 ZUMMO

TITLE

UNIVERSAL NON-CONTACT CONTAINER DETECTION

DESCRIPTION

The challenge is to be able to detect the presence or not of a container, of any material and geometry, at a certain distance, without direct contact with it, without the possibility of electrically powering the area where the container is located, without being able to ensure its exact position, with variable lighting conditions, and at a limited cost.

In particular, these are containers that will normally be made mainly of plastic (PP and PET), with a cylindrical shape, and whose purpose is to collect organic matter after automatic processing of the same.

The conditions of low lighting, this being variable depending on the location of the machine, and the fact that the system will be located in an area where food is processed, and therefore may generate remains that dirty it or hinder its operation.

HOW COULD WE

The objective is that the machine that performs this process, which can be located anywhere, can start its operation only when it detects the presence of the vessel, apart from other conditions. The problem arises from not being able to use mechanical sensors (microswitches, load cells, etc.) in the area where the vessel is located, since this area cannot be electrically powered, and not being able to ensure the exact position of the vessel, since there is some variability.

All this, in addition to the fact that the system must be able to detect any geometry and material.

When all these variables are combined, it is very difficult to ensure that the machine will always detect the vessel when it is positioned, even when using photocells (with or without a retro-reflector).

SELECTION CRITERIA

- Universality of the solution, from the point of view of detected materials and inaccurate position of the receiver
- Target cost of the complete system <100€
- Possibility of using components that meet the requirements of CE (IEC 60335) and UL (for the United States) standards.
- Backward compatibility with existing machines.

TARGET INDICATORS

- Detection of all types of containers in any condition and without failure.
- Reduced and limited cost.
- Availability of stock of the components that make up the system.- Preferential use of components with CE and UL approval.
- Few changes necessary in the current design of the machine.
- Compatibility with the current control system of the machine.
- Retrocompatibility with existing machines.- Retrocompatibility with existing machines.

REQUIREMENTS

- The minimum distance from the center of the vessel to the position of the detection system is 85 mm approx.
- Universality of detection.
- Simplicity of the system.
- Cost (target <100€).
- Compatibility with the machine control system (ports, type of transmitted signal,...). The machine is operated with a PCB developed ad-hoc (if necessary, additional data can be provided).
- Possibility of use in Europe and USA/Canada, as main markets.

CHALLENGE TYPOLOGY

Process

✓ Technology

Business

✓ Product

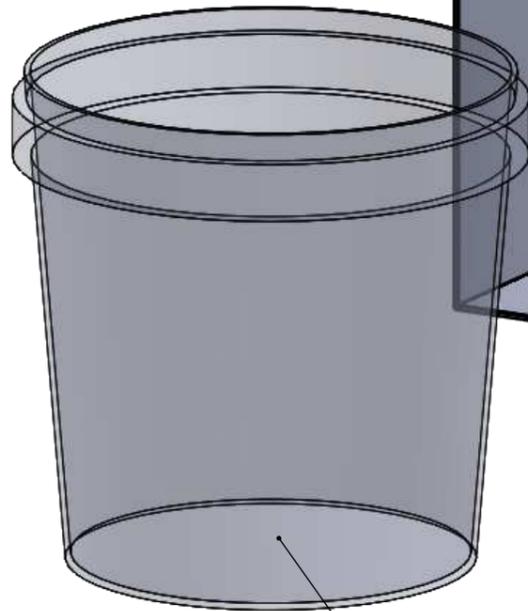
KEYWORDS

Detection, contactless, touchless, container, plastic, glass, cardboard, transparent, low cost.

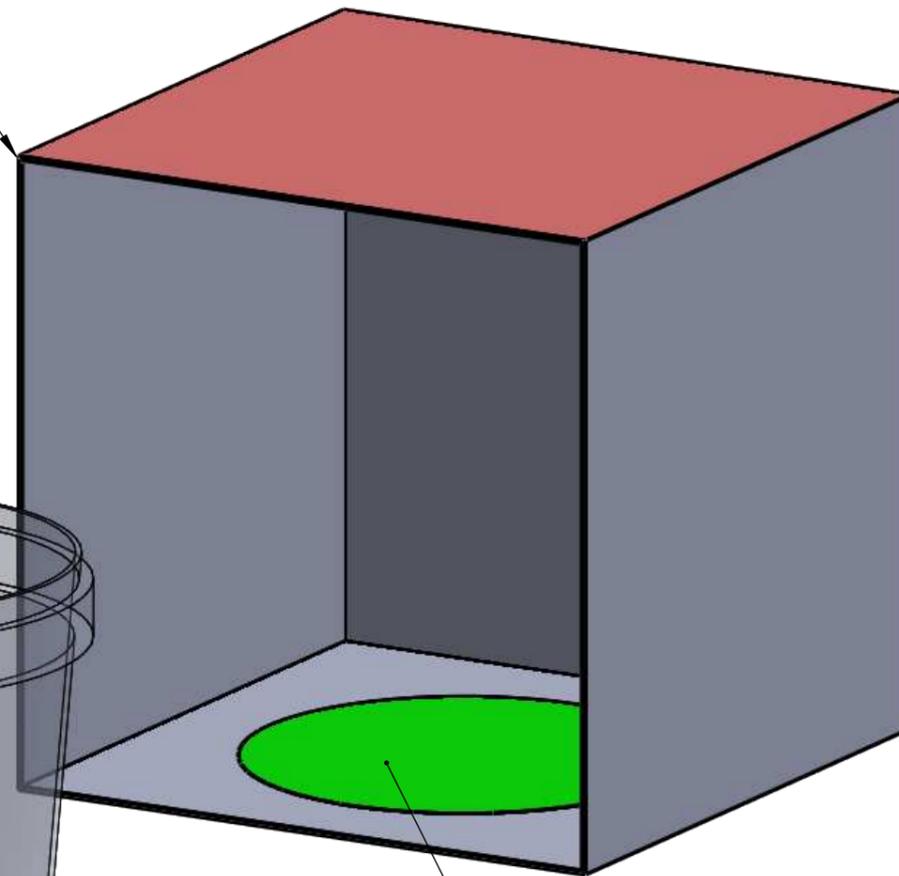
ANNEX

Volumen de 165x165x165mm
abierto por la cara delantera

El recipiente se
introduce, posiciona* y
retira por a cara
delantera abierta

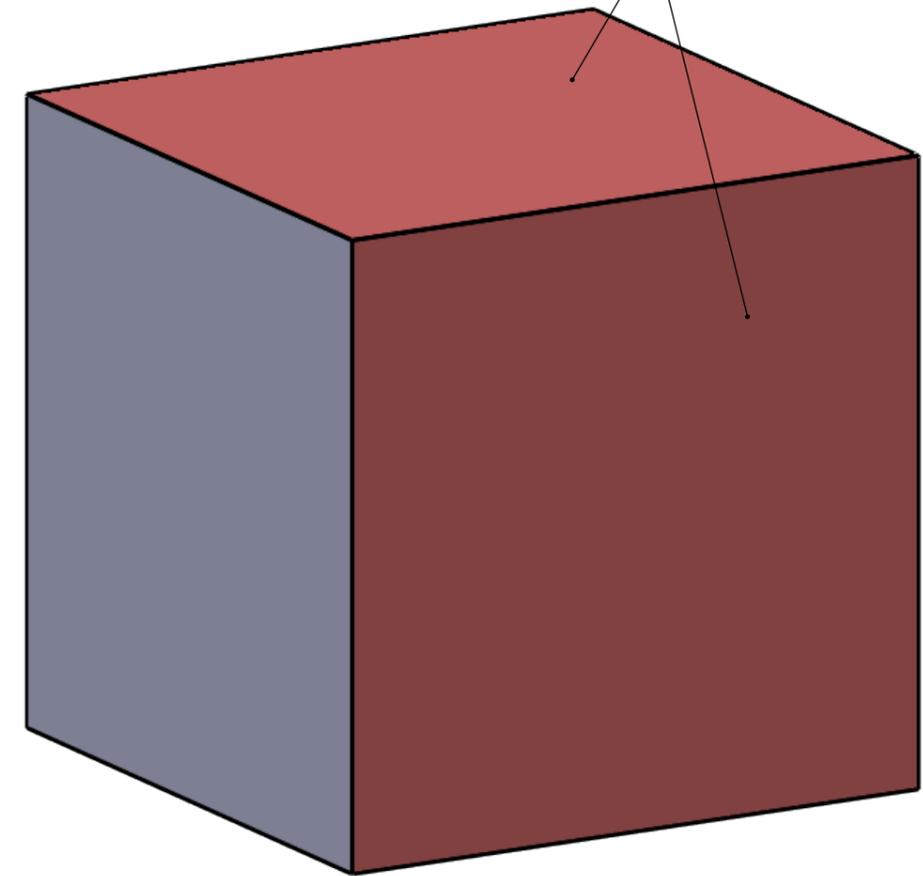


El elemento a detectar es un recipiente
de plástico transparente de hasta
140x140x140mm y 0,15Kg

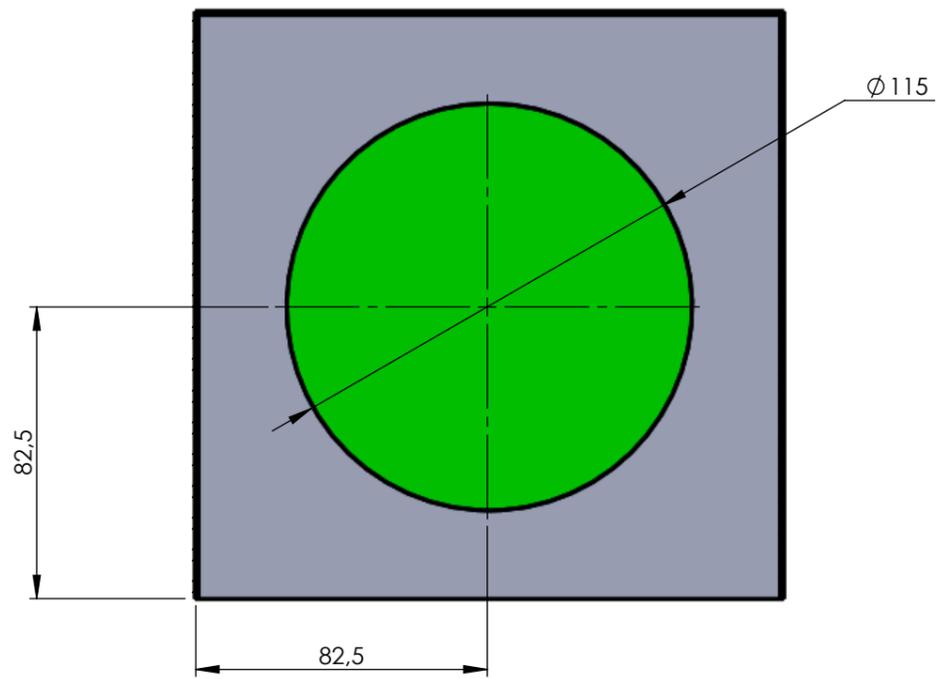
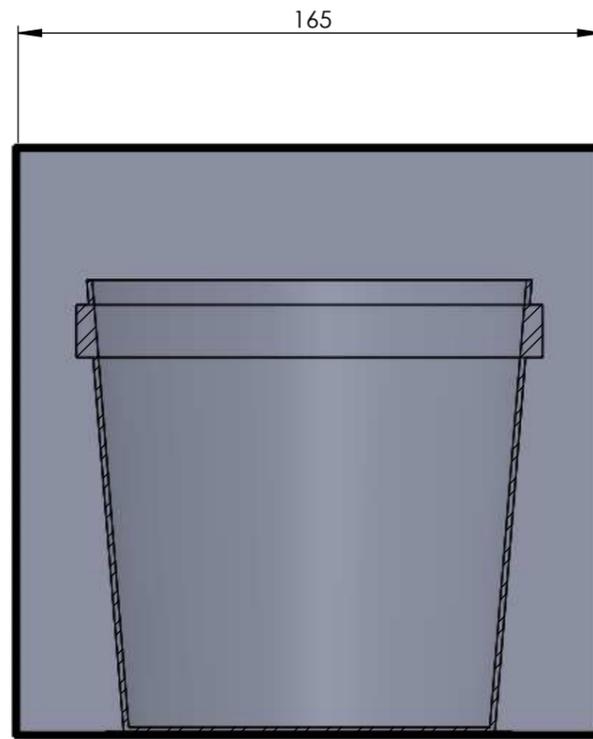
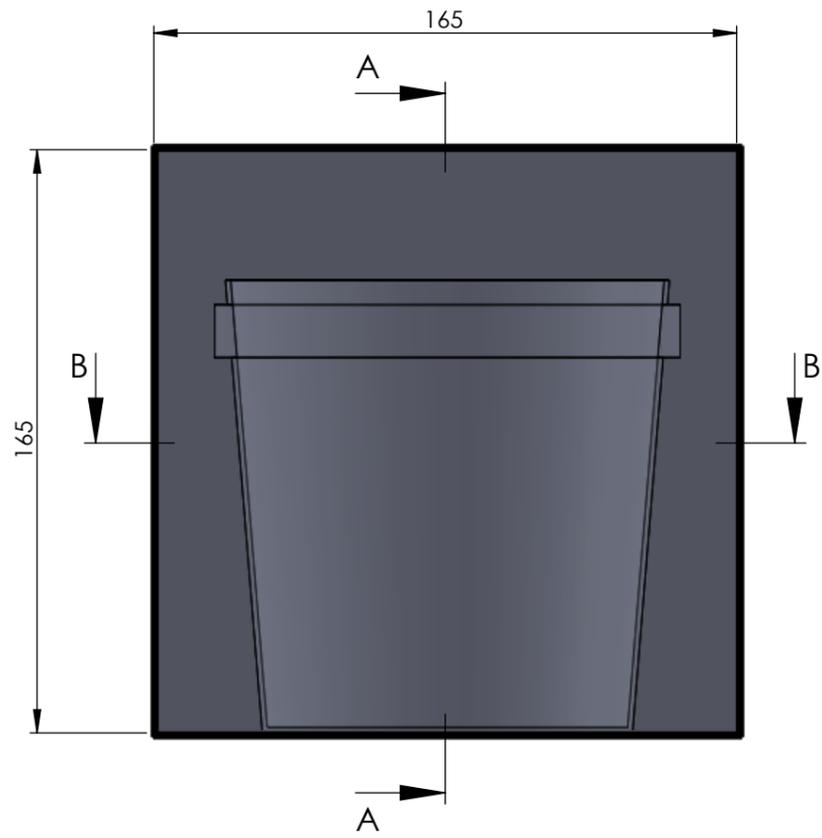


El objetivo es **detectar** automáticamente
cuándo se encuentra **presente** el
recipiente en este área (fijo)

Las caras superior y trasera del volumen
son cerradas e inaccesibles (no se
pueden modificar ni realizar intervención
alguna sobre las mismas)



**Considerar siempre una correcta posición centrado en la zona objetivo (en verde)*



CORTE B-B
ESCALA 1 : 2

