

Inspection system for food packaging sealing defects based on thermographic imaging

DESCRIPTION OF THE INVENTION

A thermosealed packaging inspection system based on thermographic imaging has been developed. It is a solution which is portable and adaptable to the specific requirements of different production lines.

The system captures thermal information of every package and determines whether they have been properly sealed. In order to do this, it registers spatial information obtained from photonic sensors in the infrared (IR) spectrum. Then, it processes the thermal images to assess packages' integrity based on the continuity of their welding.

APPLICATION BUSINESS SECTORS

The following business application sectors have been identified:

1. Producers and/or distributors of food in thermosealed packaging, such as fruits and vegetables, baby food, ready-to-eat meals, and meat and dairy products, among others.
2. Manufacturers of packaging machinery.
3. Manufacturers of packaging and packaging materials.

TECHNICAL ADVANTAGES AND BUSINESS BENEFITS

Transferring the innovation to each of the above sectors will offer the following advantages:

1. Producers and/or distributors of packaged food. According to the National Institute of Statistics of Spain, in the Valencian Community in 2018, there were 2,542 food and drink companies. Out of that number, 98.8% were small and medium enterprises. They usually have limited resources to meet competitive standards in product quality and therefore require an inspection technology which is affordable and tailored to their business model, as the one which is proposed in this document.
2. Manufacturers of packaging machinery. According to the Report on the current situation and future challenges (BIP 2013), the Valencian Community accumulated the 10.3% of companies of the sector. Packaging machinery (41.1%) and machinery for packaging manufacturing (12.8%) concentrated most sales. In both cases, manufacturers would benefit from integrating a technology to control materials and packaging integrity, of which they lack at present.
3. Manufacturers of packaging and packaging materials. Approximately 62% of Spanish packaging companies are suppliers of the food industry. Moreover, the Valencian Community accounted for 9.25% of the industry total turnover in 2018, which represented a total of 2,865 M€ and a 17% annual growth. The exploitation of this technology would provide a potential value for the market, both for local and for national companies that provide products to companies in the Valencian Community.

STATUS DEVELOPED OF THE TECHNOLOGY

The technology readiness level is set at TRL 5: Technology validated in relevant environment (industrially relevant environment in the case of key enabling technologies)

INTELLECTUAL PROPERTY RIGHTS

The invention is protected under the following patent which is property of AINIA:

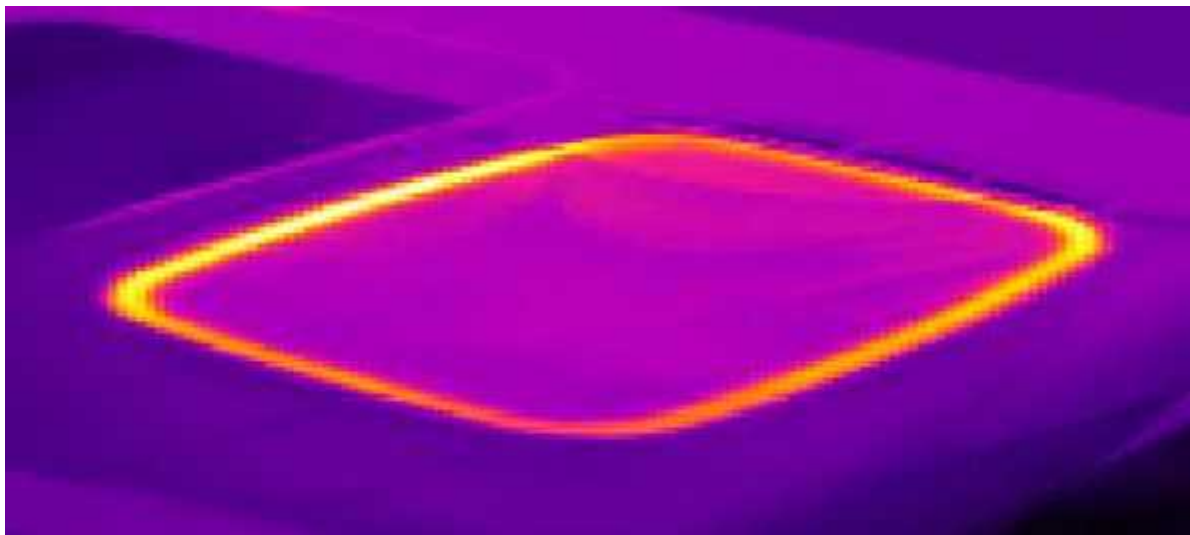
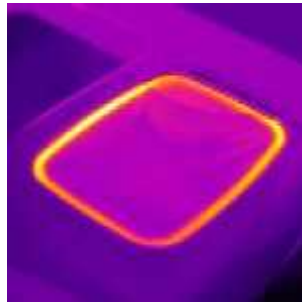
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AINIA, Paterna, Valencia, ES. Method and system for detecting defects in plastic containers. DÍAZ PUJOL, Ricardo. BELENGUER BALLESTER, José. GARCÍA REVERTER, José. BLASCO PIQUER, Miguel. SUBIRATS HUERTA, Sebastián. ES, Int Cl.: G01N 33/44, G06T 7/00, G01N 25/72, no. 15382421.4. 08.02.2017 Bulletin 2017/06.

COLLABORATION SOUGHT

Companies are sought that can market the solution, such as manufacturers of inspection systems, packaging machinery, equipment for the food packaging sector and engineering. Their potential customers might be manufacturers of food products and in thermosealed or thermoformed plastic packages, such as ready-to-eat meals, baby food, and meat, fish, and dairy products, among others.

RELATED IMAGES



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