

Imago[®] how VIDEO SYSTEMS transforming hollow glass quality control

As they revolutionize hollow glass quality control with AI-based solutions, such VIDEO SYSTEMS products as Imago Omnia and Imago Oculus are leveraging advanced AI and smart cameras to enhance defect detection and reduce false positives. The technology is improving production efficiency, reliability and sustainability – making significant strides in the glass manufacturing industry.

Artificial intelligence



Video Systems, founded in 1993, has emerged as a global market leader in developing and producing product quality control and process control solutions in the manufacturing sector. By the late 1990s, the company leveraged its expertise to support the hollow glass production industry – collaborating with the market leaders of the time. This led to the development of tailor-made applications that eventually became market products. During its first decade, such collaboration was protected by exclusive agreements due to the innovative impact of the proposed solutions. In 2012, Video Systems began the large-scale distribution of these solutions.

ARTIFICIAL INTELLIGENCE



ARTIFICIAL INTELLIGENCE BY CHOICE AND VOCATION

Since the early 2000s, Video Systems has been incorporating artificial intelligence (AI) technologies, with models developed internally by the company's software development team. It also developed the first smart cameras with built-in AI, which have evolved with the latest market technologies, such as integration with NVIDIA GPUs. One of the company's early projects was the development of the first multi-format appearance inspection machine around 2002, which became the genesis of the current Omnia system. This system can analyze clear and stressed containers up to 600 mm in height and 220 mm in diameter, using advanced AI systems introduced in 2003 that drastically reduced false rejections.

A COMPREHENSIVE RANGE OF AI-BASED CONTROL SOLUTIONS

Today, the entire range of Imago® inspection products from Video Systems® includes advanced and modern AI systems for image analysis. The company offers complete





AI-based image analysis solutions with Imago Omnia starting from 2018 the first colour camera based sidewall analysis system, bottom inspection with Imago Extrema, contactless finish and shoulder cut inspection with Imago Linea, applicable to bottles, jars, glasses and pharmaceutical containers. Laboratory systems like Imago Vertigo provide statistical control of geometric parameters, while Imago Pyxides handles the inspection of pharmaceutical container packs. Continuing the tradition of Video Systems, the company also develops special machines for specific customer needs. This comprehensive product line is made possible by the company's hardware and software development capabilities.

OCULUS: GENESIS AND EVOLUTION OF A SMALL GENIUS

In 2005, a collaboration with a major Italian glass group led to the development of a vision system to enhance carousel machines and replace traditional aiming systems, marking the beginning of Imago Oculus, now in its sixth generation. As Oculus approaches its 20th year on the market, it has evolved to meet the demands of the most discerning customers and rotary machine manufacturers. The solution is highly performant, reliable and user-friendly - all thanks to distributed computing, scalable camera installations, intelligent illumina-

tors and software developed with master glassmakers. Widely tested on virtually all market carousel machine models, it represents the most reliable and efficient solution for enhancing cut and defect control in glass container production.

WHY ARTIFICIAL INTELLIGENCE?

Pioneering the development of AI-based solutions since 2001, Video Systems has always believed in this transformative technology. Significant research investments, supported by collaborations with leading international universities, have enabled the Italian company to offer high-performance solutions. These solutions are suited for high-productivity and high-reliability sectors such as glass, steel, automotive and aerospace, where Video Systems has operated for over 30 years. The ability to identify various types of defects has improved over this period thanks to innovations in electronic and optical devices. However, even today, some defects are not identified satisfactorily. Current identification systems perform well in detecting minimal defects, but sometimes this ability is compromised by an increase in false positives. Maximizing production while optimally identifying defects is not only a goal for glass manufacturers but also a necessity for sustainable production. Optimizing production will reduce pollution generated per ton of product delivered to the

market. This article proposes an AI-based method for optimizing traditional inspection methods for glass containers. Thanks to this methodology, developed by Video Systems since 2003 and improved year by year through new studies, technologies and market demands, a significant reduction in false positives has been observed, along with improved ability to identify particularly difficult defects. Starting in 2001 with academic texts and driven by the will and perseverance to create new solutions for the manufacturing market, the company's 20-year journey has proven fruitful. It has been a long process because the company philosophy demands that it always presents finished, stable, safe and high-performing products to fully satisfy its customers and their needs.

STAYING AHEAD WITH QUALITY CONTROL AND PROCESS MANAGEMENT SOLUTIONS

The company is always available to respond to all unmet quality control and process management needs. Here it pledges to continue its research and development activities - thanks to its partners and team of seasoned and new researchers, which aims to make the glass industry more efficient, safe and sustainable. This October Video Systems will be at Glasstec 2024 in Düsseldorf where it will be presenting its latest innovations - ever on hand to discuss attendee needs. ■



VIDEOSYSTEMS
Technologies for a new world

VIDEO SYSTEMS

Viale Mangiarotti, 4
33033 - Codroipo - UD - ITALY
Tel.: +39-0432-913582
E-mail: sales@ideosystems.it
www.ideosystems.it