

Stevanato Group launches Artificial Intelligence platform to further enhance detection performance of its visual inspection machines

Pharma companies can achieve up to 99.9% defect detection accuracy thanks to the integration of deep learning models and secure, cloud-based technology. A dedicated team will support customers throughout the machine's life cycle.

Piombino Dese (PD), Italy – February 23, 2021 –Stevanato Group, a leading global provider of integrated containment and delivery solutions to the biopharmaceutical and life sciences industries, has launched an Artificial Intelligence platform, based on Deep Learning (DL) models, that leverages the benefits of human-like decision-making in automatic visual inspection equipment. The platform allows pharma companies to overcome the traditional trade-off between detection rate and false rejection rate, ensuring robust and replicable results. False rejects can be reduced tenfold, and the detection rate can be improved, yielding up to 99.9% accuracy, both for particle inspection and cosmetic defects detection.

Deep Learning is particularly beneficial when applied to difficult-to-inspect and high-value biotech drugs, as it allows pharma companies to achieve higher productivity while preserving drug integrity. Drugs in the form of suspensions or lyophilized cakes frequently challenge available vision tools, causing misinterpretations of supposed defects. Traditional systems can, for instance, misclassify cosmetic defects or air bubbles as particles. Artificial Intelligence mitigates misclassification and reduces costly re-inspection.

Thanks to its partnership with Microsoft and the adoption of Microsoft Azure platform, Machine Learning and AI features, Stevanato Group intends to deliver "smart" equipment compliant with strict pharmaceutical data management and security requirements, while improving inspection performance and reducing costs related to production reparametrization. The certified cloud-based platform is compliant with U.S. CFR 21 Part 11 and EU GMP Annex 11, meets data integrity needs, and offers advanced monitoring tools such as heat maps and confusion matrix for model performance evaluation.

Incorporating new technologies can be challenging for pharma companies, as it usually requires them to adapt internal processes and invest time and resources. The combination of the latest digital developments and a qualified team of vision and AI engineers bring a

dedicated and accurate data analysis service with continuous support for tasks from image collection to model validation.

Raffaele Pace, Engineering Vice President of Operations at Stevanato Group said: "We are glad to provide our customers with inspection machines equipped with the latest AI technology, which are able to substantially increase defect detection accuracy even with the most challenging drugs. Choosing Microsoft Azure as our technology platform allows us to offer a proven solution while delivering the highest standards in terms of data security. Thanks to our skilled visual inspection engineers and experts in big data analysis, we can support clients from the implementation of Artificial Intelligence to ongoing support during operations."

Key features of the new Artificial Intelligence platform include:

- **Cloud-based:** Data remains online and therefore perpetually available. The certified cloud-based platform that stores images and data can work with any cloud-based system and allows operators to manage images even if they are stored in the server.
- **Security:** Compliant with U.S. CFR 21 Part 11 and EU GMP Annex 11, the platform enables data sharing in a completely safe environment. Further, multifactor authentication and encrypted communication ensure complete access control and data security.
- **Assistance:** Continuous support is available for all platform capabilities throughout the process, assisting pharma companies with a variety of tasks including a labeling assistant tool to optimize timing for classification and new recipe development.
- **Monitoring:** The platform features a wide range of statistics and visualizations (heat maps, confusion matrix, etc.) for model performance evaluation. Pharma companies can track and monitor all processes through real-time reports.

About Stevanato Group

Founded in 1949, Stevanato Group is one of the world's largest providers of integrated containment and delivery solutions for the biopharmaceutical industry. From the beginning, the Group has developed its own glass forming technology to ensure quality of the highest standards. The Group includes a wide range of skills dedicated to serving the biopharmaceutical and diagnostic industry. It offers glass containers with its historic Ompi brand, plastic components for diagnostics and medical devices, contract manufacturing services for drug delivery systems, up to inspection, assembly and packaging machines. The Group also provides analytical services and tests that study the interaction between container and drug and integration into delivery systems, supporting the drug development process. By bringing together several skills under the same entity, Stevanato Group is able to offer unique solutions to companies by reducing the time to market and the overall cost.