

## AI- Powered SYRUP CAP INSPECTION

Industry : PHARMA

**Summary:** Defects in syrup caps lead to significant challenges for pharma companies, impacting multiple aspects of their operations. Additionally, regulatory risks become more prominent, as undetected defects can lead to non-compliance, fines, or even recalls. Pharma manufacturers can now leverage the SwitchOn **DeepInspect®** system to detect surface defects on syrup caps with an impressive **99.95% accuracy**, ensuring superior product quality.



# USE CASE

## The Challenge

Defects like **dents, cuts, no sealing, improper sealing, missing threads** etc. occur on syrup caps, leading to contamination risks, leakage issues, and reduced consumer confidence.

### Compliance Risk

Defects on syrup caps can lead to non-compliance with pharmaceutical regulations, risking fines, **potential recalls**, and reputational damage. Ensuring quality is crucial for compliance.

### Tampers Product Integrity

Defective syrup caps risk contamination and product degradation, allowing **bacteria or air exposure**. This compromises the syrup's quality, potentially impacting consumer health.

### Brand Trust Erosion

Visible defects on syrup caps can undermine consumer confidence in the brand, **affecting the brand's reputation** and long-term loyalty, ultimately impacting sales

### 360° Cap Inspection

Two side cameras and one top camera provide comprehensive 360-degree cap inspection, ensuring **all angles are covered** for precise detection of any defects on each bottle.

### Strategic Lighting






Strategically positioned lighting enhances visibility, ensuring each camera captures clear, detailed images for **thorough inspection**. This setup enables precise and comprehensive detection of defects.

## The Solution

Bottles are fed into the capping machine from the filling station. A conveyor belt transports them in a single file, positioning each bottle precisely under the capping head. As each bottle reaches the capping head, the cap is placed onto the bottle's mouth. Once the cap is in place, the capping mechanism, often using a spindle or chuck capper, applies torque to twist & secure the cap on the bottle. It then reaches the **SwitchOn DeepInspect®** station, where defects like cuts, missing seals, etc. are detected —with **99.5% accuracy**, ensuring only bottles with flawless caps continue forward.

### The Setup

The setup consists of the listed items with **DeepInspect** software at the heart.

-  DeepInspect Software
-  Industrial Controller with i5 and GPU
-  Industrial Machine Vision Lights
-  Industrial Camera
-  Mitsubishi PLC

## The Impact

Following the **implementation** of **DeepInspect®**, Pharma manufacturers can experience significant improvements in their operations.

01

Achieves over 99.5% accuracy, precisely identifying even the **smallest surface defects on caps**, ensuring only flawless products reach customers.

02

With less than **0.5% false positives**, the system significantly reduces unnecessary product rejections, optimizing overall production efficiency.

03

Automating inspection, DeepInspect **lowers manual labor** needs, cutting costs and minimizing errors from human oversight.

04

Ensures defect-free products, meeting strict **quality standards and regulatory requirements**, thereby strengthening brand trust and reputation.

## Conclusion

By implementing **DeepInspect®**, pharma manufacturers can achieve over 99.5% defect detection accuracy on syrup caps, minimize false positives, reduce human intervention, and ensure only flawless products reach customers—boosting efficiency, compliance, and brand reputation.



Tag: Good Score: 100



Tag: Not Good Score: 64



Tag: Not Good Score: 40

## Reach out to us