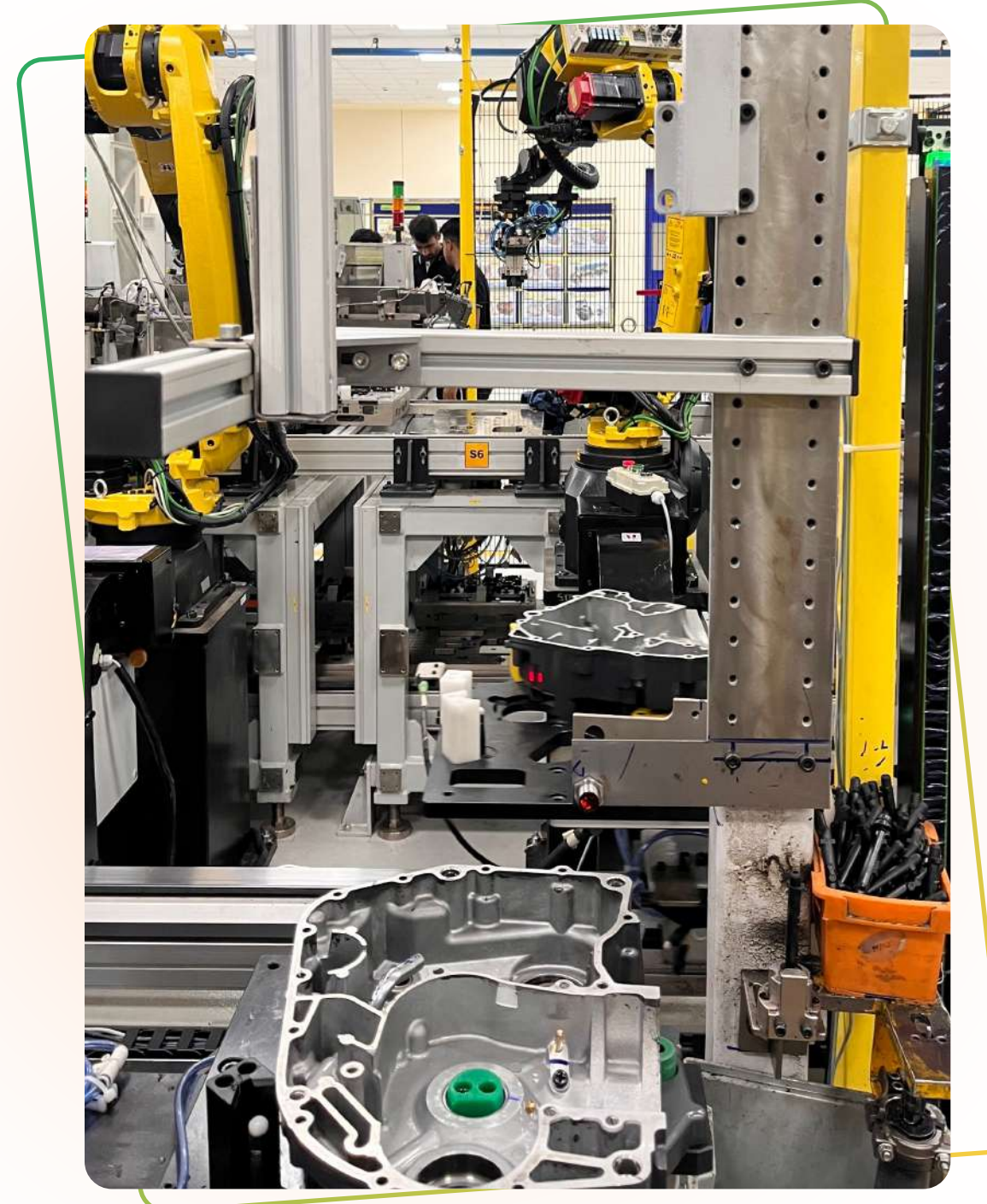


AI POWERED SEALANT INSPECTION

Industry : Automotive
Client : **Bajaj Auto Limited**

Summary: Bajaj Auto Ltd., a leading Indian automotive multinational company, has established a significant presence in both domestic and international markets. To ensure the highest quality in their crankcase sealant inspection, Bajaj implemented the **SwitchOn DeepInspect®** system, which enabled Bajaj Auto to achieve an impressive accuracy rate of over **95%**.



CASE STUDY

The Challenge

Bajaj's primary challenge was that their **sealant inspection** process was done manually and is **time consuming and inefficient**, highlighting the need for automation to improve speed and accuracy.

Inadequate Lubrication

Missing sealant in the crankcase is a serious concern and can lead to oil leaks, reduced engine performance, and potential engine damage due to inadequate lubrication.

Damaged Vehicle

Incorrect sealant thickness can result in poor sealing, leading to leaks, reduced engine performance, and **potential damage** from pressure imbalances or gaps.

Oil Seepage

Uneven sealant continuity on the crankcase can result in **poor adhesion**, increased vibration, inconsistent sealing, and potential oil seepage or contamination issues.

Model Training & Validation

The system required only less than **200 good sealant images** and less than **45 minutes** for model training & validation, using a 20 MP industrial camera placed 400 mm above the crankcase.

The Solution






Bajaj implemented the **SwitchOn DeepInspect®** system to streamline their sealant inspection on all **SKUs** on the line. The process begins with an operator manually placing the crankcase onto an automatic fixture. The fixture rotates 180 degrees. A robot then applies sealant to the crankcase. The fixture then returns to its original position, where the The DeepInspect system **inspects sealant for presence, continuity, and thickness**, achieving more than **99.5% accuracy** in defect detection with less than **4% false positive rate**.

Cycle Time & Inspection

The **entire process**, from image capture to inspection and output display, was completed in **under 1 second**, ensuring rapid and efficient performance.

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, our customer experienced significant improvements in their operations.

01

Achieved 99.5% accuracy with 5% rejection rate, ensuring **high-precision** inspections and delivering only quality products to the market.

02

The increased accuracy **boosted** vehicle performance and effectively eliminated engine oil contamination and preventing potential leakages.

03

Eliminated the need for 1 manual labor by enabling accurate, rapid inspection, enhancing **efficiency** and reducing the chances of human error.

04

The **false positive rate** was minimized to just 4%, ensuring that almost all good sealants were accurately identified and correctly classified.

Conclusion

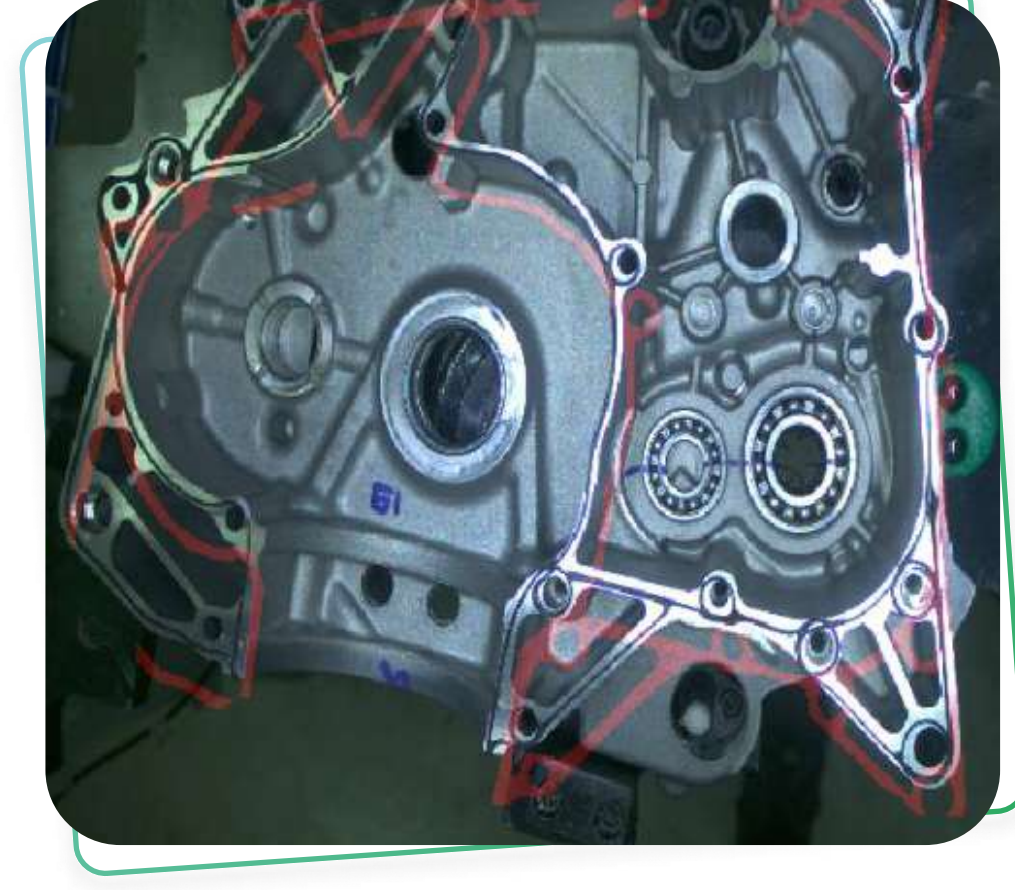
After implementing the SwitchOn DeepInspect System, Bajaj achieved 99.5% accuracy in various sealant inspections, including continuity, presence/absence, and thickness, significantly reducing manual effort. This enhancement improved the performance of Bajaj motorbikes using crankcase SKUs.



Tag: **Good** Score: **100**



Tag: **Not Good** Score: **84**



Tag: **Not Good** Score: **40**

Reach out to us