# motherson

# Development of Vision-Based Automated Product Identification System for Industrial Equipment



#### Overview

Motherson Technology Services Ltd. (MTSL) engineered a robust vision-based product identification system to ensure the use of correct consumables in industrial machinery. Deployed directly on customer equipment, the system uses real-time image capture and intelligent pattern recognition to validate the presence of authorized consumables, significantly improving process integrity and operational efficiency



#### Engagement

Product development | Hardware integration | Testing & validation



### **Solution Approach**

The engineering team developed a cutting-edge vision-based product identification system leveraging OpenCV for precise real-time logo detection on consumables. By integrating sophisticated image pre-processing techniques—including grayscale conversion to reduce color complexity, Gaussian blur for noise reduction, edge sharpening for enhanced feature clarity, and binarization for optimized template matching-the solution ensures high accuracy and reliability under varied operating conditions. This robust approach enables seamless integration with customer welding machines to support automated quality control workflows.

## **Client & Industry**

#### American Swedish welding and cutting equipment manufacturer based out of India

Motherson Technology Services was approached by a leading industrial equipment manufacturer to develop a reliable vision-based system for accurate product identification using logo recognition.

#### Expertise

The project leveraged expertise in various areas, including:



**Computer Vision & Image Processing** 



**OpenCV-Based Development** 



**Embedded System Integration** 



Real-time Detection and Pre-processing Algorithms

### **Benefits Delivered**

This intelligent product identifier significantly reduces manual errors and operational delays, driving higher welding process quality and consistency. By automating consumable verification, it lowers rework costs and enhances overall production throughput. The scalable and modular design of the solution also paves the way for future AI-driven analytics and quality monitoring, enabling clients to leverage data insights for continuous process improvement and competitive advantage.

Proud to be part of.