

ELECTRIC & ELECTRONICS



Improving Manufacturing Accuracy Through Smart Cylinder Detection

Problem Identified

The manufacturing process for lead forming machines faced challenges in accurately detecting cylinder positions during operation. Existing detection methods lacked the precision required, leading to inefficiencies and inconsistent product quality. Additionally, there was a need to monitor cylinder bounce, which could potentially affect machine performance and reliability.

These issues impacted production consistency and increased the risk of downtime. Accurately, real-time monitoring was essential to improve efficiency and reduce errors.

Solution Provided

A laser distance sensor (HG-C1030-P) was implemented to accurately measure the displacement position of the cylinder. This sensor was integrated with a PLC (AFP0HC32ET) for precise data processing and sequencing, ensuring reliable control of the system. A 7" HMI (AIG707) was included to display live operational data, providing operators with real-time visibility of machine performance.

This setup offered a significant improvement over traditional methods by increasing measurement accuracy and reducing operator dependency. The solution was designed to be seamless, easy to integrate, and capable of sustaining long-term operational stability.

Results & Summary

The new system successfully detected cylinder positions with high accuracy, ensuring consistent and reliable performance in the lead forming process. Cylinder bounce was found to be minimal, eliminating the need for further intervention in this area. The improved detection capability enhanced production quality and reduced the possibility of errors caused by misalignment. Operators reported better control and oversight of the machine through the HMI interface. Overall, the solution improved process reliability and supported higher production efficiency.

This case study highlights the successful resolution of a critical manufacturing challenge through the integration of advanced laser sensing technology, PLC control, and real-time data visualization.

