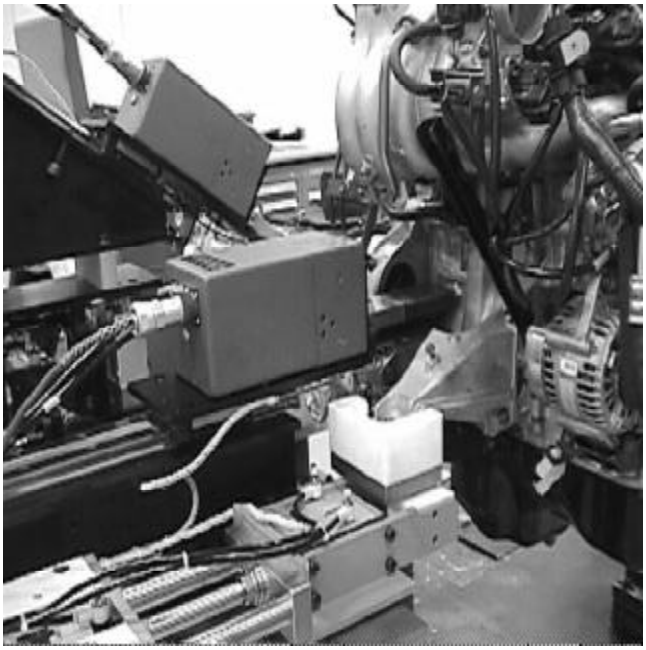
TELESIS
TECHNOLOGIES, INC.

Dual TMM5100/400 VIN System Marks Engines and Transmissions On Moving Conveyor

An international automaker needed an integrated marking system for an engine/transmission assembly line. VINs were to be marked on both engines and transmissions. The line could not stop for the marking operation, so the marking station had to move along the line during the marking operation, then index back to the starting point as each new assembly entered the marking station. Time and space constraints meant that the engines and transmissions had to be marked simultaneously.



The transmission marker approaches the assembly at a 35° angle and the engine marker is mounted horizontally. Both markers and the clamp (bottom) approach the assembly on pneumatic slides.

Telesis Custom Engineering Team designed a unique system using two TMM5100/400 VIN markers to meet the complex requirements. The two markers are mounted on a custom indexing carriage with pneumatic slides to advance the marking heads into marking position. Slides oriented perpendicular to the conveyor line advance the marking heads into position. One marker is canted at a 35° angle to access the transmission. The engine-marking head is mounted horizontally.

A clamp assembly is also mounted on a horizontal slide. It advances toward the conveyor and closes on the engine pedestal. This coupling allows the marking system to slide along in tandem with the engine/transmission assembly until the marking process is complete.

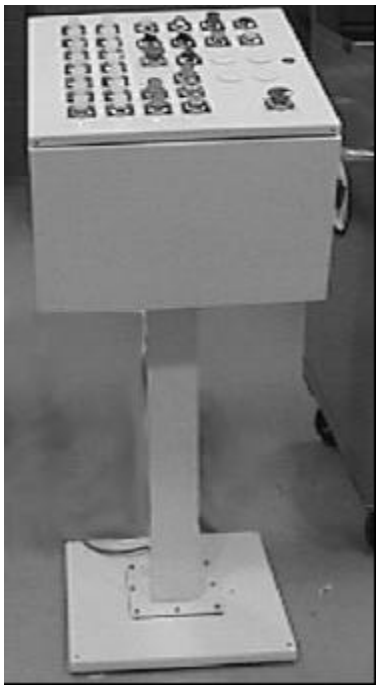
Vertical slides raise and lower the marking heads to accommodate different engine models.

This multiple-slide marking system is mounted on a custom designed table. A cat track holds and protects the electronic cables and pneumatic tubing, allowing them to extend and retract repeatedly, without tangles, kinks, or wear points.

A programmable logic controller (PLC) controls the movements of the slides. A freestanding control pedestal contains all the manual controls, including Auto/Manual and Run/Bypass selector switches and a mushroom-type pushbutton emergency stop. It also has full array of indicator lights that track the system throughout the marking cycle.

A freestanding Main Disconnect enclosure is equipped with a heat exchanger. Indicator lights and E-stop button are located on the front of the enclosure.

TMM5100/400 VIN software allows the system to receive VINs from the host computer.



The freestanding control pedestal has has manual controls, including Auto/Manual and Run/Bypass selector swiches, as well as an array of indicator lights that track the marking system status throughout each cycle.

Sequence of Operations:

The following steps describe the general sequence of operations for the system.

1. The conveyor PLC sends a message containing the VIN and specific engine/transmission type to the marking system via an RS232 serial connection.
2. The conveyor moves the engine/transmission assembly into the marking station.
3. When the pallet contacts the dual-acting Y-axis location slide, a proximity switch detects it and issues a part present signal.
4. The pneumatic clamp mechanism advances toward the engine pedestal.
5. When the proximity switch detects the pedestal, the PLC directs the clamp to close. While the clamp holds the engine pedestal, the entire carriage travels along the table, parallel to the conveyor line.
6. The PLC signals the two marking head slides to advance toward the engine/transmission assembly, stopping when proximity switches are tripped.
7. The PLC issues a Start Print signal to the TMC400 controllers.
8. When the engine and transmission marking cycles are completed, the TMC400 Controllers issue Done signals to the PLC followed by Ready Signals.
9. The PLC sends signals releasing and retracting the clamp and retracting the marking heads away from the engine/transmission assembly.
10. The PLC signals the slide mechanism to retract the carriage to home position, which is detected by proximity switches.
11. The PLC issues a Cycle Complete signal.

This customer needed a seamless marking operation that would not slow the production line and would not require additional personnel. Telesis designed and built this moving, dual-head marking system that delivers fast, effortless, high quality product marking.