

**TELESIS**  
TECHNOLOGIES, INC.

## Fully Automated TMM5100/400 Systems Mark Pickup Truck Frames

*Industrial Identification/  
Traceability Equipment*

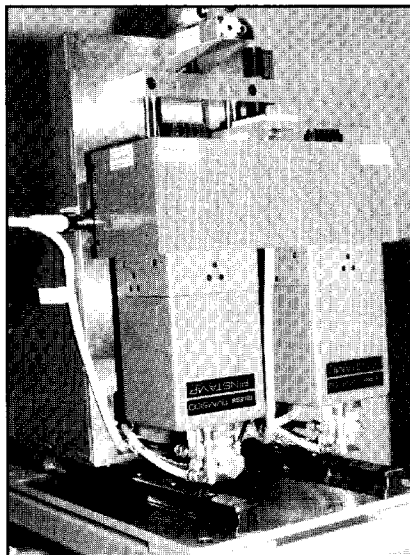
An American automaker wanted to mark vehicle identification numbers (VINs) on the frames of their line of full-sized and extended cab pickup trucks. They needed a fully automated marking system to mark the steel C-channel frames in two locations. One VIN would be visible for normal identification purposes and the other would be hidden. It would be used to identify stolen vehicles with altered VINs. The automaker determined that the best location for the marking operation was on a section of the assembly line that is elevated on a mezzanine across an aisleway. They also required a sound-dampening system to keep sound levels below 80 dB.

This assembly line processes 65 trucks an hour, pausing for 24 seconds on the mezzanine. The marker would have to extend to marking position, mark two VINs and retract in the time allotted. The automaker's host computer would download the VINs to the marking system. They also required that the marks be in a special 7mm 150 dot per inch font that is suitable for export truck marking. (See Application Bulletin #31.)

**Telesis Technologies' Custom Engineering Team** designed a system using two PINSTAMP® TMM5100/400 Marking Systems. Because the truck frames are up-

side-down on this section of the assembly line, the side-by-side markers are inverted to mark the tops of the frames.

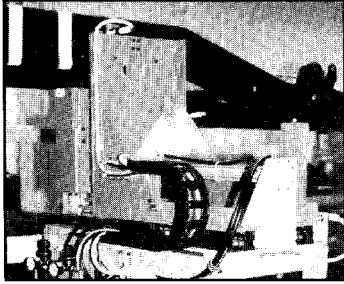
The markers are moved into marking position on a custom-designed fixture that has two pneumatic slide mechanisms. The first slide mechanism horizontally extends the marking heads 17". An inductive proximity switch senses when the markers have reached the frame and stops the horizontal movement. Then the second slide mechanism moves the markers vertically, approximately 3". Another proximity switch governs this vertical positioning of the marking heads. The two marking heads each have five carbide marking pins, spaced 1/2" apart.



**Two TMM5100 Marking Heads are inverted side-by-side to imprint VINs 12" apart on pickup truck frames**

Telesis programmers wrote custom software, allowing the TMM5100/400 Marking Systems can convert the full 17-character VIN received from the host to an 8-character VIN derivative. It is this VIN derivative, with leading and trailing asterisks, that is marked in the two locations on the frames.

The customer wanted Telesis to handle the whole installation. This included working with subcontractors to widen the mezzanine and install a sound deadening curtain around the markers.



Pneumatic slide mechanisms allow the marker to extend 17" horizontally toward the truck frames. A cat track carries cables and prevents them from getting entangled in the moving parts.

System controls are protected from environmental extremes in a free-standing NEMA-rated enclosure. A cat track allows the pneumatic lines and electronic cables to easily extend and retract with the

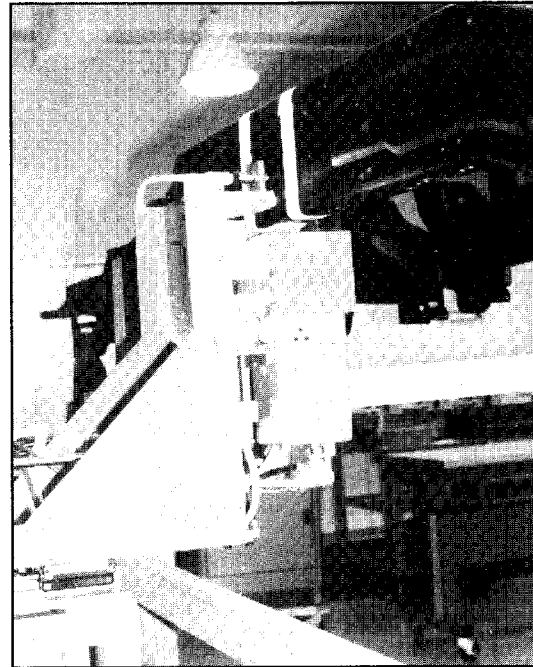
marking heads. A protective shroud around the marking heads protects them from possible collisions with surrounding equipment.

### ***Sequence of Operations:***

1. An elevator and crane system brings the inverted frame to the mezzanine level, 15 feet above the floor, and sets it on pedestals attached to the conveyor.
2. The conveyor indexes the frame into the marking area where it pauses for 24 seconds.
3. The TMM5100/400 converts the next VIN in its queue to the 8-character VIN derivative.
4. The horizontal slide mechanism is activated by a signal from the automaker's programmable logic controller (PLC). It extends approximately 17", stopping when the proximity switch indicates the marking heads are 5mm from the frame.
5. The vertical slide mechanism then raises the marking heads approximately 3", stopping on the signal from the second proximity switch.
6. The TMM5100/400 Marking Systems mark the 8-character VIN derivative and two asterisks simultaneously in the two locations, approximately 12" apart. The

marking part of the cycle is less than six seconds.

7. The vertical and horizontal slide mechanisms retract the marking heads to idle position.
8. The marking system sends a "DONE" signal to the automaker's PLC.
9. The marking system signals the customer's computer to download the next 17-digit VIN.
10. The conveyor moves the frame to the next assembly station and a new frame enters the marking station.



A pickup truck frame is marked from below by two TMM5100 Marking Heads.

This automaker needed a fully automated marking system with minimal operator intervention. Telesis designed and coordinated the complete system to all their specifications. The result: VIN derivatives are now marked on every full-size and extended cab pickup truck frame without the need of operators. And, now law enforcement agencies have an additional weapon in their arsenal to thwart thieves.