



# Customer Success Story

## Kia Motors achieves 99% read rates with Cognex barcode readers



A 2-D Data Matrix code on a Kia Motors car transmission part. DataMan barcode readers are optimized with a patented algorithm which helps users achieve the highest read rates (99.9%) in the toughest Direct Part Mark (DPM) and label-based ID applications.



Multiple 2-D Data Matrix codes on a single Kia Motors transmission part.

In the automotive industry, data management allows manufacturers to optimize processes and track levels of quality. Having the appropriate data on vehicles and related parts can help to reduce costs and make it possible to respond to quality assurance and recall problems in a timely manner.

Kia Motors, located in Korea, manages their traceability program on engine and transmission parts using 2-D Data Matrix direct part marked (DPM) codes. Automobile transmissions have up to 300,000 unique parts including key components (e.g., differential gear, T/F driver gear, T/F driven gear, carrier, O/D clutch, transmission case, housing, valve body) that are traced throughout the production process. Similarly the approximately 200,000 key components of an automobile engine (e.g. piston, cylinder head, engine block, CAM shaft, and crank shaft) are also traced throughout the manufacturing and distributing processes.

In Kia Motors' traceability program, the 2-D Data Matrix codes marked on the parts are read to determine if they are matched to the appropriate part. Production information, such as manufacturing date and model number, is then saved on the server for full traceability.

### 99% read rates on the six-speed transmission production line

Kia Motors focused on enhancing 2-D Data Matrix read rates for traceability after it shifted its production system to the six-speed transmission production line. The company's conventional transmission production line produced approximately 1,800 units daily but only delivered 96-97% read rates. Their engine line, which produced 1,300-1,400 engines daily, had read rates that were under 97%. Kia Motors knew that an increase in read rates by as little as 2-3% in this production line would deliver higher production yield and reduced manufacturing costs and improved efficiency.

**Customer Name:**  
Kia Motors

**Industry:**  
Automotive

**Application:**  
2-D Data Matrix  
Code Reading on  
Automotive Parts

**Cognex Product:**  
DataMan Barcode Reader

### Summary

#### Challenge

After shifting its production system to the six-speed transmission production line, Kia Motors needed to increase DPM (Direct Part Mark) code read rates.

#### Solution

Kia Motors deployed Cognex barcode readers to its six-speed transmission production line to achieve 99% read rates. Cognex readers are optimized with patented algorithms for decoding DPM and label-based barcodes in harsh environments.

#### Results

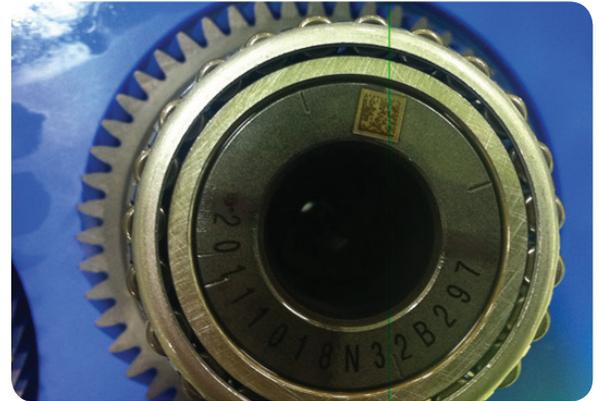
Kia Motors is now able to match the manufacturing cycle on time, and increase work efficiency and production yield while lowering manufacturing costs.



The previous barcode reader was problematic because it would frequently stop manufacturing equipment due to code reading failures. Due to its manual operation, it was difficult to match the manufacturing cycle on time, resulting in decreased work and production yield. Operators risked using the wrong parts if the code was read incorrectly, which could result in product defects. This particular six-speed transmission line faced further Data Matrix code reading challenges due to small parts and declining marking quality on a 5x5mm marking space. To address these challenges Kia Motors deployed DataMan® barcode readers from Cognex and achieved 99% read rates. DataMan barcode readers are optimized with patented algorithms for decoding the toughest DPM and label-based barcodes in harsh environments.

**Patented 2-D code reading algorithm**

Because Kia Motors’ auto parts are assembled with anti-rust oil spray, one of the challenges for the reader is caused by oil on the code. Additionally, the 2-D Data Matrix codes can be further damaged by dirt or scratches, even though they have been washed and kept clean. Furthermore, the size and varying quality of the code marking made the matrix codes difficult to read. However, these challenges are effectively handled by DataMan barcode readers. The Cognex 2DMax+™ code reading algorithm can read virtually any barcode regardless of the damage or the surface it is marked on. In addition, Cognex barcode readers offer Ethernet connectivity so they can integrate into the factory network and directly communicate with a PLC without the need of an additional transmission device.



A low-contrast 2-D Data Matrix code on a Kia Motors transmission part. The Cognex 2DMax+ code reading algorithm can read virtually any barcode regardless of the damage or the surface it is marked on.

**DataMan Barcode Readers**

The benefits of image-based readers combined with the ease-of-use and cost of laser scanners, featuring:

- Highest read rates
- No moving parts
- Performance feedback
- Industrial connectivity



[www.cognex.com/dataman](http://www.cognex.com/dataman)

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