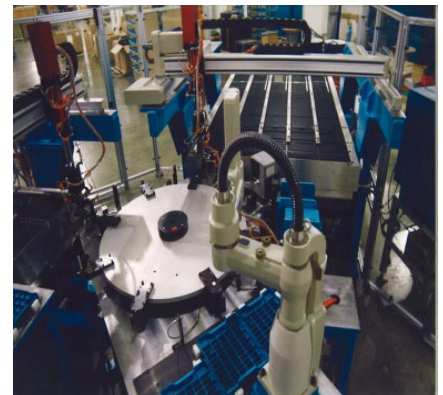


## Automotive Compressor Assembly & Test

This project represents one of ATW's largest single projects. This system was duplicated at a second plant for expanded production and proved to be a strong system for many years. The initial project held many challenges by needing to support a greenfield plant that had never manufactured a compressor prior to start up. The results were tremendous and recorded the best start up in this customer's history in a new plant with a new product. Another challenge was the implementation of a high level of automation on a product design that was just finalizing during the project. ATW's dedication to communication and project management throughout the project allowed for an on time delivery and start up at a foreign plant location as promised.



### System Overview

- This overall system consisted of six (6) integrated palletized assembly lines that contained a total of 91 stations.
- The majority of the stations were automated to provide a TAKT time of 8 seconds for the system.
- Transfers between lines are accomplished by robots to provide re-orientation and flexible placement capabilities.
- Select fit of components is a major requirement for this assembly due to tolerance requirements in the product.
- Unique gauging, handling and documenting of these select fit processes provide a robust solution.
- Testing was also a significant perk of the system including IPV stations and EOL functional tests to approve all assembly operations.
- A "CE Mark" qualification was obtained on this total system.

### System Values & Benefits

- During first year of production only 2 parts per million rejects occurred.
- At startup first time throughput was in excess of 90%
- Multi-line concept allows for segmented production
- Test process integration provides quick response

### System Highlights

- Signature analysis of each assembly including average torque, discharge pressure and flow.
- Oil fill verification by combination of three IPVs - VEK meter, flow meter and product weight check
- Variable position bushing press that allow flexible position within a six (6) inch square through the use of a 3-axis closed-loop servo placement and press mechanism.
- Vision system verification of manual assembly operations.
- RF communication system provides data control that facilitates a product build parameter accumulation.
- Torque and angle monitoring of all fastening processes.
- All press operations are verified by monitoring of force and distance during cycle.
- Intelligent valve banks allow for easy troubleshooting / expansion.