

Through the years, we've designed, built, installed, expanded, and modified a wide range of assembly and test systems for various automotive and truck steering columns. From this history, several systems are featured in this Bulletin, as they represent a range of unique customer requirements, product mixes, production volumes, and integral levels of flexibility for economical future expansions and model changes.

Our objective is to convey the experience, know-how, creativity, resourcefulness, and practical technologies we apply to yield the best strategic solutions for individual customer situations and requirements. We welcome the opportunity to discuss the individual merits of these and other systems we've developed, including the many economic and production advantages delivered with our system solutions. Besides other focused specialties, please know that ATW's assembly and test experience extends far beyond steering columns to include a broad range of complete systems and sub-systems in various markets such as automotive, heavy truck and off-road equipment, appliance, medical, electronics, and consumer products.

Our hope is that you'll find the systems in this Bulletin intriguing and we're successful in conveying our credibility in the wide arena of production assembly and test systems. Most of all, we welcome the opportunity to meet with you and learn more about your unique situations and requirements. Let's take this first step toward our team linking with your team to collectively explore and develop the best, most productive, and most economical system solutions, now and for years to come!

Low Labor . . . with reconfigurability and flexibility



System Values & Benefits

- Lowest labor cost assembly in the entire plant
- Highly cooperative and successful simultaneous engineering project with customer's product design engineering team
- Planned expansion allowed customer to delay capital spending
- Highly adaptable to piece part design changes; many requiring only robot reprogramming and/or gripper tooling changes
- Dunnage stacking errors corrected by vision guidance
- Completely retooled for new product with only 10 days of downtime

System Highlights

- Three robots, with integral vision systems, pick and place a variety of parts
- Bar code product ID and reporting system
- RF tag system for product tracking
- Manual Correction stations (conveyor spurs) at every station allow off-line corrections and re-entry of partially assembled units
- Force monitoring of all press operations ensure desired results



Two-handed gripper allows robotic pick of multiple parts and dunnage

- Torque and angle monitoring of all fastening processes using DC tools
- A vision station with multiple cameras checks quality of assembled units
- Allen-Bradley PLC 5 Control System with remote I/O configuration

Flexible Manning . . . efficient production volume fluctuations

System Values & Benefits

- Lean system provides utmost production volume flexibility with high labor efficiency
- Modular station/system concept allows for lower initial capital investment
- High system uptime due to simplicity of stations and control architecture
- Easy-access and availability for all part handling
- Exceptional flexibility due to modular stations that can be pulled out and reconfigured for process changes



System Highlights

- Lean system operates with as few as 3 operators (100 units/day) . . . to 6 operators (600 units/day) . . . and up to 16 operators
- Each modular station has its own section of powered conveyor and PLC, making it easy to remove and retool
- Additional modular stations can easily be added to expand production capabilities and/or volume
- The PLC of each modular station is connected via Ethernet to a central PLC control system
- FIS (Factory Information System) capability
- Model changeovers without purging the line
- Torque and angle monitoring of all fastening processes using DC tools



Integral re-processing loop makes timely product corrections

- Force and position (vs. a stop) monitoring of all press operations
- Full functional product testing



Modular station has its own PLC and section of powered conveyor

Steering Columns – Assembly & Test

Focused Specialties ➔ Broad Capabilities

High Model Mix . . . quick changeover on 24 models

System Values & Benefits

- High flexibility to accommodate a broad product mix of 24 unique models
- Model changeovers are accomplished without purging the line; automatic changeovers occur within select stations
- Multi-loop assembly strategy to ensure continuous production
- Integral re-processing loops make timely product corrections, avoiding delays and eliminating extra work space
- Electrically actuated motions provide enhanced flexibility and cleaner work environment



System Highlights

- 36 stations; 24 product models; 32 universal pallets to accommodate all product models
- 2 robots, one for packing and another for product transfer
- FIS (Factory Information System) to monitor system performance and trends, including troubleshooting aids for maintenance
- Bar code reading of each component upon introduction to the line
- Distributed control network of PLCs
- Electric presses instead of hydraulics for lower maintenance
- Force and position (vs. a stop) monitoring of all press operations
- Torque and angle monitoring of all fastening processes using DC tools
- Full functional product testing
- Vision station for final model verification prior to labeling the product and pack-out

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- Automotive powertrain components
- Automotive electrical components

Efficiency . . . blending of process and production requirements

System Values & Benefits

- Cellular system approach for lowest cost start-up and delayed capital spending
- Lean, scaleable approach provides utmost production volume flexibility with high labor efficiency
- As demand increases, duplicate cells can be delivered quickly for rapid market response time
- Self-contained (electrically and pneumatically) modular stations have built-in capability for design changes, providing exceptional flexibility for future model changes
- Completely tool-less model changeovers



◀ Staged assembly station allows for single position tending of 3 processes

System Highlights

- Stations within the cell/system are designed for easy reconfiguration
- All fixtures are mounted to sub-plates for interchangeability and reusability
- Material handling pick points are ergonomically engineered to minimize reach of operators
- Quick-connect utilities
- Multi-purpose fixture allows for efficient part handling and processing
- Part feature sensors verify model and determine process steps
- Savings through re-use of de-commissioned system components
- Full functional product testing

Take the Next Step.

Please contact us today to discuss your application and explore profitable possibilities.

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