



MANUFACTURING OPERATIONS WITHIN SECONDS

BRANCH OF INDUSTRY

automotive-supplier industry

ITEM

brake-piston-assembly system

JOB

completing manufacturing operations within seconds

SPECIAL TECHNICAL FEATURES

- 100% quality control
- image-processing system determines component positions and orientations
- setup changes may be carried out during system operation

TASK

For a supplier to the automotive industry, ASA Automatisierungs- und Fördersysteme implemented a series of cascaded systems for the unmanned fabrication and assembly of pistons for passenger-car disk-brake calipers. The basic requirements were achieving a certain throughput, maintaining high processing reliability, and excellent quality of the finished parts. The

set of requirements also covered the associated recognition of the positions and orientations of components and keeping them reliably aligned relative to one another during assembly on a reproducible basis.

IMPLEMENTATION

A fundamental requirement for the proper operation of disk-brake pistons is the reliable, correct mating of individual piston components with one another, i.e., for example, the mating of outer pistons with piston inserts and sleeves, where the correct positionings and orientations of components is a critical factor during assembly operations.

The system has been designed to handle various types of pistons and differing product generations of both front and rear braking systems. Cycle times of a few seconds are typical for such systems, but vary radically from one type/generation to another, which imposed stringent requirements on ASA's integrated Carryline conveyor system.

The sensors that have been incorporated into the system take on a large share of the job of

running it. Image processing has been incorporated at every critical station along the system. A total of eighteen robots, some of which perform handling tasks, while others perform processing operations, run on those subsystems that have been supplied by ASA.

BENEFITS

The system met the demands imposed on throughput and finished-part quality right from the start. The demanded reliability of component positioning and orientation was also accurately documented and has remained reproducible.

