

ENGINE BLOCK LEAK TESTING

Market driver:

The customer needed a system that was capable of leak testing 85-pound, partially-machined engine blocks. The product volume also demanded a system capable of maintaining maximum up-times, three shifts, and to run six-days per week.

Test requirement:

The customer is required to leak test five different cavities of the engine block, each with different test pressures and leak specifications. Cycle time and Gage Repeatability and Reproducibility (R&R) was a critical requirement in the specification.



CTS Solution:

Cincinnati Test Systems (CTS) application engineers started the project by identifying each challenge with the customer during the initial proposal stage. During the design phase of the project we worked closely with our customer to understand the issues and challenges which provided valuable insight to the design needed to make this a successful implementation.

The first challenge was to design a test cell capable of supporting the required production requirements, maintaining a minimum downtime during routine maintenance and seal changes while processing the product through a single in-feed conveyor system. The first step in the process was to calculate how many stations were required based on cycle time of each stand. It was determined that four test stations was necessary to complete the cycle time requirement. To minimize downtime of the entire cell for maintenance to each station, CTS engineers designed safety doors that closed by remote switches, thus isolating service personnel from the path of the robot on all sides. This feature allowed the other stations to continue processing parts while keeping the service technicians isolated from the robots path.

CTS engineers selected an ABB robot capable of moving two, 85-pound castings at the same time with precision, speed, and reach to accommodate a smooth throughput. The robot was equipped with dual-grippers giving it the capability to load and unload each station with minimum steps, streamlining the overall process. Each station was equipped with a nest that would shuttle to a load/unload position for easy access by the robot. After picking up a block from the incoming feed conveyor, the robot would unload a tested block from the ready station with one gripper and load the untested block onto the abandoned nest for testing. The robot would then process the tested block to the outgoing or reject conveyors for additional processing.

The Result :

CTS answered all the customers concerns and needs while meeting all test and processing requirements. The customer is pleased with the production output and overall performance of the system. The implementation of Creativity, Experience, and Listening to the customer needs define why Cincinnati Test Systems is known Worldwide as the experts in TEST.