MICHIGAN CUSTOM MACHINES, INC.

Product Highlight:
ENGINE BRAKE ASSEMBLY

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The purpose of this bench is to test Engine Brake Rocker Arm Assemblies. The bench is configured to hydraulically test Engine Brake Rocker Arm final assemblies in a single-station configuration. The Rocker Arm Assembly consists of three (3) Brake Rocker Arms and three (3) Intake Rocker Arms. The test bench uses Motor Oil to test the function of the Brake Rocker internal valves, actuators, and oil control valve. Following the test cycle good parts will be air purged to remove internal test fluid and then blown off with air to remove any residual external fluid. Assemblies that pass the EOL test are marked with an impact market to identify that they have passes the final test.

Machine Features:

- Accommodates single product. Operator loads DUT with the aid of a lift assist.
- Test Fluid is temperature controlled to ±2 degree C at 40 Celsius.
- Machine logs all test results to a plant network.
- Part presentation is via infeed conveyor with positive part location.
- Reject conveyor and good part conveyor handle machine output.
- Machine is configured with Allen Bradley or Omron PLC.
- HMI main run screens are configured in English, Spanish and Polish.
- All filters have dual differential pressure switches to provide an early warning of filter failure.
- A fixed 2D Scanner obtains part serial number and attaches it to the test results in the log file.

Machine controls

The machine uses an Allen Bradley CompactLogix or Omron industrial controller to handle the machine functions. An industrially hardened touch screen PC is used as the operator interface. The operating system platform is Windows 8.1 or higher and the interface application is written in Microsoft C# utilizing the ".NET 4.5 platform". We use the CimQuest INGEAR package to communicate with the PLC using the Ethernet connection. All applicable calibration coefficients and operation parameters are stored on the PC and transferred to the PLC at test time. An uninterruptible power supply is used in conjunction with the PC so that the PC can perform a graceful shutdown in the event of a power failure or if the disconnect is pulled. The electrical cabinet is air conditioned.

Specifications

Controlled Feature	Control Type	Description
Oil supply	Programmable	The oil supply is controlled in the range 0.5 – 3 Bar with resolution of 0.1 Bar during steady flow.
Clamp load	Hydraulic	The load applied to the part mounting points when clamped in the fixture is controlled to 1300LBS per clamp (8000LBS total system)
Supply Temperature	Programmable through operator interface.	Controlled from 40º C ±1º C based on 10 GPM, 13ºC externally supplied cooling water.
Flow Rate	Variable	The oil flow range is 0.2 LPM to 5 LPM with resolution of 0.01 LPM
CAM RPM	Variable Frequency Drive	400 – 1200 RPM with a resolution of 5 RPM
Displacement Measurement	Valve Displacement	0mm – 3mm with resolution of 0.01mm