Piston Connecting Rod Fracture: Force Monitoring - V8 and V10 Engine Assembly

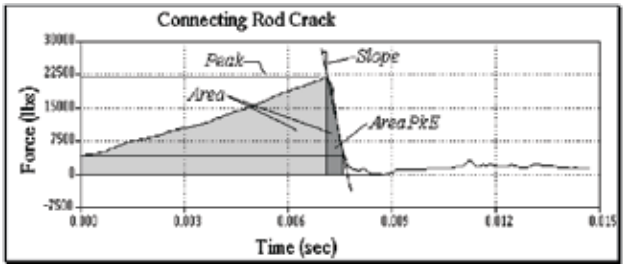
Highlights:

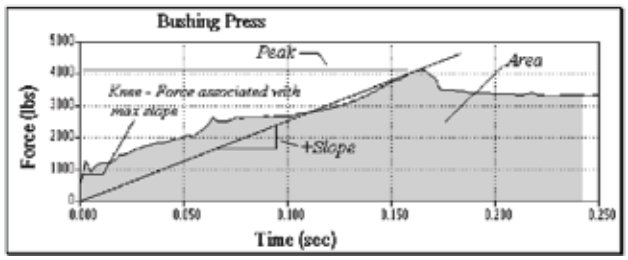
- Complete traceability of all manufactured parts
- 100% part testing
- Modbus Plus™ PLC interface (using SA85 card)
- Serial number tracking
- Five second machine cycle time
- Simplified calibration and setup procedures
- Database stores all waveforms for defect analysis
- Cracking process and bushing press can be monitored simultaneously with one system

Connecting rods join pistons to the crankshaft in a standard internal combustion engine. Extremely tight tolerances are required on the crankshaft bearing surfaces for operation at high engine speeds. In many engine designs, the connecting rods are machined and then “cracked” at the crankshaft end with hydraulic equipment. This guarantees the connecting rod will reassemble around the crank journal with exceptional tolerance.

Sciemetric’s Signature Analysis System is used to monitor the crack force to verify the correct range of key parameters including peak force, area under the curve (i.e., energy) and the falling slope (ensuring a clean crack). The same system also monitors force as a bushing is pressed into the piston end of the connecting rod.

Connecting rod serial numbers assigned by the host PLC are printed on the rod with an ink jet. The serial number is also received by the force monitor via Modbus Plus™ (Modicon PLC network). The system may be configured to save failed and/or good part waveforms (referenced by serial number) in a data base internal to the program. As defective or substandard rods are discovered, the waveforms can be promptly recalled by day of production and serial number to allow both failure analysis or quick adjustments to the PASS/FAIL criteria, improving the overall test system reliability





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