CASE STUDY 1 - (Leak Test of CI Lube Oil Sump)

Customer : An Engine component supplier .

Part Name : Engine lube oil sump – CI castings

Machine Supplied : Semi auto Leak Test machine for lube oil sumps.

Customer Requirements :

1. Dry Air Leak testing of components to ensure its performance specifications.
2. Eleven number of part varieties to be tested on single machine.
3. No downtime for loading/unloading of test parts.
4. Full auto testing cycle except manual loading/unloading of test parts.
5. Auto acceptance punch mark on all leak test passed components.
6. Test result records to be stored on office PC.

Test Criteria : Test Pressure -1.5 Bar & Leak Rate – 10 scc/min.
. Test Volume - Approximate 6500 ml.

Our Solution :

1. Our 'SHANTI' brand Differential pressure decay measurement type leak tester was used for this application.
2. Simple fixture changeover was given to accommodate all eleven varieties in a single machine. In Fixture changeover only job resting sealing plate have to be changed ,which takes place in less than 10 minutes.
3. The machine was designed with reciprocating dual job resting pallets by pneumatic cylinder so as when one pallet is at test station , other one is at job load/unload station. So operator can load/unload test job at one end simultaneously with conducting leak test at test station. So there was no downtime for load/unload of test jobs.
4. Except manual job loading ,the loaded job was automatically moved, clamped , sealed & leak tested. Upon successful completion of the test, test part gets stamped with acceptance mark & the tooling clamps & seals were automatically retracted & pallet moved to load/unload station, where test part was removed manually. Automation was controlled through PLC. 5. Our leak tester was loaded with self designed, user friendly data logging software which enables our customer to store all leak test results data in PC. 6. To get accurate leak test results & to reduce cycle time, we have inserted dummy volume to reduce the effective test cavity volume. Total cycle time we achieved was around two minutes. 7. The machine is running efficiently since last 7 years.