CASE STUDY 3 – (Leak Test of V type Cylinder Block)

Customer : Genset Engine Block manufacturer.

Part Name : V- type engine block .

Machine Supplied : Semi Auto Dry Leak Test machine for V- type Engine Block.

Customer Requirements :

1. Dry Air Leak testing of water passages of engine block to ensure its performance specifications.
2. Four number of varieties to be tested on a single machine. 8,10,12,16 cylinders Blocks.
3. Easy & simple fixture changeover.
4. Auto leak test cycle. Partial manual clamping acceptable.
5. Auto acceptance punch mark on all leak test passed components.
6. Component weight, near about 1 MT, should be considered while designing the loading concept.

Test Criteria : Test Pressure – 3.5 Bar & Leak Rate – 10 scc/min.
. **Test cavity volume – Approx. 7000 ml.**

Our Solution:

1. Our 'SHANTI' brand Differential pressure decay measurement type leak tester was used for this application.
2. Due to V banks, water passages were divided in six different cavities. So each cavity was to be tested separately. Also there was limitation at most of the places to reduce the volume of test cavity by putting dummy volume. Due to which air fill & stabilization required more time, resulting in increased in cycle time. To achieve expected results, we have set cycle time near about 50 mins. which was technically essential & so accepted by our customer.
3. To load test job easily, we have provided reciprocating pallet so that test job can be easily loaded with the help of shop floor crane on the pallet which was initially located at the outside of test station & after loading, it can move automatically towards test station by pneumatically operated cylinder. so pallet movement, clamping & sealing with pneumatic & hydro pneumatic cylinders and leak testing was carried out automatically. Upon successful completion of the leak test, test part gets stamped with acceptance mark & the tooling clamps & seals were automatically retracted. Then part was removed manually by crane after returning job pallet to load/unload station .
4. The machine is running flawlessly & efficiently since last three years.