

**The Objective:**

The customer wanted NextFirst to build a semi automated assembly line for the production of automobile alternators. Per day capacity to be obtained was 1000 with only 10 operators handling the entire line.

**The Challenges:**

The biggest challenge was complex testing requirements with high accuracy in measurement to be achieved against aggressive cycle time to chase. The assembly of the drive pulley on the shaft was very critical and required very accurate alignment. The assembly line has to perform quality check on rectifier and regulator.

**The Solution:**

The entire assembly line consisted total of 11 stations. The material transfer from one station to another was done by manual conveyor. The line was capable of handling 3 variants of alternators.

Tightening of 4 screws for the assembly of the alternator was done using a single servo drive in one shot. The servo feedback system ensured that the screws are tightened very accurately to the specified torque value. 4 screwing operation in one shot helped customer to achieve the required production targets. Large forces required for the assembly were achieved by using hydro - pneumatic cylinders.

The accurate alignment of drive pulley and shaft helped in reducing the mechanical noise of the alternators during its operation. Hi - Pot tests were conducted on intermediate assemblies. Rectifier & regulator tests, frequency measurements and, no load and load tests were conducted on a single test bench. The Smart poke yoke systems had to be incorporated at every stage to ensure no mixing of child parts with its variants.