

# Universal Testing Machine

**Name:** Axial Fatigue Testing Machine - Servo Hydraulic 2000 kN

- ✓ Features:
- ✓ Capacity: 2000 kN (Dynamic)
- ✓ According to ISO 14242 and ASTM-F1942 standards.
- ✓ Powerful software (intranet connection with hardware) with the ability of applying periodic loads with certain amplitude and frequency, and in sinusoidal, triangular and square wave shapes capable of specifying the slope, saw-tooth waves and random waves to get the related waves pattern and applying predefined noise on each type of mentioned wave forms.
- ✓ Ability of automatic control of amplitude during test to increase the tolerance and capability system reliance in long time tests and compensation of stiffness errors, grips and load cell weight at dynamic stat to omit the faults and get the exact and true results.
- ✓ Controllers for speed, position, force and strain and discrete PID for each control mode for dynamic tests as fast as 10 Hz (considering amplitude) and ability of applying dynamic forces with constant force, position, and strain range.
- ✓ Using dynamic test specialized and high temperature resistant sealing of the best brand in the world and using best parts and instruments and controllers for long duration tests.
- ✓ User defined test setting (frequency, amplitude, wave form ...) and PID parameter at online force, position or strain mode during test without test brake (Result can be observed immediately)
- ✓ DSP technology of electronic hardware with high frequency response and sampling rate and controlling in every 200 micro second steps.
- ✓ Robust design of body, hydraulic wedge grips, load cell and actuator for decreasing the stiffness of instrument
- ✓ Optimizing servo hydraulic operation using best servo hydraulic valve
- ✓ Compensation system for impacts due to stiffness mechanism
- ✓ Real time discrete controlling system



## **Applications:**

SAF-2000 axial fatigue test machine applies in various industries such as power, energy, construction, aerospace, medical etc for measuring the life period of parts and equipments such as turbine blades and other power distribution equipments, under pressure tanks, tubes, blades, compressors, small and bid metallic and nonmetallic parts like steel, aluminum etc, parts and equipments relevant to civil engineering such as beams, metallic and polymeric matrix composites, welded counterparts, connectors and fasteners used at air industries, simple and reinforced plastics and rubbers, biomedical materials like orthopedic materials, dental implants, spinal column implants etc.

## **Description:**

Different type of materials, especially metals, breaks under sudden stress far below needed stress for breakage. So many engineer designed parts should endure under cycles of force or stress during their defined lifetime. Based on this breakage under dynamic loads is called fatigue failure. Depending on some of these parameters, this change in load happens under maximum amplitude of stress or strain. Duo to this, in some special cases fatigue happens under controlled stress or strain condition. Scientifically speaking, fatigue is a local progressive failure under dynamic load. SAF axial fatigue testing machine can test different fatigue tests on different samples according to different instructions, using sinusoidal, triangular and square wave shapes with options of, steepness control, saw teeth and random in predefined range of constant strain or stress amplitude as fast as 10 Hz. Using newest version of electronic hardware with high sampling and response rate, best sensors and transducers and most accurate servo valves and use of separate controllers for obtaining real time process, using powerful PID optimized software for each control mode and special hydraulic and mechanic design with best cooling system for long test time, enables SAF series to practically simulate most realistic and various condition for test of fatigue samples.





