



## SCC-SSRT Advanced SSRT / Constant Load / Corrosion Fatigue Loading Device

### Description:



The SCC instruments of Advance Instrument (AI) are computer controlled, electromechanically operated loading devices. The loading unit can perform SSRT tests, constant load tests and cyclic fatigue tests. It is for the investigation of various forms of Stress Corrosion Cracking (SCC) under different environmental conditions.

The system consists of the loading units, datum acquisition unit, control system and the test vessel. The facility is designed for Constant Load Testing (CL), Slow Strain Rate Testing (SSRT) and Low Cycle Fatigue Testing (LCF).

The computer controls a motor that is loading the tensile specimen. The displacement rate is specified by the operator's computer software. The measured value from the load cell will be displayed on the computer screen by means of the software. The computer saves both the displacement and load data automatically. The data will be available for further management in ASCII format. The instrument fulfills the requirements presented in ASTM Practice G 129.

When constant load feature is used, the response of the load cell is used as a feedback signal to control the displacement so that the load cell measurement value is equal to the load set by the operator.

The loading device can perform low frequency cyclic fatigue tests. The cyclic loading can be performed either under load or strain control. The shape of the loading can be either of trapeze (a special case: saw tooth) or sinusoidal type. The maximum frequency depends on the amplitude.

The basic design of the unit includes a compact non-backlash ball screw driver actuator, with the motor, and a load cell with a digital force indicator. The computer controls the motor and saves the measured data.

The SSRT instrument is capable to perform SSRT / tensile tests, constant load tests and cyclic fatigue tests. Operational parameters are set up through the user-friendly software that allows the combination of various loading modes in sequences and in loops.



3-3

Stress Corrosion Cracking (SCC) Test Equipment



## SCC-SSRT Advanced SSRT / Constant Load / Corrosion Fatigue Loading Device

### Specification:

- SSRT: Slow strain rate testing
- CL: Constant load testing
- CF: Cyclic fatigue testing
- Loading range: 10 \ 20 \ 30 \ 50 kN

Model	SCC-SSRT-10	SCC-SSRT-20	SCC-SSRT-30	SCC-SSRT-50
Load Range	10 kN	20 kN	30 kN	50 kN
Displacement range	30 mm	30 mm	50 mm	50 mm
Load accuracy	< 0.1% FS			
Typical pull Rod speed range	$6 \times 10^{-7} - 9 \times 10^{-2} \text{ mm/s}$			

\*\*\* Other displacement rate ranges can be arranged through the gearbox modification.

- Testing cell
  - Testing cell will be made of different material depending on the needs. Due to the construction materials, various kinds of chemical environments can be applied.
  - The cell can be gas tight. It thus can be operated with slight over pressure and at about 120° C temperature if there is a heating bath available.
  - The specimen holders made of different material, for different purposes of usage, and positioned inside the cell.
  - There will be plugged ports for reference and counter electrode cables, temperature sensor and working electrode cable.
  - There will be a Hastelloy / Alloy C-276 coil in the testing cell, through which the user can pump cooling / heating media.
- Autoclave - Optional
  - The pressure vessel is designed, manufactured and inspected according to Pressure Equipment Directive PED 97/23/EC.
  - The autoclave vessel will be inspected and tested at the factory prior the shipment.
  - Autoclave construction of stainless steel.
  - Max. operational pressure can reach 200 bar.
  - Max. operational temperature can reach 360° C.
  - Computerized temperature control and pressure monitoring integrated with the SSRT software, including load compensation based on pressure and pull-rod cross-section.
  - Electrical lid lift for easy handling of the heavy autoclave lid and SS
  - Lid seal octagonal ring joint gasket.
  - With pressure gauge.
  - With a safety valve to avoid overpressurizing.
  - With Vessel heating system.
  - With temperature controller and PC-operated.
  - With resistance thermometer with stainless steel protection tube.
  - With surface thermocouple against overheating.
  - Electrical components and temperature controller assembled in electrical cabinet.

