KSGC-20M Fiberglass Pipe Cyclic Pressure Impact Testing Machine

Picture for your reference

1. Application

The KSGC-20M fiberglass pipe cyclic pressure impact tester is manufactured according to the test methods of ISO 10508-1995 <<Thermoplastics Pipes and Fittings for Hot and Cold Water Services>> and ASTM D2992-24. It is designed to assess the ability of pipes, fittings or piping systems to withstand stress fatigue damage and pulse peak pressure under alternating loads.

2. Working Principle

According to the pipe test standards, the test can be carried out after the specimen is installed and the specimen tension is adjusted. This instrument is a high-end configuration with a touch screen and PLC, which can monitor the test conditions of the three stations at all times and has functions such as automatic

shutdown after the test is completed, pipe leakage alarm, and impact frequency setting.

3. Features

Main Unit Features

• Independent workstation design, ensuring no interference: Maximum pressure 200 bar, 3 independent workstations, each with a shut-off valve. In case of a rupture or other issue, the affected workstation can be isolated by closing its valve, allowing other workstations to continue testing.

• Versatile functionality: Can apply pre-stress to the pipe material according to test requirements, or perform any number of cycles between 1000 and 10,000, offering multiple functionalities.

• High precision and stability: The core technology and key components are sourced globally from Denmark and Germany, ensuring high precision and stability.

• Wide control range: Cyclic pressure control range is 5 bar to 200 bar.

• Highly reliable safety protection: Safety measures are implemented in the electrical, mechanical, and software systems. Leak detection and splash protection devices ensure the safety of operators.

• High-capacity, high-pressure accumulator: Maintains the required pressure range during cyclic pressure testing.

Constant Temperature Test Water Tank

● The insulation system uses a fully wrapped inner tank design with two types of insulation materials, ensuring excellent thermal performance and significant energy savings during long-term use. Even at 95°C water temperature, the outer casing remains close to room temperature, greatly enhancing safety and reducing energy consumption by over 70%.

● The circulation system uses a spray-type design. The entire piping system is made of 304 stainless steel, with a stainless steel pump providing a flow rate of at least 4 m^3/h.

● The built-in heater has high heat transfer efficiency, and maintenance or repair can be performed without interrupting the test operation.

● A separate temperature control system is used, with a built-in heating system and an external cooling system, minimizing noise.

● The tank lid opens using a cylinder mechanism, providing ample access space for laboratory use.

● The lid opening angle can be adjusted to any position, ensuring reliability, safety, and convenience.

● The lid uses a silicone rubber seal to prevent leakage at high temperatures.

● Features include automatic water replenishment, automatic shutdown protection in case of low water level, and overflow protection. The temperature can be set to any desired value.

● The structural frame and base are designed for high load capacity and strong resistance to deformation.

● The stainless steel inner tank, along with the stainless steel pump and structural frame, provides high load capacity and strong resistance to deformation.

● The inner tank is made of 2.5mm thick stainless steel plate.

● The insulation layer is over 85mm thick, with measures to minimize heat bridges, ensuring excellent insulation and energy efficiency.

● All components are made of stainless steel (pipes, fittings, heaters, valves, etc.);

● A high-quality German circulation pump ensures uniform temperature distribution within the tank;

● The temperature control system utilizes a brand-name ground fault protection device for enhanced safety;

● The temperature-controlled water tank can operate in a closed loop or be connected to an external circulation system;

● The tank has an integrated heating control system, and the pressure inlet can be customized by the user;

● It features an automatic water replenishment system, which automatically adds water when the level drops

below a set point;
● The tank also has an automatic filtration system to continuously remove impurities from the water;
● The inner wall of the tank has high-pressure ports, each equipped with a quick-connect fitting and a high-pressure hose;
● The tank uses a spray-type circulation system: the pump draws hot water from the bottom and sprays it from the top, maintaining a consistent temperature;
● The tank lid uses a cylinder-assisted lifting mechanism for smooth, safe, and reliable operation;
● The heating system uses a modular design, ensuring safety and ease of maintenance.

4. Standards

- ISO 10508-1995: Thermoplastic pipes and fittings for cold and hot water systems
- ASTM D2992-24: Standard Practice for Obtaining Hydrostatic or Pressure Design Basis for "Fiberglass" (Glass-Fiber-Reinforced Thermosetting-Resin) Pipe and Fittings
- GB/T 18997.1-2003: Aluminum-Plastic Composite Pressure Pipes, Part 1: Lap-welded Aluminum-Plastic Pipes
- GB/T 18997.2-2003: Aluminum-Plastic Composite Pressure Pipes, Part 2: Butt-welded Aluminum-Plastic Pipes
- GB/T 18992.1-2003: Crosslinked Polyethylene (PE-X) Piping Systems for Cold and Hot Water, Part 1: General Requirements
- GB/T 18992.2-2003: Crosslinked Polyethylene (PE-X) Piping Systems for Cold and Hot Water, Part 2: Pipes

5. Specification

- Pressure cycling frequency: 25 ± 5 cycles per minute (alternating between 0.5 ± 0.1 MPa and 20 ± 0.1 MPa);
- Timing accuracy: 1 second;
- Timing error: ±1%;
- Pressure accuracy: 0.05 MPa;
- Number of cycles setting: 0–10000 cycles (user-selectable);
- Water tank temperature range: Room temperature – 95°C;
- Test stations: 3;
- Power-off data retention function and leak/burst detection function;
- Test pipe diameter: 2″–8″;
- Water tank internal dimensions: 2500mm × 1000mm × 1000mm;
- Temperature control method: PID digital display controller;
- Water tank temperature display accuracy: 0.1°C;
- Temperature control accuracy: ±0.5°C;
- Temperature uniformity: ±1.0°C;
- Heating power: 18kW

6. Configurations

Name	Details	Qty.
Pressure station	Server + Servo motor + Gear reducer + High-pressure pump	1
Water pump	Water booster pump	1
Accumulator	High-capacity, high-pressure storage tank	1
10-inch color touchscreen	Delta	1
PLC	Delta	1
High-pressure	Imported	2
Temperature control	KASON	1
Constant temperature	KASON	1
Temperature control	KASON	1
Heating element	Domestic	9
Cylinder	Taiwanese (AirTAC)	2
Circulating pump	Southern China	1
Air pump	Quiet air pump	1
Fiberglass pipe clamp	2"（60.3mm） 3"（88.9mm） 4"（114.3mm） 6"（168.3mm） 8"（219.1mm） Carbon steel material	1 set

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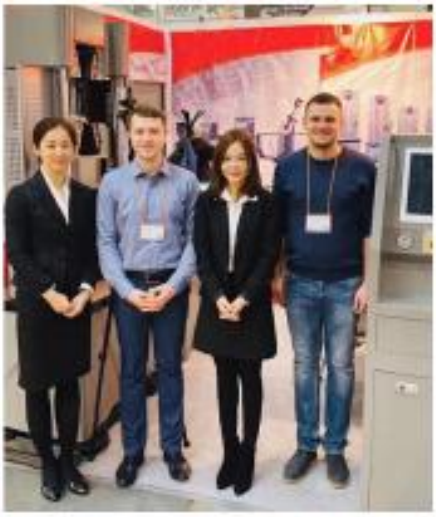

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