

# R series

Electronic creep tester

Product model: RDL/RWS Series

## 01 Overview

RDL series electronic creep durability testing machine is jointly developed by SINOTEST and GERMANY DOLI. The control system adopts EDC digital controller customized and developed by DOLI specially for SINOTEST creep testing machine. The software system adopts CreepTest software with exclusive right of use and Creep Test Expert v2.0 software independently developed by SINOTEST, which has the characteristics of mature and stable technology and reliable long-term test. The measurement and control part of RWS series electronic creep durability testing machine adopts TMC series digital controller independently developed by SINOTEST.

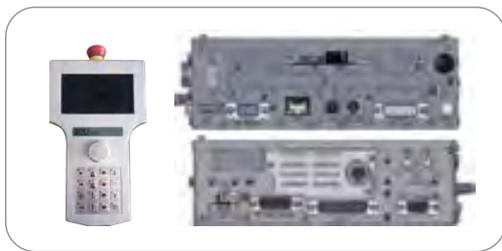
## 02 Advantages and characteristics

- Highly integrated host (temperature control system and controller integrated in the host) saves space, which has intuitive display and convenient operation.
- Electronic creep tester can realize multiple hosts placing side by side without clearance, saving the space occupied by the host.
- The software can test offline and recover all data (force, temperature, deformation, displacement).



### DoLI EDC Controller

High resolution of 24 bits (1 million yards), which can realize high precision measurement.  
 The test parameters can be set through the manual control box to complete the test independently.  
 It can communicate with the temperature controller and control it to ensure that the test process is not disturbed.  
 The temperature will be raised automatically according to the test, and the test will be carried out automatically when the set ambient temperature is reached.  
 It can automatically calibrate the load measurement system to prevent its temperature drift and ensure the measurement and control accuracy.  
 It can automatically identify different inserted sensors.



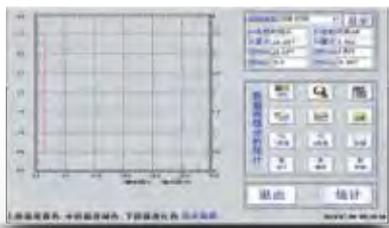
EDC controller and manual control box

### TMC controller

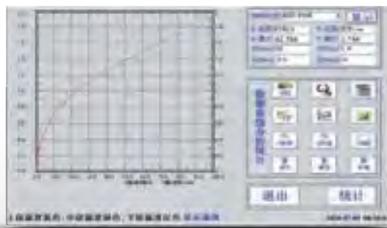
High resolution of 19 bits (500000 yards), which can realize high precision measurement.  
 The temperature drift of analog signal sampling is small.  
 The external independent screen display manual control box can independently complete basic test functions without computer.  
 Automatic identification plug technology.  
 Verification of 10000 hour creep rupture test.  
 The maximum transmission rate is 5000Hz.  
 Four measuring channels of strain sensor (load cell extensometer) can be configured.  
 Four AB signal measurement channels (encoder, grating ruler) can be configured.



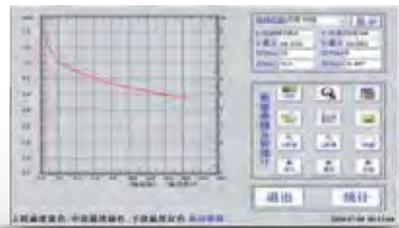
TMC controller and touch manual control box



Endurance curve



Creep curve



Relaxation curve

## 03 RDL series electronic permanent creep tester technical parameter table

Model	RDL-10	RDL-30	RDL-50	RDL-100	RDL-200	RDL-500
Max Capacity	10kN	30kN	50kN	100kN	200kN	500kN
Force Error	±0.5%				±1%	
Force Range	1%-100%FS					
Force Control	0.5%					
Host Coaxiality	≤8%					
Pull Rod Stroke	200mm					
Overall Dimension	2300*710*550			2300*730*550	3200*950*740	
Host Weight	500kg			600kg	1200kg	
Host power	220V、500W			220V、1KW	380V、2KW	380V、3KW
Atmospheric furnace power	1.5mm furnace 4kw (5mm furnace 5kW)					

# R series

*Slow tensile stress corrosion tester*

**Product model: RDL-F Series**

## 01 Overview

RDL-F series slow tensile (pre-crack) stress corrosion testing machine

It is mainly used to detect and study the mechanical performance test of metal materials under the dual effects of extremely slow tensile stress and corrosive medium environment. It can also be used to simulate the corrosion resistance of parts under constant tensile stresses in a corrosive environment, conduct a constant load pre-crack stress corrosion test, and detect and study the destructive performance of metal materials under the dual effects of constant tensile stress and corrosive medium environment. The accelerated stress corrosion susceptibility accelerated test of ductile materials is carried out by applying dynamic strain to the sample, which solves the problem that the stress corrosion cracking cannot be stimulated even if the test period is fully extended under constant load and constant deformation conditions.

## 03 Advantages and characteristics

Various combinations can be designed to meet various requirements such as different temperatures, pressures, corrosive media, and different corrosive media circulation rates.

It can realize the crack growth measurement under the corrosive medium environment.

It can be equipped with heating, temperature maintenance and automatic liquid supplement device.

Corrosion medium: NaCl, methanol, N<sub>2</sub>O<sub>4</sub>, NH<sub>3</sub>, H<sub>2</sub>S, NaOH, NaNO<sub>3</sub> and other aqueous solutions.

Corrosion-resistant material: 316 stainless steel for fixtures and organic glass for corrosion tanks.

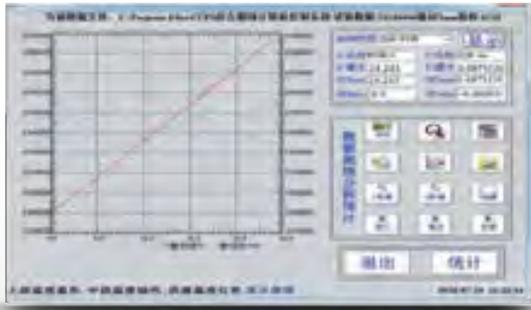
The number of damped samples can be expanded according to requirements.

## 02 Standards and methods

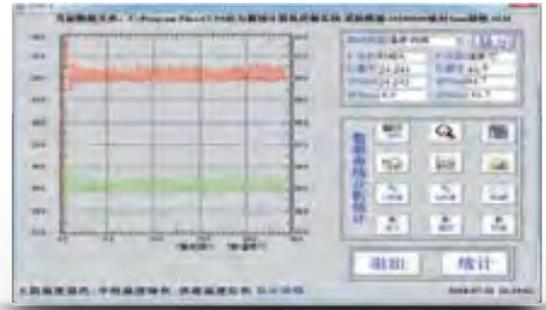
According to the different characteristics of materials or products, we provide a complete set of solutions for stress rupture and creep tests. Fully meet the GB, ISO, ASTM, en, JIS and other standards

Corrosion Stress Corrosion Test of Metals and Alloys





Stress corrosion- displacement



Stress corrosion-temperature

**04 RDL-F slow tensile series stress corrosion tester technical parameter table**

Model	RDL-F30	RDL-F50	RDL-F100
Max test force	30kN	50kN	100kN
Force range	1%-100%FS		
Force Accuracy	Indicated value $\pm 0.5\%$		
Force resolution	0.5%		
Deformation range	0-10mm/0-30mm		
Deformation deviation	$\pm 0.002\text{mm}$		
Coaxiality	$\leq 8\%$		
Pull-down rod stroke	200mm		
Slow stretching speed range	0.000001-0.0001mm/s (Can be designed as requirements)		
Stretching speed deviation	$\pm 1\%$		
Corrosion environment tank volume	Not less than 400ml (Can be designed as requirements)		
Temperature range	Room temperature+10°C-60°C (Can be designed as requirements)		
Fluctuation	$\pm 2\text{°C}$		
Main appearance(mm)	2300*710*550 (50kN)	2300*730*550 (100kN)	
Overall power	Host 220V $\leq 500\text{W}$ (50kN), 220V $\leq 1\text{kW}$ (100kN), Constant temperature circulation device $\leq 2\text{KW}$		

# Typical

## Application introduction



### Multi-head electronic relaxation creep testing machine

Product model: ZRDL-D Series

#### Main uses

The multi-head electronic creep endurance testing machine is mainly used for the compression creep and relaxation tests of non-metallic materials at a certain temperature.

#### Advantages and Characteristics

Three independent loading systems can be used for different tests at the same time.

With the corresponding accessories and software, creep test, relaxation test, low cycle fatigue test and creep fatigue test can be carried out.

Continuous working time: more than 500 hours.



### Biaxial tensile creep testing machine

Product model: ZRDL-T Series

#### Main uses

It is mainly used to test the persistent creep test of glued materials under the condition of simultaneous force in the horizontal and vertical directions.



### Bending creep testing machine

Product model: ZRDL-W Series

#### Main uses

It is mainly used for bending creep test of FRP and related materials under temperature environment. According to GB / T1456 Test Methods for Bending Performance of Sandwich Structure, the bending stiffness and shear stiffness of FRP can be calculated by three-point bending test of extended beam.



### Compression creep testing machine

Product model: ZRDL-Y Series

#### Main uses

It is used for compression creep test of materials in high temperature environment.

Test Methods for Compression Creep of Rigid Foam



### Small punch testing machine

Product model: ZRDL-CK Series

#### Main uses

It is used to test the creep properties of micro sheet specimens at high temperature. It is a new method to obtain the creep properties of in-service components.



### Rubber creep testing machine

Product model: ZRDL-Y Series

#### Main uses

It is mainly used for tensile compression creep rupture test of rubber materials at high and low temperature. It meets the standard of GB / T1685 Determination of Compression Stress Relaxation of Vulcanized Rubber or Thermoplastic Rubber at Room Temperature and High Temperature.



### Corrosion testing machine

Product model: ZRDL-GF Series

Seawater corrosion creep endurance testing machine

High temperature corrosion testing machine

High temperature salt spray corrosion testing machine

C-ring stress corrosion testing machine

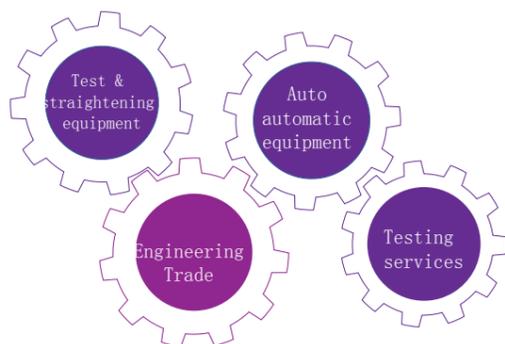
# COMPANY PROFILE

Sinotest Equipment Co., Ltd. (short name: SINOTEST) was founded in 1959 (original name: Changchun Research Institute for Testing Machines of the Ministry of Machine Building Industry; former name: Changchun Research Institute for Mechanical Science Co., Ltd.). SINOTEST is a subsidiary of SINOMACH GROUP, one of the world's top 500 large state-owned enterprises. It is the support unit of the national testing machine quality supervision & inspection center and the national testing machine standardization committee. The national testing machine industry association and the association Secretariat are all located in SINOTEST. SINOTEST is known as the "cradle of China's testing machine technology". It is a high-tech enterprise with perfect innovation ability in China's test equipment industry.

SINOTEST is a state-level scientific and technological innovation enterprise mainly engaged in R & D and manufacturing of "test equipment". At present, the company has 120 patents, including 61 invention patents, 30 software copyrights and 29 utility models. The company presided over the formulation of 30 national standards and 42 industrial standards. SINOTEST has undertaken 4 national major scientific instrument projects. 3 of them have been accepted by the state. Currently, the project of "high temperature and high frequency in situ testing technology and application" is passing the acceptance of scientific research achievements. SINOTEST has kept continuously innovating. It has a number of international cutting-edge core technologies in the test equipment industry, and has solved a number of national "neck sticking" technical problems, including hydrostatic support technology, measurement and sensing technology, etc. A batch of key technology has been in an advanced position in the world.

SINOTEST is a professional engineering test and solution provider in China. It has advanced product innovation ability and special product R & D and manufacturing system in the industry. It is a high-end solution provider in the whole industry chain covering the development of unit components, manufacturing of finalized products, customized special products and overall construction of laboratory.

Now, SINOTEST has formed an industrial layout of one center and two bases, with R & D center located in Beijing and manufacturing bases located in Changchun and Wuxi. SINOTEST focuses on the field of high-end equipment manufacturing, leads the development of China's test equipment technology and industry, and makes unremitting efforts for the rise of national industry!



## Core value :

Integrity, innovation, passion, joint efforts and win-win cooperation

With 60 years of material testing experience, SINOTEST provides professional material testing solutions for users with rich technology accumulation and strong innovation ability.



- Enterprise qualification
- High tech Enterprise
- Innovative technology enterprise
- ISO9001 quality management system
- German Rhine certification
- EU CE certification
- Safety production standardization certification
- Intellectual property management system certification
- Industry qualification
- National testing machine quality supervision & Inspection Center
- National Technical Committee of testing machine standardization
- National straightening machine standardization group
- Secretariat of National Testing Machine Industry Association
- Industry journal "Engineering and testing"
- R & D and testing institutions
- Academician workstation, postdoctoral research workstation
- Engineering Research Center of material testing instrument in mechanical industry
- Research Center of straightening equipment in mechanical industry

From standardized test equipment to customized test system and series test solutions, SINOTEST is working hard to meet the special needs of users, to build and establish a domestic first-class and internationally influential high-end brand.

## 02 Standards and methods

According to the different characteristics of materials or products, we provide a complete set of solutions for stress rupture and creep tests.

Fully meet the GB, ISO, ASTM, EN, JIS and other standards

JIG276-2009 High-Temperature Creep and Stress-Rupture Testing Machines

GB / T2039-2012 Metallic materials - Uniaxial creep testing method in tension

ASTM E139-11 Standard Test methods for Conducting Creep, Creep-Rupture and Stress-Rupture Tests of Metallic Materials

GB / T10120-2013 Metallic materials - Tensile stress relaxation - Method of test

ASTM E328-2013 Standard Test Methods for Stress Relaxation for Materials and Structures  
 HB5151-1996 Test Method for High temperature tensile creep of metals

HB5150-1996 Test Method for High temperature tensile rupture of metals

ASTM E2714-2013 Standard Test Method for Creep-Fatigue Testing

GB / T15248-2008 The test method for axial loading constant-amplitude low-cycle fatigue of metallic materials

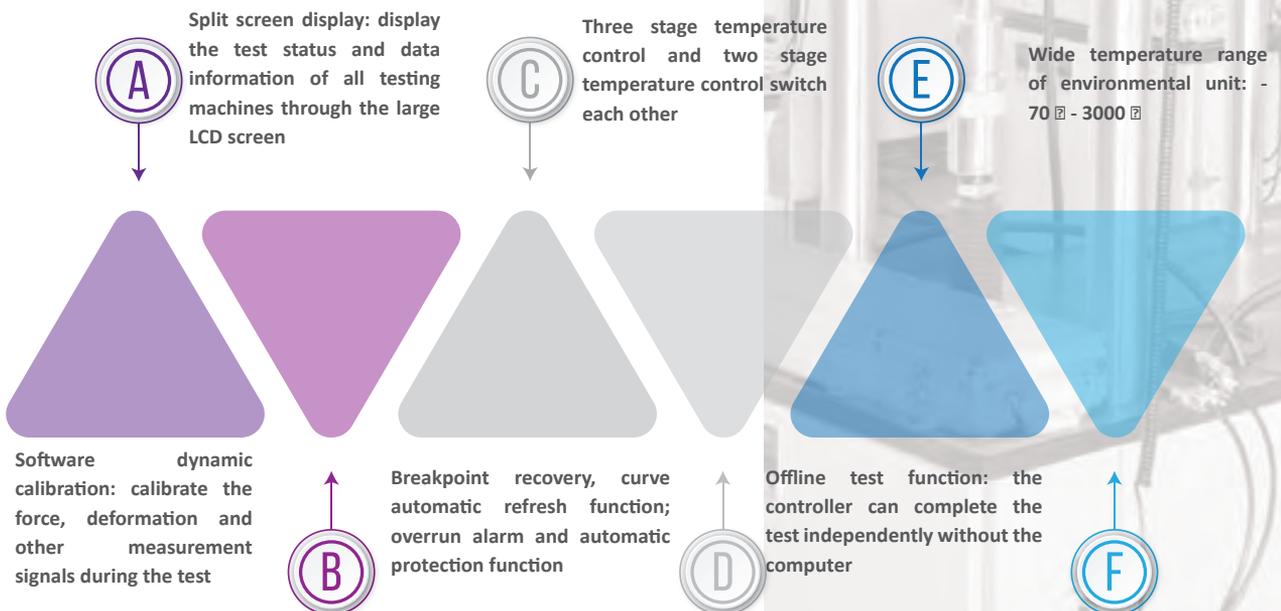


Large Screen Data Monitoring System



LCD Large Screen Data Display

## 03 Advantages and characteristics



# MATERIAL MECHANICS TEST EQUIPMENT

*SINOTEST is recognized as the most powerful test equipment technology leading brand in China. With excellent product quality, professional technical support and perfect after-sales service, it aims to provide users with perfect test solutions.*

## **Application area**

*The technical capability of SINOTEST covers the whole system of material mechanics test, and can provide you with comprehensive test solutions to meet the test requirements of almost all industries, especially in the aspects of micromechanics, large-scale material structure, mechanical property test under high temperature and complex environment in scientific research level, as well as personalized special demand test equipment.*

*Application fields: metals, plastics, rubber, textiles, biomedical materials, composite materials, electronic industry, parts processing, automobile manufacturing, aerospace, etc.*

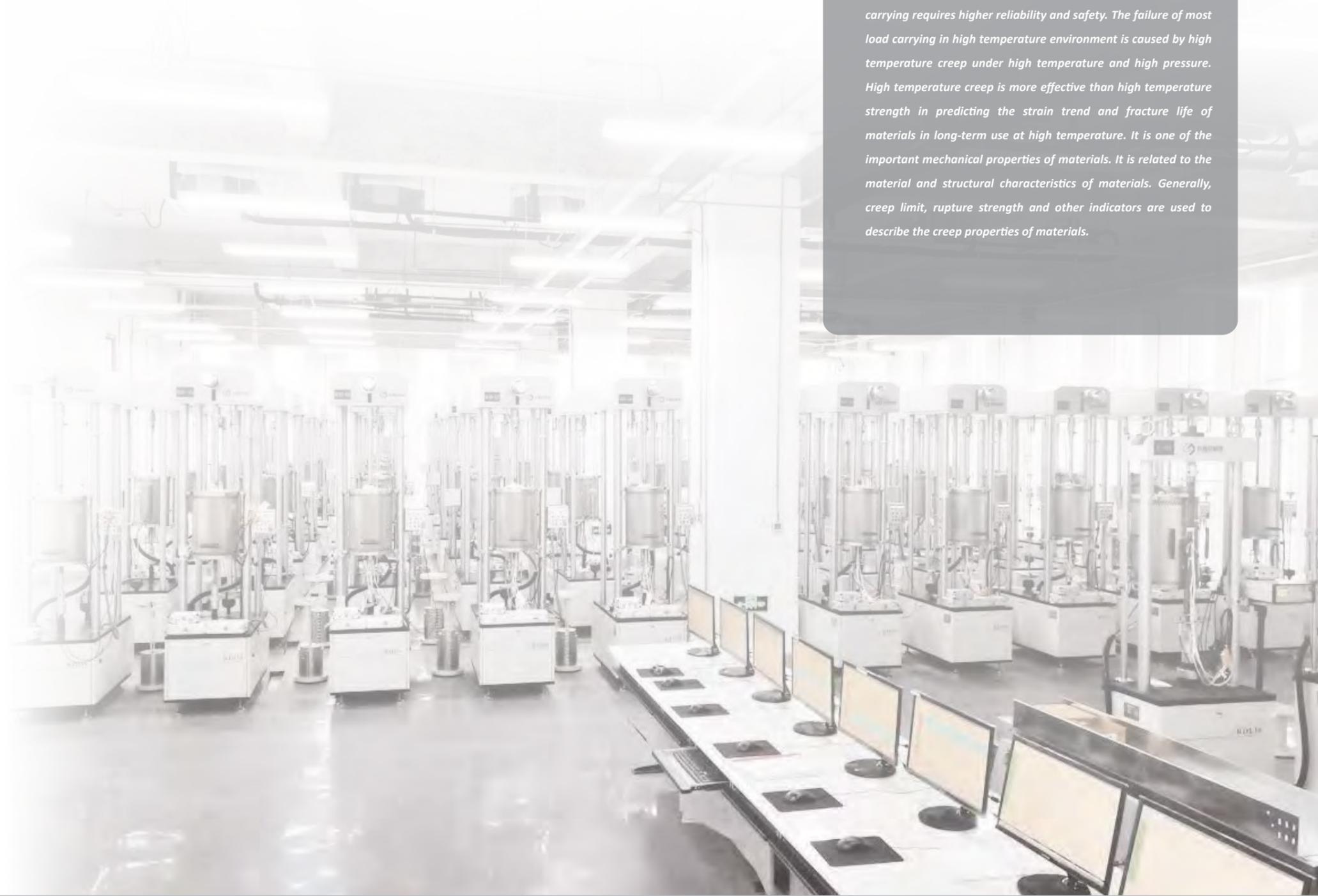
*Flexible modular test procedure*

*Standard modular test accessories*

*Intelligent automatic test software*

*Accurate digitized measurement and analysis system*

*At present, due to high temperature and corrosion in petrochemical, energy, metallurgy and other industries, load carrying requires higher reliability and safety. The failure of most load carrying in high temperature environment is caused by high temperature creep under high temperature and high pressure. High temperature creep is more effective than high temperature strength in predicting the strain trend and fracture life of materials in long-term use at high temperature. It is one of the important mechanical properties of materials. It is related to the material and structural characteristics of materials. Generally, creep limit, rupture strength and other indicators are used to describe the creep properties of materials.*



# PARTNER

## 合作伙伴

High temperature creep endurance test equipment is generally composed of several machines to form a system, including host, control system and data processing system, and can also be composed of different types of machines. SINOTEST has always been focusing on the continuous innovation of creep equipment technology. The new generation of creep testing machine is based on the years technology accumulation of creep equipment. Coupled with advanced design concept, we seek breakthroughs in mechanical design, electrical control, software manipulation, ergonomics and other aspects. On the premise of retaining the original stiffness of the equipment, the new generation of creep testing machine improves the structure and operation of the host in order to provide more perfect new experience for customers. We have carried out all-round technical upgrading in the aspects of control mode and cluster control. Over the years, SINOTEST has provided thousands of high temperature creep endurance test equipment for hundreds of customers, serving the key industries and fields of the lifeline of the national economy.

### 重点战略合作客户

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宝山钢铁股份有限公司	170
天津重型装备工程研究有限公司	145
中科院沈阳金属所	138
东方电气集团东方汽轮机有限公司	111
北京科技大学(国家长期材料服役中心)	112
合肥通用机械研究院	94
中国钢研科技集团 (钢铁研究总院、钢研纳克检测技术有限公司、 钢研高纳科技股份有限公司)	91
长春中机检测公司	80
哈尔滨汽轮机有限公司	73
中国一重集团公司	55
西安热工研究院有限公司	53
东方电气集团东方锅炉股份有限公司	52
哈尔滨锅炉有限责任公司	47
抚顺特钢	40
上海汽轮机有限公司	39
中国航空标准件有限责任公司	33
中国二重集团	32
湖南航天天麓新材料检测公司	30
哈尔滨东安发动机	30
浙江海岩国检	30
山东电力研究院	30

### 高校

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- 大连理工大学
- 东北大学
- 北京科技大学
- 北京航空航天大学
- 北京工业大学
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- 哈电集团哈尔滨汽轮机厂有限责任公司
- 中船重工龙江广翰燃气轮机有限公司
- 山东伏雷克电气有限公司
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- 哈尔滨东安发动机有限公司
- 中国航发成都发动机(集团)有限公司
- 中国航发四川成发航空科技股份有限公司
- 中国航空工业标准件制造公司
- 首都航天机械公司
- 信阳航天标准件厂
- 成都成发泰达航空科技有限公司
- 中航上大高温合金材料有限公司
- 无锡透平叶片有限公司

# R series creep durability test system

It can be used for all kinds of high temperature creep test from 30KN to 600kN

## 01 Overview



R series CREEP DURABILITY TEST SYSTEM is mainly used for tensile, compression, durability, creep and relaxation tests of metal and nonmetal materials, as well as low cycle fatigue, creep fatigue and stress corrosion tests. It includes electronic high temperature creep rupture testing machine, mechanical high temperature creep rupture testing machine, creep fatigue testing machine, slow tensile stress corrosion testing machine, etc.



专业工程试验与测试解决方案提供商

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**中机试验装备股份有限公司 Sinotest Equipment Co.,Ltd.**

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