

Aerospace & Defense



Company Profile

HiFluid, located in Ji'nan, China, national high-tech enterprise, science and technology-based SME. Since its establishment in 2019, HiFluid has been focusing on providing safe, stable, intelligent, and customized solutions for advanced ultra-high-pressure fluid applications such as hydrogen compression, high-pressure testing, high-pressure processing (HPP), solid-electrolyte battery production etc. Leveraging its core competencies in design, equipment, and quality assurance, the company is committed to helping customers minimize lifecycle operational costs through energy-saving technologies and extended maintenance intervals.

The company has achieved certifications for ISO 9001 Quality Management System, ISO 14001 Environmental Management System, and ISO 45001 Occupational Health and Safety Management System. We strive to differentiate ourselves from traditional suppliers by embodying the role of consultants and solution providers with our expertise and craftsmanship.

All greatness comes from a brave beginning.

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1

Integrated Customization



- As a specialist in customized and integrated solutions for the ultra-high-pressure fluid industry, HiFluid provides one-stop services covering design, manufacturing, factory testing, on-site installation, commissioning, and personnel training. This integrated approach effectively addresses system integration challenges.
- All high-pressure core components are independently developed by HiFluid, ensuring optimal matching between components and overall system performance, avoiding the “weakest-link effect” caused by mixing equipment from different brands, and ultimately saving customers time and engineering costs.

2

Safety and Reliability



- Safety and reliability form the baseline of effective risk control. From the earliest design stage, HiFluid incorporates multiple safety features such as pressure relief devices, overload protection, and safety interlocks, establishing multi-layered protection to minimize accident risks and safeguard personnel and equipment assets.
- All products fully comply with or exceed the most stringent international standards and certifications, including API, ISO, and CE, ensuring that every stage of design, manufacturing, and testing is governed by established standards with controlled risks.
- Prior to delivery, each product undergoes pressure proof testing and performance testing at levels well above its rated working pressure, ensuring reliable and safe operation and eliminating potential issues during on-site commissioning and operation.

3

Intelligent Monitoring



- HiFluid’s independently developed intelligent control platform serves as the core of the entire equipment control system, enabling one-touch start and stop, automated process control, and adaptive parameter adjustment. This significantly reduces reliance on manual intervention while ensuring standardized and stable production and testing conditions.
- The control system features advanced diagnostic and predictive maintenance capabilities, allowing potential faults to be anticipated through real-time data analysis, transforming passive maintenance into proactive prevention and becoming a key enabler of continuous operation and elimination of unplanned downtime.
- Real-time equipment data is seamlessly integrated with management platforms, providing data support for higher-level systems and enabling digitalized and transparent data management to support optimized decision-making.

4

Adaptability to Complex Operating Conditions



- Different booster ratios and inlet-pressure ranges provide a wide output range from very low to high pressure for aircraft tire inflation, accumulator charging, wind-tunnel testing, and other applications.
- The hydraulically driven design fully isolates hydraulic fluid from the gas, enabling safe, oil-free boosting of oxygen, nitrogen, helium, hydrogen, and other gases for high-purity aerospace service.

Application Scope

The gas booster system covers a wide pressure range and is compatible with multiple working media. It supports gas filling, gas recovery, leak testing, and other aerospace processes.



Technical Parameters

Working Medium:	Nitrogen, air, helium, and other specified gases	Discharge Pressure:	0-20000psi
Inlet Pressure:	100-2000psi	Drive Pressure:	14.5-145psi
Control Accuracy:	±1%FS	Configuration:	Skid-mounted, frame-mounted, or partially enclosed

Functional Features

High Efficiency Energy Saving

- Pneumatic, hydraulic, and electric boosting solutions reduce energy consumption and improve efficiency.
- Flexible booster-ratio combinations, stepless pressure regulation, and a wide output-pressure range.
- The system automatically maintains and stabilizes pressure after reaching the target, with no medium consumption during the hold period.

Safe Explosion-Protected

- Oil-free design with self-lubricating seals prevents medium contamination.
- An integrated cooling system effectively reduces outlet-medium temperature.
- TÜV Rheinland explosion-protection certified and compliant with the EU ATEX Directive.

Application Scope

Widely used for maintenance support of aerospace oxygen-supply systems.



Technical Parameters

Working Medium: Oxygen	Discharge Pressure: 0-5000psi
Inlet Pressure: 100-2000psi	Drive Pressure: 14.5-145psi
Control Accuracy: $\pm 1\%$ FS	Configuration: Skid-mounted, frame-mounted, or partially enclosed

Functional Features

Safety

- Designed specifically for oxygen service; all components undergo oil-free cleaning and degreasing.
- Flow control effectively manages oxygen outlet temperature.
- TÜV Rheinland explosion-protection certified and compliant with the EU ATEX Directive.

Reliability

- A multi-stage filtration system effectively controls particulate contamination.
- Automatic boosting with shutdown at the set pressure and overpressure protection.
- Oxygen-wetted components use alloy materials selected for the applicable pressure.

Application Scope

Designed for mobile nitrogen service, providing high-purity dry nitrogen for charging, purging, and leak testing from low to high pressure, including aircraft landing-gear shock struts, door cylinders, hydraulic accumulators, and tires.



Technical Parameters

Working Medium: Nitrogen	Discharge Pressure: 0-6000psi
Inlet Pressure: 100-2000psi	Drive Pressure: 14.5-145psi
Control Accuracy: $\pm 1\%$ FS	Mobility: Four-wheel towable

Functional Features

Convenience

- The four-wheel towable design enables easy movement on aprons, in the field, in hangars, and throughout maintenance areas.
- No electrical power is required; compressed air or nitrogen is used as the drive source.
- Automatic cylinder raising and tilting simplifies cylinder replacement and reduces manual handling.

Safety

- Oil-free design with self-lubricating seals prevents medium contamination.
- Automatic boosting with shutdown at the target pressure and overpressure protection.
- TÜV Rheinland explosion-protection certified and compliant with the EU ATEX Directive.

Application Scope

Designed for mobile oxygen service, providing high-purity dry oxygen for charging and leak testing from low to high pressure, including onboard oxygen-cylinder filling and oxygen-system leak testing.



Technical Parameters

Working Medium: Oxygen	Discharge Pressure: 0-5000psi
Inlet Pressure: 100-2000psi	Drive Pressure: 14.5-145psi
Control Accuracy: $\pm 1\%$ FS	Mobility: Four-wheel towable

Functional Features

Safety

- Designed specifically for oxygen service; all components undergo oil-free cleaning and degreasing.
- A multi-stage filtration system effectively controls particulate contamination.
- Automatic boosting with shutdown at the target pressure and overpressure protection.

Convenience

- The four-wheel towable design enables easy movement on aprons, in the field, in hangars, and throughout maintenance areas.
- No electrical power is required; compressed air or nitrogen is used as the drive source, with safety grounding.
- Automatic cylinder raising and tilting simplifies cylinder replacement and reduces manual handling.

Filling Systems—Fire-Extinguishing Agent Transfer and Recovery System HIFLUID

Application Scope

The system integrates gas boosting, medium transfer, and pressure measurement and control for recovery, purification, testing, transfer, and filling of extinguishing agents. It supports aerospace equipment, onboard fire-suppression systems, fire-cylinder maintenance, and agent handling while enabling reuse and reduced emissions.



Technical Parameters

Working Medium:	Halon	Working Pressure:	0-600psi
Inlet Pressure:	10-400psi	Drive Pressure:	14.5-145psi
Drive Type:	Pneumatic / electric	Configuration:	Skid-mounted, frame-mounted, or partially enclosed

Functional Features

Safety

- Pneumatic boosting eliminates electrical sparks for safe, explosion-protected operation.
- Primary wetted components use corrosion-resistant materials compatible with chemical agents.
- Pressure stabilization, filtration, and backflow prevention ensure a stable, reliable process, with pressure-relief protection, emergency shutdown, and safe venting.

Reliability

- Oil-free lubrication prevents medium contamination.
- Manual and automatic control provide simple, convenient operation.
- Compact, lightweight, mobile, economical, and durable design.

Application Scope

Pressure testing of aircraft valves, tubing, and actuation systems.



Technical Parameters

Test Medium:	Water, hydraulic fluid, or other specified media	Working Pressure:	0-60000psi
Drive Pressure:	14.5-145psi	Pressurization Rate:	Adjustable
Control Accuracy:	±1%FS	Control Mode:	Manual, PLC, or PC
Power Supply:	AC220V/50Hz		

Functional Features

Stable Efficient

- The system delivers stable pressure output for testing across different pressure ratings.
- Corrosion-resistant materials provide compatibility with water, hydraulic fluid, and other test media.
- Pressure regulation, stabilization, hold, and release functions can be configured for different test procedures.

Intelligent Accurate

- Manual, semi-automatic, and fully automatic control are available, with pressure-temperature interlocks and automatic alarms.
- Precise control is available for pressure, flow, pressurization rate, depressurization rate, and other parameters.
- The host computer automatically records and displays pressure curves in real time, monitors test pressure, and provides access to historical records.

Testing Systems—Aircraft Cylinder Hydrostatic Expansion Test System **HIFLUID**

Application Scope

Dedicated equipment for mandatory inspection of aviation cylinders, integrating high-pressure water boosting, pressure measurement and control, and volumetric-deformation acquisition for hydrostatic testing and permanent volumetric expansion measurement during periodic inspection, factory acceptance, and post-overhaul reinspection.



Technical Parameters

Test Medium:	Water	Working Pressure:	0-15000psi
Drive Pressure:	14.5-145psi	Pressure Accuracy:	± 0.5%FS
Measurement Accuracy:	0.01g/0.01mL	Control Mode:	Manual + PLC
Cylinder Capacity:	0.5-300L	Water Jacket Construction:	Stainless-steel pressure-rated water jacket

Functional Features

Safe Reliable

- Strict compliance with international water-medium testing standards provides inherently safer high-risk testing.
- Multiple intelligent safeguards include automatic overpressure alarm and unloading, electrical interlocks, and remote control to keep test risks within controlled limits.
- Optional equipment includes stainless-steel water jackets, electronic scales, cylinder handling machines, and dryers.

Intelligent Accurate

- A high-precision volumetric measurement system accurately detects elastic and permanent residual deformation of cylinders under high pressure.
- A fully automatic one-touch sequence covers water filling and venting, pressurization, pressure holding, depressurization, and data acquisition, greatly reducing operator error.
- Test data are automatically recorded and stored, and compliant electronic reports are generated. Tamper-resistant records support lifecycle traceability and certification audits.

Application Scope

The mobile hydraulic test cart integrates a hydraulic power source, precision pressure and flow measurement and control, and multiple outlets for ground testing, commissioning, and servicing of aircraft hydraulic systems and components in hangars, on aprons, and during field flight-test support.



Technical Parameters

Working Medium:	Aviation hydraulic fluid	Working Pressure:	≤ 3000psi
Output Flow:	≤ 230L/min	Tank Capacity:	≤ 230L
Instrument Accuracy:	± 0.5%FS	Mobility:	Four-wheel towable

Functional Features

Convenient Reliable

- A modular integrated design with towable or hand-pushed chassis supports apron transfer.
- Primary wetted components use corrosion-resistant materials compatible with aviation hydraulic fluid.
- Pressure stabilization, filtration, and backflow prevention ensure a stable, reliable process, with pressure-relief protection, emergency shutdown, and safe venting.

Intelligent Accurate

- High-precision pressure, flow, and temperature sensors enable real-time monitoring, timed pressure holding, and test-data recording.
- Wide pressure and flow adjustment ranges meet the hydraulic-system requirements of different aircraft types.
- Multiple outlets connect quickly to different aircraft hydraulic interfaces; the system records and displays pressure curves, monitors test pressure, and generates test reports.

Application Scope

The autofrettage system applies ultra-high pressure to cylindrical components to create localized plastic deformation and beneficial residual compressive stress at the bore. This offsets operating stress, suppresses crack growth, and greatly improves fatigue life in cyclically loaded high-pressure tubes, actuator cylinders, valves, and gun barrels.



Technical Parameters

Test Medium:	Dedicated autofrettage fluid	Working Pressure:	≤200000psi
Drive Pressure:	3600psi	Pressurization Rate:	Adjustable
Control Accuracy:	±1%FS	Control Mode:	PLC

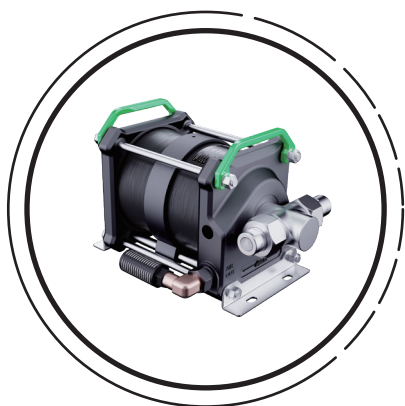
Functional Features

Safe Reliable

- The system provides stable pressure output for autofrettage at different pressure ratings.
- Intelligent high- and low-pressure monitoring, multiple pressure safeguards, pressure-relief protection, emergency shutdown, and safe venting.
- High structural strength and reliable guarding contain fragment impact and enable remote operation.

Intelligent Accurate

- High-precision pressure, flow, and temperature sensors enable real-time monitoring, timed pressure holding, and test-data recording.
- A wide pressure adjustment range with programmable, automatically controlled pressurization rate.
- Multiple outlets support multi-station autofrettage, with automatic recording, real-time pressure curves, and process-report generation.



The HiFluid HFLG Series air driven liquid pumps use compressed air as the driving source to pressurize liquid media to the required pressure. Designed for oil, water, and various special liquid media, the pumps can deliver a maximum output pressure of up to 87,000 psi. They play a critical role in numerous applications, particularly in explosion-proof environments with extremely high safety requirements.

Key Features



Oil-Free Compression

No lubricating oil required, eliminating media contamination and maintaining fluid purity.



Intrinsic Safety

No risk of electrical sparks, suitable for flammable and explosive hydrogen environments, compliant with ATEX explosion-proof certification.



Frequent Start-Stop Capability

Unlimited continuous start-stop cycles, especially suitable for intermittent operation.



Automatic Pressure Balancing

Automatically stops upon reaching the target pressure, resulting in zero energy consumption and significant energy savings.



Wide Pressure Range Coverage

Flexible pressure ratio combinations and modular design provide a broad output pressure range to meet both low- and high-pressure requirements.

Typical Applications

● Valve Pressure Calibration and Verification

Provides stable hydraulic power for component calibration and verification to ensure accuracy.

● Pressure and Burst Testing

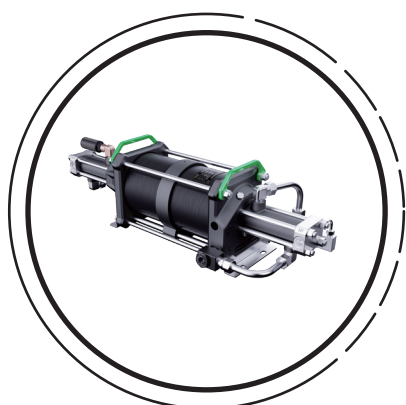
Provides high pressure for proof-pressure and burst testing of valves and pipelines.

● Hydraulic Control

Provides a power source for valves and actuators in hazardous areas to support remote control.

● Cleaning and Maintenance

Drives pipeline pigs through long pipelines to remove debris and accumulated liquid and maintain transfer efficiency.



The HiFluid HFG Series air driven gas boosters use compressed air as the driving source to boost process gases to the required pressure. They are widely applied to oil-free compression of various industrial gases such as nitrogen, hydrogen, argon, helium, and methane, with working pressures up to 22,000psi.

Key Features



Oil-Free Compression

No lubricating oil required, eliminating media contamination and maintaining fluid purity.



Frequent Start-Stop Capability

Unlimited continuous start-stop cycles, especially suitable for intermittent operation.



Simple Structure

No electrical power connection required, low maintenance cost, and nearly maintenance-free.



Intrinsic Safety

No risk of electrical sparks, suitable for flammable and explosive hydrogen environments, compliant with ATEX explosion-proof certification.



Automatic Pressure Balancing

Automatically stops upon reaching the target pressure, resulting in zero energy consumption and significant energy savings.



Wide Pressure Range Coverage

Flexible pressure ratio combinations and modular design provide a broad output pressure range to meet both low- and high-pressure requirements.

Typical Applications

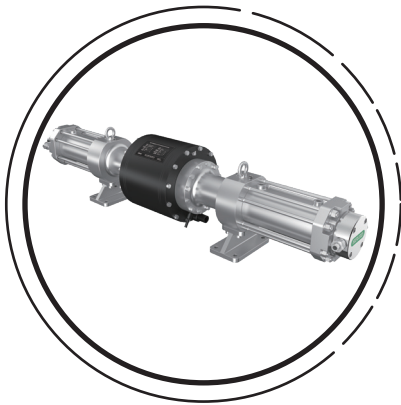
Leak Testing

Provides high-pressure gas for leak and proof-pressure testing of test rigs and pipelines.

Pneumatic Control and Emergency Supply

Provides high-pressure control gas for pneumatic valves and actuators in hazardous areas to ensure stable operation.

High-Pressure Components—Electrically Driven Gas Boosters **HIFLUID**



The HiFluid HFEG Series electrically driven gas boosters are designed for oil-free gas compression. Powered by servo-motor precision control, they offer high pressure regulation accuracy, fast response, low energy consumption, and advanced intelligence, making them ideal for high-pressure gas applications with stringent pressure control requirements.

Key Features



Oil-Free Compression

No lubricating oil required, eliminating media contamination and maintaining fluid purity.



Simple Connection

Requires only electrical power and cooling liquid connections to operate.



Simple Structure

Unlimited continuous start-stop cycles, suitable for intermittent operations.



Compact and Efficient

Delivers high flow and high pressure output within a smaller footprint.



Safe and Quiet Operation

Integrated with multiple sensors for self-monitoring, high system integration, communication compatibility, and operating noise below 80dB.



Wide Pressure Range Coverage

Fewer failure points and reduced maintenance requirements compared to hydraulic or diaphragm technologies.

Typical Applications

Leak Testing

Provides high-pressure gas for leak and proof-pressure testing of test rigs and pipelines.

High-Precision Equipment Testing

Provides precisely adjustable high-pressure gas for leak and proof-pressure testing, with real-time output control for equipment of different specifications.

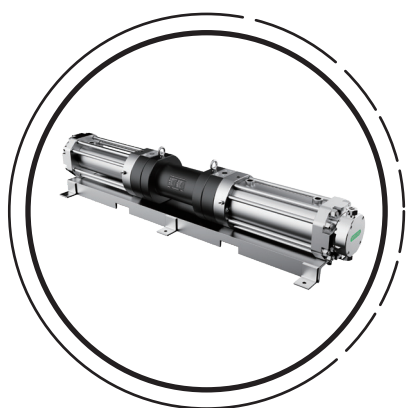
Pneumatic Control and Emergency Supply

Provides high-pressure control gas for pneumatic valves and actuators in hazardous areas to ensure stable operation.

Precision Gas Injection

Precisely controls gas pressure and flow to prevent overpressure damage to the test article.

High-Pressure Components—Hydraulically Driven Gas Boosters **HI FLUID**



The HiFluid HFHG1 Series hydraulically driven gas boosters use low-pressure hydraulic oil as the driving source to boost process gases to the required pressure. The standard design supports a maximum working pressure of 17,000 psi, with special designs available for higher pressure requirements. These boosters are highly efficient for ultra-high-pressure and large-flow gas applications.

Key Features



Oil-Free Compression

No lubricating oil required, eliminating media contamination and maintaining fluid purity.



Intrinsic Safety

No risk of electrical sparks, suitable for flammable and explosive hydrogen environments, compliant with ATEX explosion-proof certification.



Frequent Start-Stop Capability

Unlimited continuous start-stop cycles, especially suitable for intermittent operation.



Automatic Pressure Balancing

Automatically stops upon reaching the target pressure, resulting in zero energy consumption and significant energy savings.



Wide Pressure Range Coverage

Flexible pressure ratio combinations and modular design provide a broad output pressure range to meet both low- and high-pressure requirements.

Typical Applications

Leak Testing

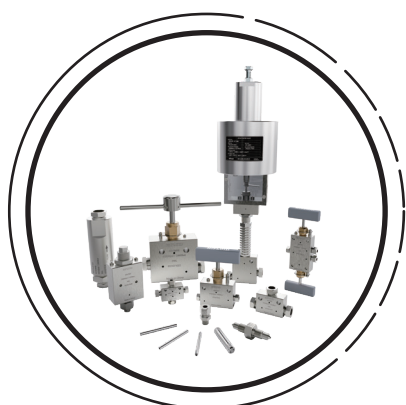
Provides high-pressure gas for leak and proof-pressure testing of large equipment and pipelines.

Gas Recovery

Recovers process gas after testing large equipment and boosts it for storage, minimizing waste.

Wind-Tunnel Testing

Provides ultra-high-pressure gas for high-speed wind-tunnel testing.



Ultra-high-pressure tubing and valves are critical components for high-pressure energy transmission, flow control, and safety protection. HiFluid provides ultra-high-pressure tubing and valve solutions across multiple pressure ratings, widely applied in oil & gas, energy and chemical processing, high-pressure testing, and processing applications. Featuring high strength, superior sealing, corrosion resistance, and hydrogen embrittlement resistance, these products support working pressures up to 150,000psi and ensure long-term stable operation under extreme conditions.

Key Features



High hydrogen embrittlement & sulfur resistance

Wetted materials exhibit excellent resistance to hydrogen embrittlement and sour service environments.



Intrinsic Safety

No risk of electrical sparks, suitable for flammable and explosive hydrogen environments, compliant with ATEX explosion-proof certification.



Outstanding Sealing Performance

Innovative metal-polymer composite sealing ensures long-term zero leakage even under high-frequency pressure shocks and thermal cycling.



Superior Durability

Proven through millions of pressure cycle fatigue tests, significantly reducing downtime and lifecycle costs.



Customized Services

End-to-end customization from technical consultation and solution design to installation guidance.

Typical Applications

Test Equipment

Provides matching valves, tubing, and fittings for high-pressure test equipment and test-system control.

Storage & Transportation

High-pressure valves for cylinder banks and storage vessels enable high-pressure medium storage and filling control.

Autofrettage System

Provides ultra-high-pressure valves, fittings and tubing for autofrettage systems.

