EVERYTHING YOU NEED TO KNOW ABOUT SAFE HOSE TESTING

YOUR HIGH PRESSURE EXPERT - RESATO

Resato

Content

Introduction

The safety of your team and your customers is one of your highest priorities. Working with high pressure creates risks. Managing those risks is key to ensuring the safety that you value for your business.

You know your business, and you understand how its high-pressure components are vital to meeting your customer expectations. We are experts in the high-pressure field with 25 years of experience and can help you make a quality business decision. We have the people, passion, knowledge, experience, and equipment to ensure the best outcome for you. The goal of this eBook is to share some of our knowledge about the risks and benefits of proactive hose testing with you. We want to be a part of keeping your people safe and keeping your business running.

TIP

IF ANY QUESTIONS ARISE WHEN READING, PLEASE DO NOT HESITATE TO CONTACT OUR EXPERTS. OUR HIGH-PRESSURE EXPERTS ARE MORE THAN HAPPY TO ANSWER ALL YOUR QUESTIONS.

Hose testing risks

Hazardous situations place you, your team and your business at risk. Resato takes some precautions in consideration in order to control these unforeseen risks.

POTENTIAL HAZARDS THAT COULD OCCUR:

- HOSE BURST
- A WHIPPING HOSE
- SMALL PIECES OF HOSE AND FITTING BLOWN OUT BY A RUPTURE
- GAS OR LIQUID EXPELLED FROM A LEAK
- HYDRAULIC INJECTION INJURY

Resato hose testing benches are designed in such a manner that they can endure an unforeseen risk. The type of risk that could occur depends on the type of test. However, Resato designed its machines in such a manner that the operator is safe even in the worst-case scenario.

- **The test bench cover is made from thick polycarbonate.** Polycarbonate has a high impact resistance and has the transparency of glass. Polycarbonate can endure a smash from a whipping hose. The transparency of polycarbonate enables visual inspection and a safe view during testing.
- **The hose test bench boxes are made of stainless steel**, stainless steel is a strong material. It maintains its strong characteristic because stainless steel is not sensitive for rust and corrosion.
- **To ensure safety during pressure testing**, the hose test benches allows pressure build-up only with a closed cover.
- **Unwanted opening of the cover is not possible** because of the cover's locking mechanism. This to enhance safety and avoid hazardous situations.
- **Visual de-air indication ensures that a hose is properly vented**, and no gas energy is stored inside the hose.

OPTIONAL HOSE TESTING SAFETY FEATURES:

SAFETY GRIPS

will reduce the first impact in case a connection blows out under pressure. The zinc plated safety grips are mounted on each hose-end and have to be firmly connected to the unit, object or construction part.

HOSE GUARD

The outside of the high-pressure hose can be protected against damage by means of a hose guard.

BURST BOX

This is an optional feature for clients who aim to test a hose to its maximum. This burst box can endure multiple hose bursts.

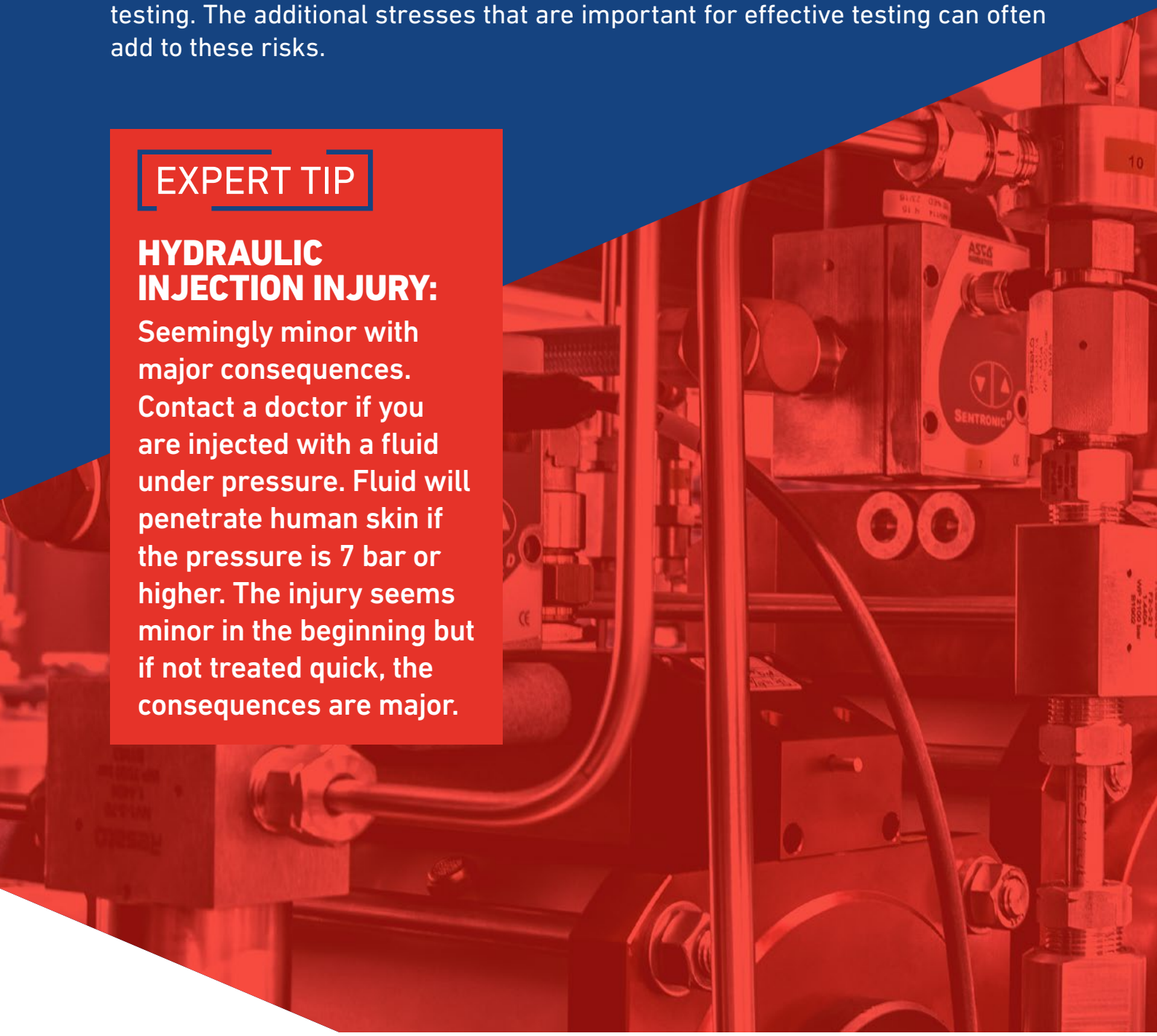
Managing the risks of high-pressure hose testing

Testing your high-pressure hoses is a vital part of your safety protocols. Have you considered the safety requirements of the testing process itself? The risks associated with the normal function of the tested components are present in testing. The additional stresses that are important for effective testing can often add to these risks.

EXPERT TIP

HYDRAULIC INJECTION INJURY:

Seemingly minor with major consequences. Contact a doctor if you are injected with a fluid under pressure. Fluid will penetrate human skin if the pressure is 7 bar or higher. The injury seems minor in the beginning but if not treated quick, the consequences are major.



IMPORTANT CONSIDERATIONS REGARDING RISK MANAGEMENT:

RESPECT PRESSURE.

Dealing with high-pressure is serious business. High-pressure demands a high-level of safety precautions. A hose could fail abruptly and unexpectedly for any number of reasons. Therefore, an accidental disconnection or hose fail could end catastrophic for you and your personnel. A catastrophic accident can happen in the blink of an eye, therefore pressure should always be respected.

DO NOT MIX QUICK-CONNECT COUPLINGS.

If you mix quick-connecters from different manufacturers you may end up damaging the inside of the hose. Even if it seems that the connection fits, this does not guarantee that the connector works optimal and safe. An accidental disconnection can be the worst-case scenario. These safety hazards open the door to potential risks in hose testing. Resato strongly advises that you do not use mix quick-connect couplings from other manufacturers.

TRAINING OF ALL STAFF ON RISKS AND RISK MANAGEMENT.

All customers have access to Resato's extensive Customer Knowledge Centre. Our technical instruction and e-learning packages allow customers to add industry best practice to their own experience. The mix of our experience with your specific business knowledge means that your training delivers optimal value to your staff and organisation.

EFFECTIVE TEST DESIGN.

For your test to be valid you need to be clear on the aim of the test and the specification of the material you are testing. Dimensional tests, proof/leakage tests, change in length tests, deformation under pressure tests, burst tests and others will all require specific test design. Your testing is only as good as your test design.

USING FIT FOR PURPOSE TESTING EQUIPMENT.

If any component ranging from pumps, gas boosters, valves, or fittings is of inferior quality it can influence the test result or even worse, endanger the tester. Resato has 25 years of experience in building equipment specifically designed to deliver accurate and safe high-pressure test results.

FOLLOWING EQUIPMENT SETUP AND OPERATION INSTRUCTIONS.

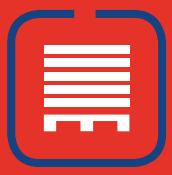
To get the best outcome you need to ensure that your equipment is set up and operated correctly. All quality providers of testing equipment provide clear and easy to follow instructions to allow you to have confidence in the test results. Resato has used expert input and customer feedback to provide the highest quality documentation and customer support. Resato provides all the resources you require to make your testing effective and to keep your people safe.

Maintaining your hose testing equipment

Hose testing equipment is designed to deliver pressure to equipment. For tests to be safe and effective, all testing equipment must be operating at correct levels. Effective maintenance is key. The cost of effective proactive maintenance is almost always less than the costs of issues that arise.

YOUR MAINTENANCE PLAN SHOULD INCLUDE:

Ensuring the test machines are clean and corrosion free. To obtain the best test results your testing machine needs to be operating at its peak performance. Any dirt, dust, or corrosion may interfere with the results of your testing. For this reason, your test machine should be checked and cleaned before and after all the testing sessions.



Sourcing and building high-pressure test machine components and test chambers only from industry best practice materials. If the right materials are used in the construction of the test machine maintenance is much easier. Stainless steel is the best material for components and test chambers. All Resato high-pressure test machines use this material where ever possible.

Proactive maintenance is more effective than reactive maintenance or problem solving. All maintenance plans for your testing equipment should aim to prevent issues from occurring. A plan that highlights possible risks and future issues and has actions to prevent them from occurring is most effective.

Ergonomic management of a hose testing process

Hose testing can be repetitive and if you do not address the ergonomics of the testing environment you can introduce unnecessary risks to the process. Repetitive tasks that subject employees to strain, stress, awkward posture or extended reach carry higher risks of fatigue and injury. An ergonomically well-designed testing environment is also more efficient, saving time and money.

The hose test benches of Resato are designed with operator convenience in mind, the following features have been taken into account.

- All of our hose test benches are designed to ensure a working space at an optimal height. You can adjust the height according to the operator with the adjustable legs that are located under the machine.
- The cover is mounted at an angle. This is to create more working space and to make it easier for the operator to mount the hoses from the side of the machine. The operator can access the workspace from multiple sides, an awkward posture is avoided. In addition: the cover can be opened more easily, and the operator does not have to step back.
- The gas springs can be adjusted to the height of the operator. This option allows every operator to easily operate a Resato hose test bench.
- The RTC1500 (pallet loading cabinet) stands on a platform, which ensures that the operator does not have to bend down to assemble hoses.
- For testing with water or other liquids, the test cabinet is equipped with a drip tray. The floor will not get wet after disassembling and removing a hose. A wet floor can cause your staff to slip, with all the ensuing consequences.
- The layout of our components is designed to convenience maintenance. The layout is of the components is designed in order that the components are easily accessible. This makes it easier to carry out maintenance when necessary.

SANDER VROLING, OUR SALES DIRECTOR, SUMS IT UP PERFECTLY WHEN HE SAYS:

"WE SEE OURSELVES AS HIGH-PRESSURE DOCTORS AND NOT JUST AS SELLERS"

Resato

Designing a safe & effective hose testing process

THE FOUR MOST COMMON TYPES OF PRESSURE TESTS USING RESATO EQUIPMENT ARE:

1 LEAK TEST.

The hose is inflated to an assigned pressure, and any leaks are detected and recorded.

2 PROOF PRESSURE TEST.

This hydrostatic test involves filling the hose with a medium such as water and raising the pressure to a pre-specified limit. The pressure is maintained for a pre-specified period. The hose is inspected to ensure that it can withstand the pressure over time. This test is not suitable for kinked or curved hoses. Pressure, time and the results are recorded.

3 DEFORMATION UNDER PRESSURE TEST.

This test has three variations:

- **Volumetric expansion (VE) test.** This test measures the volumetric expansion of the hose under a range of internal pressures. This test is suitable only for some types of hoses, including power steering hose and hydraulic hose. Volumetric expansion is recorded.
- **Rotation or Twist test.** Two readings are taken, usually at a low pressure and at proof pressure. The rotation of the hose free end is measured and the difference in degrees between the two readings is called the 'twist'. The two pressures and the 'twist' are recorded.
- **Length measurement test.** This test measures if the length of the hose changes under pressure.

4 BURST TEST.

The burst test tells you the exact pressure at which a hose fails. The test involves inflating the hose to its limits and beyond. At the point of failure, the pressure at which the failure occurred is recorded.

HIGH-PRESSURE HOSE TESTING COVERS A WIDE RANGE OF SPECIFICS, BUT COMMON TO ALL THESE PROCESSES ARE SOME STANDARD STEPS.

PRE-FILLING.

The hoses are filled with the test medium (liquid or gas) and necessary checks are completed.

DE-AERATION.

The removal of any residual air from the test materials.

PRESSURE BUILD-UP.

The pressure of the test material is increased until it has reached the required test level/levels. The equipment being tested is monitored throughout the test. Results are recorded.

CERTIFICATIONS.

The output of your tests needs to meet your requirements for audit, validation and other certifications. These certifications can be customized with your business logo.

Benefits of hose testing

THE SAFETY OF YOUR PEOPLE

The most important consideration is the safety of your people. Ensuring that your high-pressure hoses are capable of coping with the day-to-day running of your operation removes a significant risk to your most valuable resource.

THE EFFICIENCY OF YOUR BUSINESS

Your business stops when your equipment fails. Keeping your business running is simpler when you have full confidence in the components your business relies on to operate.

TEST TO PREVENT HYDRAULIC INJURY

A benefit of hose testing is preventing hydraulic injury to happen. You can guarantee the safety of your customers and personnel with preventive hose testing.

THE CONFIDENCE OF YOUR CUSTOMERS

Demonstrating your commitment to your people and processes gives your customers confidence in your ability to deliver. Their business relies on your business, with your customized certificates you can guarantee quality.

REGULATORY COMPLIANCE

Meeting your regulatory requirements means that your licence to operate is never at risk. Being audit-ready should be a part of your day-to-day operations.

THE SECTION AND ASSESSMENT OF SUPPLIERS

You can have full visibility over the quality of your supply chain with regular and effective testing.

MARKETING TOOL

A Resato hose test bench can function as a marketing tool for your business. Our quality of workmanship can be seen as a marketing asset because a Resato test machine communicates to your customer that you value quality.

Why partner with Resato?

With high pressure comes high stakes, for your people, for your customers, and your business. Resato is the expert in ensuring that this area of your business operates smoothly. What makes Resato different?

- WE HAVE OVER 25 YEARS OF EXPERIENCE IN HIGH-PRESSURE TECHNOLOGIES
- WE USE THE LATEST TECHNOLOGY AND BEST MATERIALS TO ENSURE WE PRODUCE BEST IN CLASS EQUIPMENT
- WE ARE AN ALL-IN-ONE SUPPLIER. WE DEVELOP ALL COMPONENTS IN HOUSE TO ENSURE QUALITY AND MINIMISE DELIVERY TIMES
- WE WANT YOU TO MAKE A QUALITY BUSINESS DECISION
- WE OFFER A WIDE RANGE OF PRE-BUILT AND CUSTOMISED HIGH-PRESSURE TEST SOLUTIONS
- WE BELIEVE THAT OUR PASSION FOR EXCELLENCE KEEPS YOUR TEAM SAFE
- WE OFFER SOLUTIONS AND SUPPORT GLOBALLY
- WE MEASURE OUR SUCCESS BY YOUR SUCCESS

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