

Recherches & Réalisations Rémy



www.3r-labo.com

**TESTING MACHINES
UNIVERSAL**



V.3

DESIGNER OF UNIVERSAL TESTING MACHINES

Founded in 1987, the French company 3R specialises in the design and manufacture of materials testing machines.

Undisputed leader for more than 20 years in the French market for testing equipment in the field of Civil Engineering (with 80% market share), the company has gradually established itself in the world of universal testing machines (UTM), with a growing market share, gathering the most prestigious references, in the field of mechanics, aerospace or nuclear. Its assets for establishing itself have remained the same since its creation and are based on on three axes:

1 - A definitive desire to produce only high-quality machines, without compromising on the choice of technical solutions, materials and suppliers. This strategy allows us to offer our customers an exceptional lifespan of their 3R machine, for a guaranteed return on investment. This approach is fully in line with the reparability index and ahead of the new sustainability index of 2025.

2 - A dedicated R&D department, with talented engineers and technicians, capable of innovating and customizing any technical solution, in order to precisely meet our customers' specifications. In addition to our standard range of machines, we regularly manufacture custom-made machines with unconventional dimensions (see our Syntium range).

3 - A team of dynamic and highly mobile technicians, for the commissioning and maintenance of our machines, capable of responding within 24/48 hours to the slightest request from our customers, on site or in remote maintenance. This is one of the induced (and unbeatable) advantages of Made in France!

We manufacture all our machines (machining and welding, painting, mechanical assembly, electrical and hydraulic wiring), and control systems (electronic boards, computer systems and software) in our 10,000 m² factory in Montauban, equipped with modern production machines

Since September 2015, we have integrated the machining of our metal parts, with the creation of a new company (USR – Usinage Soudure Rémy), equipped with high-capacity CNC machines, installed in a 2,500 m² building, equipped with three 5-ton overhead cranes and a 10-meter long paint booth.



Recherches & Réalisations Rémy sas



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MAXIMIZING OUR CUSTOMERS' SUCCESS THROUGH CUSTOMIZED SOLUTIONS

Our goal is not only to sell testing machines, but to offer solutions that can ensure and maximize your success.

That's why we support you throughout the entire lifecycle of your investment.



" Engineering is not enough, we accompany the customer from the request to the end of commissioning, with an open, future-oriented system "



Our strength, beyond our ability to design a range of machines perfectly adapted to our customers' expectations, is our ability to manufacture high-tech machines in small series.

We are able to respond to the current trend of systematic customization of customer solutions.

This customization is not a cosmetic criterion, but reflects our desire to satisfy 100% of our customers' needs.

THE FRENCH SOLUTION

Since June 6, 2012, 3R has been credited with the "ORIGINE FRANCE GARANTIE" label. (the first industrial company to be labelled in Midi-Pyrénées).

This label was issued by Bureau Veritas Certification and then by CERIB.



" Origine France Garantie" is the guarantee for the consumer that the product bearing the logo was made in France "

The award of this "Origine France Garantie" label is defined by two cumulative criteria, checked each year during a rigorous audit carried out by the certifying body:

- 1- the product takes its essential characteristics in France (= the product is designed in France),
- 2- 50% to 100% of the unit Added Value of this product is acquired in France.

It is with great pride that we affix this label to our products designed and manufactured in our factory in Montauban (82).

Our relationship: neither buyers nor sellers, but PARTNERS

The acquisition of a test machine is a global action.

Throughout the life of the machine, 3R ensures a complete follow-up and promotes interactions with the customer.

The customer is not only buying a 3R test machine, they are investing in a long-term partnership with a dedicated supplier. And because 3R has everything to prove, we are very motivated to give more and more to our customers. Customers.

We don't just see ourselves as machine sellers, but above all as system and solution providers. We provide added value tailored to our customers' business.

" We always imagine how we would like to be treated as a customer "

Customer satisfaction is the cornerstone of our development strategy.

Making every task simple and intuitive, every day, with our expertise.

Our business approach and the care we take in how we maintain our products throughout their lifespan are in direct line with this goal.



Our after-sales service is responsive.

He will be at your side to accompany you throughout the life of your equipment.

Our 3 "Customer Contracts" :

- 1 - Benefit from a complete range of machines and accessories to achieve the best performance.
- 2 - Partner with a responsive and proactive partner to ensure the best support on time.
- 3 - Take advantage of the expertise of a French designer and manufacturer, at the most competitive price.

OUR DNA: DESIGNING OUR MACHINES

To best meet the demands of the market, 3R is expanding its range of testing machines.

The premium SYNTECH range, featuring the exclusive RIGI-DRIVE drive system, has been thoroughly redesigned, the economical SYNTAX range has been introduced and the SYNTEZ range is aimed at low-capacity testing. And finally, the SYNTIUM range meets "non-standard" demands.

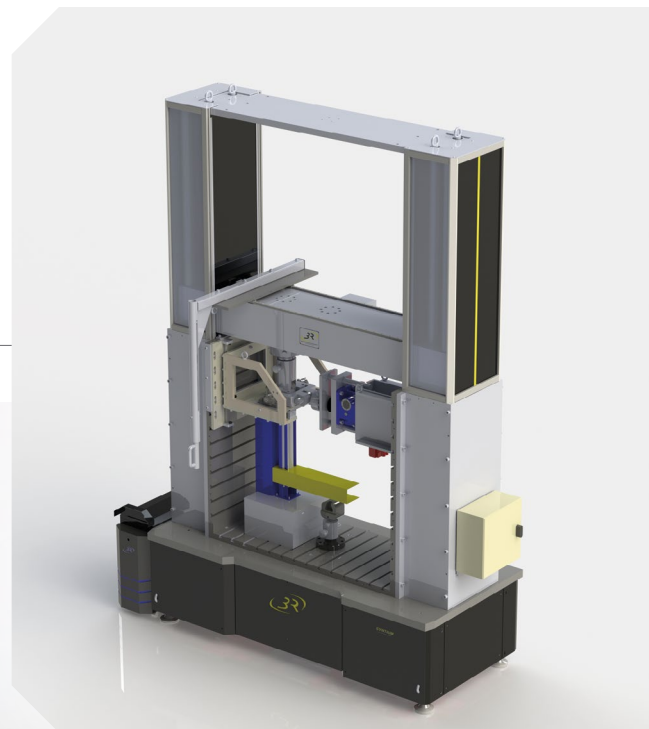
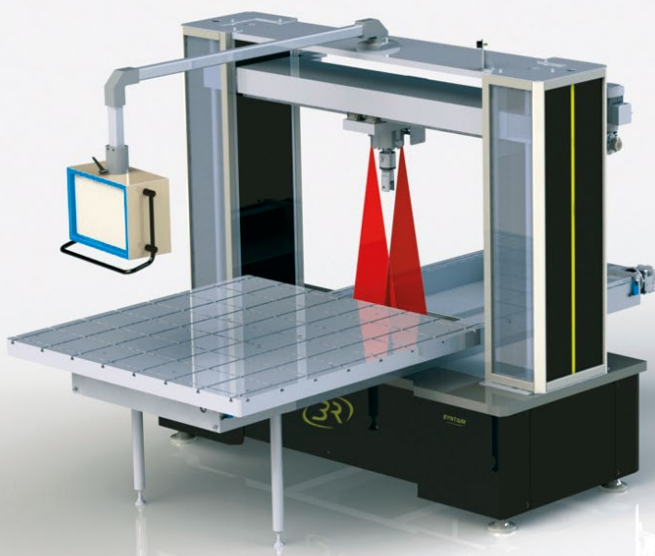
3R is positioning itself as an innovative player and consolidating its ambition as a leader in the market.

" Innovative design "

Our 4 current ranges are the result of a global reflection.

Everything has been optimized to provide our customers with the best performing and most user-friendly equipment

Double axe 350 kN/50 kN sur mesure



Machine with motorized worktable for easy positioning of heavy samples.

By choosing 3R, you are making a committed choice for a sustainable future

OUR CSR COMMITMENTS:

" CONCRETE, LOCAL, SUSTAINABLE ! "



French Manufacturing and Insourcing

The vast majority of our products are designed and manufactured in our factory, for rigorous control of each stage of production.



Exceptional Durability

Thanks to high-quality materials, our products are designed to withstand the test of time, reducing the need for replacement and minimizing waste.



Local Partnerships and Short Circuits

By relying on local partners, we reduce our carbon footprint and support the local economy. Our short circuits reflect our commitment to responsible development.



Responsible consumption

With a reduction of 150 tons of CO2 in 10 years, we are doing our part for the environment. This is equivalent to the emission of a car circling the earth 30 times.

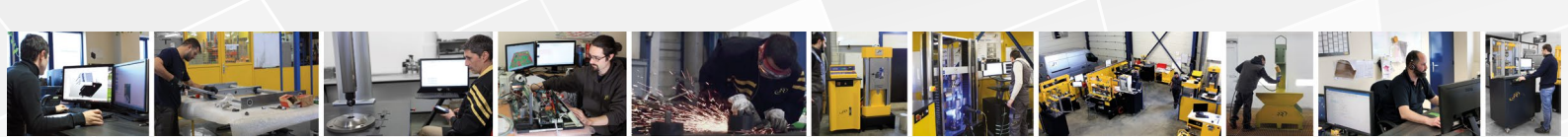


Repairability and Upgrade

Our machines are designed to be easily repaired and upgraded, giving you robust and durable solutions that are adapted to the changes in your industry.

We also support :



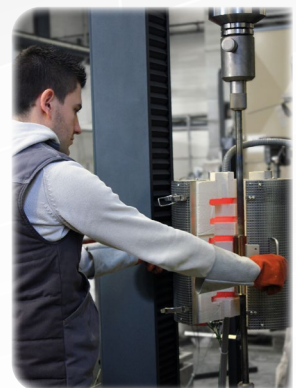


It's also...

FATIGUE TEST

VHCF Fatigue Testing Machine with Ultra High Cycle

20 kHz High Frequency Fatigue Testing for Metallic Materials
Dead mass



EDUCATION

Synthon 25 ATF

Universal Testing Machine for
Material Characterization:
Tension, compression, bending,
hardness, shear, stamping...



CREEP TEST

Dead masses

Wide range of force for creep testing on different materials,
duration up to 99 years, depending on the fluctuation of
gravity on earth, in the coming decades...



CREEP TEST

Hydraulique

Automatic or manual hydraulic
adjustment, for a long life. Tests
with a high load from 100 kN to
1000 kN. The frames are specially
designed for your application.



www.3r-labo.com

The RIGIDRIVE concept The most powerful solution on the market

Rigid transmission combined with a high-rigidity chassis offering the lowest deformation.

In order to improve the rigidity of our frames, and therefore the quality of the guidance, SYNTECH frames are equipped with 2 to 4 columns (depending on the maximum load), and up to 4 ball screws for models above 400kN.

- The encoder is directly connected to the servo motor for highly responsive and stable control.
- Constant-speed transmission and low elasticity ensure exceptional smoothness of movement throughout the entire gear range.
- Bevel gear with 90% efficiency > compared to 30% as standard. Saves space and energy.
- Quiet and smooth operation for greater operator comfort

" Proven and controlled technology "

The exceptional rigidity of the transmission significantly limits the stored energy that is released when breaking brittle materials.

The design of our SYNTECH chassis is based on 3 points:

- Easy and reliable assembly allows for a significant reduction in labor, and therefore reduced costs.
- The efficiency of the transmission is multiplied by 3! The power obtained with RIGI-DRIVE significantly improves the responsiveness of the drive and increases the life of the components.
- Compact chassis. Our engineers have worked particularly the compactness of the SYNTECH chassis. Most of them travel standing up (depending on the maximum capacity). They can enter a room through a simple standard door, and handled with a simple pallet truck. This greatly simplifies handling during delivery, making it easy to integrate into your lab





MAXIMUM PRECISION

Our challenge is to achieve maximum steering precision over the widest range of travel speeds.

Each machine configuration must allow for fast, precise and controlled movement, in order to meet a large number of standards, while allowing slow tensile tests to be carried out, with an instantaneous speed of less than one micron/minute over a period of several weeks.

Remote electronics offer direct access and better electrical insulation (reduction of interference).

The operator has easy access to connect their peripherals.

Upgrading your equipment is simplified.

Technical features: :

- Closed-loop control: stress, strain rate, speed, load.
- Closed-loop regulation frequency 2500 kHz. and 10 kHz.
- I/O expansion cards: gauges, LVDT, SSI ruler, automatic and video extensometers...
- Supplied with LCD remote control and speed adjustment knob.
- Automatic recognition of connected load cells, with EEPROM connector.



Speed steering accuracy

**0.01
μm/s**

The lowest ramp-up speed is available on all 3R universal testing machines

At this rate, the machine travels at 3 mm per week

We offer a complete range of high-resolution and Standard

SYNTAX range

SYNTAX Model 5, 12, 25, 100 and 300kN

Thanks to the sleek design of its frames, the SYNTAX range will allow you to carry out all your tests efficiently, and on a limited budget, without compromising on precision or quality.

syntax

Mechanical Specifications

- **High-rigidity frame.**
- 2 pre-loaded ball screws.
- Hybrid drive with high rigidity reinforced belt and backlash-free gearbox.
- Specific preloaded bearings, high rigidity, long life, maintenance-free.



Syntax 5



Syntax 12

Drive

- Brushless servo motor with encoder and brake.
- Closed loop speed, force, stress, strain control.
- Actual crossmember resolution: 0.01µm.
- External blackbox with all electronic acquisition and control, forced ventilation and filtration.
- Drive control with a 12 kHz sample rate.
- Synchronous measurement channels, adjustable acquisition up to 1000 Hz.
- Power supply 230V+T for model 5 up to 100kN and 3 x 400V+N+T for model 300kN.
- Intuitive remote control with LCD display and adjustable controller (optional).



	Syntax 5	Syntax 12 S	Syntax 12 SW	Syntax 25 S	Syntax 25 SW	Syntax 25 SW HA	Syntax 100 S	Syntax 300 S	Syntax 300HA
Overall width (in mm)	400	700	850	865	1 450	1 450	865	1 000	1000
Overall height (in mm)	1 300	1 480	1 480	1 705	1 705	1 970	1 805	2 030	2 350
Chamber width (in mm)	120	450	600	450	1 000	1 000	450	500	500
Chamber height (in mm)	1 000	1 130	1 120	1 230	1 200	1 540	1 300	1 200	1 500
Net weight (in kg)	120	140	160	285	450	500	285	950	1 050



Syntax 25 & 100

Protection et conception

- Heavy-duty profiled steel side uprights for added rigidity.
- Bottom frame and metal frame.
- Protection of the ball screws by a Kevlar bellows.
- Flush bottom rail, protected by a stainless steel curtain.
- Protective doors (optional) with hinged or sliding opening.
- Transparent polycarbonate and aluminium frame, with safety switch.



Syntax 300



Ergonomics

- Ergonomic working height, with optional storage stand and ergonomic desk.
- Large transverse travel and wide horizontal space to accommodate all types of supports and accessories.
- Easy front handling by pallet truck or forklift, through a standard door.
- Wide range of tools: tension, compression, bending, shearing, peeling, friction, furnace, thermal chamber, etc.
- Compliant with EN, ASTM, DIN, ISO...

**Complies with the Machinery
Directive 2006/42/EC**

RIGI-DRIVE range

Model SYNTECH 150, 400, 700, 1200 and 1600kN

syntech

Rigid Rigi-Drive II type transmission, for speed and positioning accuracy, compact design for easier implementation inside your lab.

Mechanical Specifications

- 2 massive guide columns for 150 kN and 4 columns above.
- 2 preloaded ball screws without backlash for 150 kN & 400 kN and 4 ball screws above.
- High-performance, maintenance-free, backlash-free RIGI-DRIVE transmission.
- High-efficiency bevel torque gearbox.
- Machine tool-type bearings, sealed and greased for life, maintenance-free.



	Syntech 150S	Syntech 150 HA	Syntech 400 S	Syntech 400 HA	Syntech 700 S	Syntech 700 HA	Syntech 1000/1300	Syntech 1600/2000
L1 Overall width (in mm)	1 200	1 200	1 500	1 500	1 500	1 500	1 850	1 850
H1 Overall height (in mm)	2 020	2 520	2 500	2 850	2 650	3 550	3 400 / 4 600	3 500 / 4 300
L2 Chamber width (in mm)	650	650	750	750	750	750	850	910
H2 Chamber height (in mm)	1 300	1 800	1 555	1 900	1 700	2 500	2 000 / 3 200	2 000 / 2 800
Net weight (in kg)	1 100	1 200	2 100	2 300	3 400	4 200	7 000 / 8 000	9 000 / 10 000

Protection and design

- Ball screws protected by stainless steel and transparent polycarbonate housings.
- Ball screw protection by rigid Kevlar bellows.
- Work table covered with stainless steel sheet for protection and daily use.
- Protective doors (optional) with hinged or sliding opening.
- Transparent polycarbonate and aluminum frame, with safety switch.

- Brushless servo motor with encoder and brake.
- External blackbox with all electronic acquisition and control, forced ventilation and filtration.
- Crosshead displacement resolution: $\pm 0.01\mu\text{m}$.
- Minimum speed: $0.05\mu\text{m/sec}$ up to maximum speed.
- Drive control with a 12 kHz sample rate.
- Synchronous measurement channels, adjustable acquisition up to 1000 Hz.
- Intuitive remote control with LCD display.



Ergonomics

- Working height 450mm (150 kN) or 550mm (above).
- Large crossbar travel and large width between columns to accommodate all types of accessories useful for your tests.
- Easy front handling by pallet truck or forklift.
- Wide range of tools: tension, compression, bending, shear, peeling, friction, furnace, thermal chamber...
- Complies with EN, ASTM, DIN, ISO...



RIGI-DRIVE range

SYNTIUM model from 10kN to 2000kN

Our R&D department can design 100% tailor-made machines to meet your specific requirements in terms of:

- dimensions
- vertical test chamber height
- horizontal test chamber width (column spacing)
- equipment
- ergonomics
- rigidity
- speed
- precision

The mechanical components of these machines, the controller and the software are identical to the standard models of the SYNTECH range.

Here are some examples: :

ROPES AND TEXTILES

Frame: 400kN 1500mm x 1500mm horizontal test chamber, 3500mm vertical crosshead stroke.

Location: Malaysia

Type of tests: Harness and mountaineering equipment, large-scale tests, with dummies.

Specificities: High energy stored during tests on products exceeding the speed of sound (strings) during breakage. Specific protection with energy absorbers.

syntium



FOUNDRY

Frame: Test machine with X-Y-Z movement. Horizontal test space 1500 x 1500mm, vertical stroke 700mm, with grooved table and motorized transverse movement of the load cell.

Location: France

Type of tests: Tests on cast iron street buffers according to the new EN 124 standard for the European market.

Specificities: No manual manipulation of the operator thanks to the motorization of the 3 axes to apply forces to any part of the structure. Measurement with 4-point non-contact lasers (integrated in the software).





Frame: 600kN Traction Machine

Location: France

Type of tests: Multi-material and structural

Specificities: Reduced height machine for integration inside a low-ceiling laboratory. Our R&D department has designed a specific chassis, with grooved table and special fixings for a quick change of 600kN tooling.



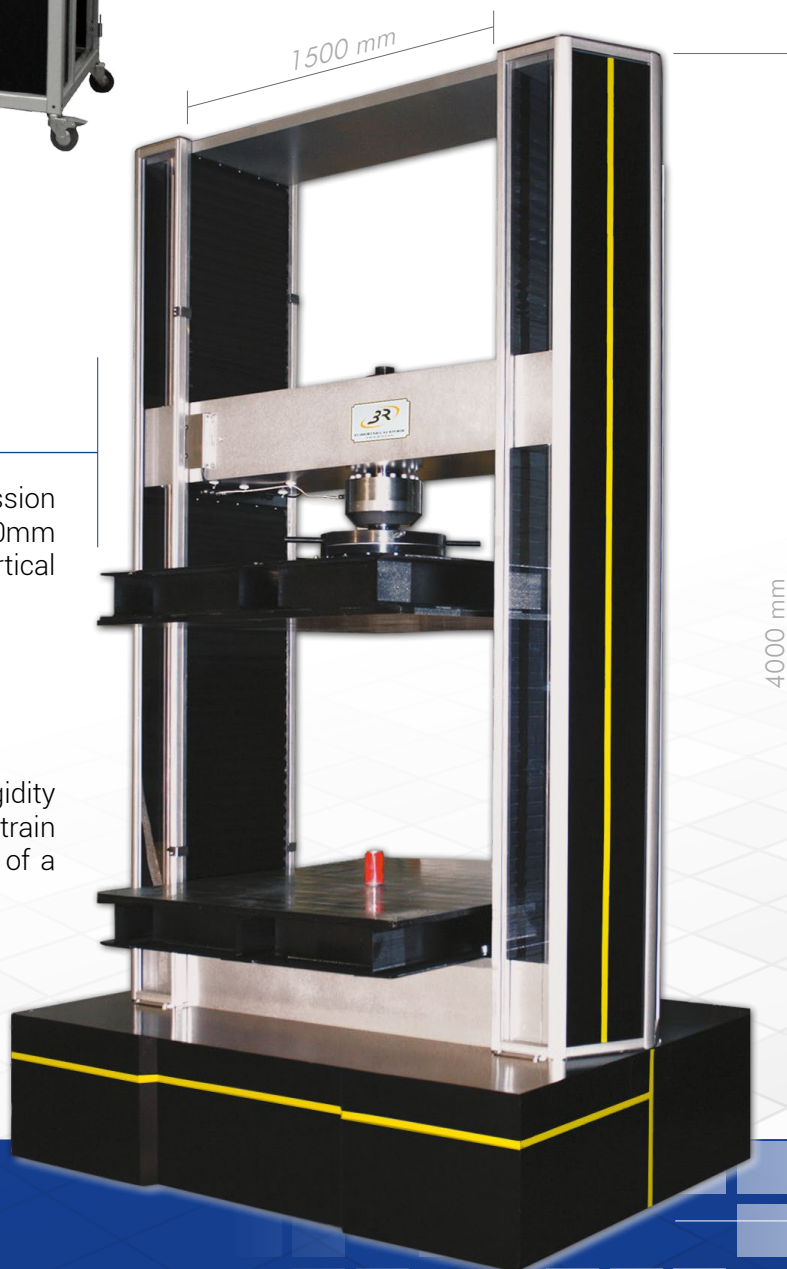
COMPOSITE

Frame: Oversized 500kN compression machine with 1400mm x 1400mm ball top plate and 1500mm vertical stroke

Location: France

Type of tests: Composite tanks for civil engineering

Specificities: oversized chassis with high rigidity for exceptionally accurate strain measurement without the use of a 4000 mm extensometer.



12

TONS

This is the weight of Syntium 1500 kN

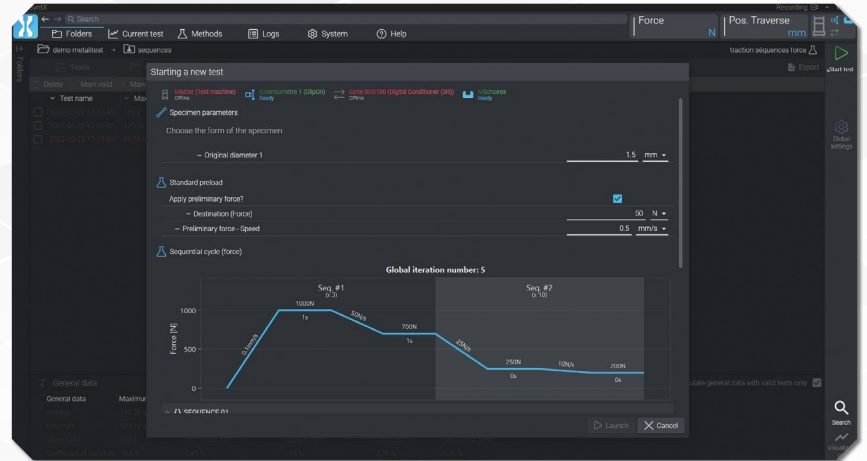
CONTROL SOFTWARE

3R has developed a "Full touch-screen" software in line with the demands of today's market:
User-friendly, quick to access and efficient

synt-x

Efficiency

The software's settings allow instant access to the test with just a few clicks, leaving little room for errors. It also allows the user to create and edit their own test cycles and reports. All products to be tested can be pre-programmed



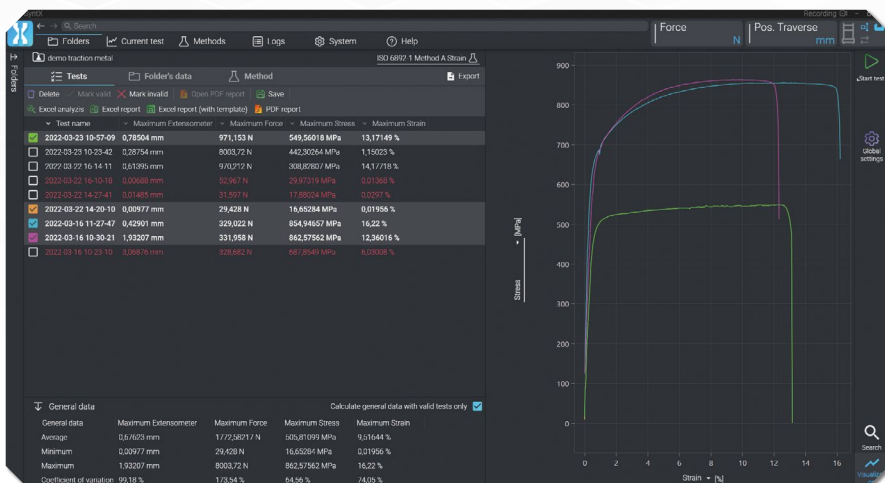
Batch Testing Manager

Performance

The software contains a support program for calibration and adjustment of the control interface.

Ergonomics

The configuration interface is very intuitive and allows you to select trials and adjust parameters with just a few clicks.

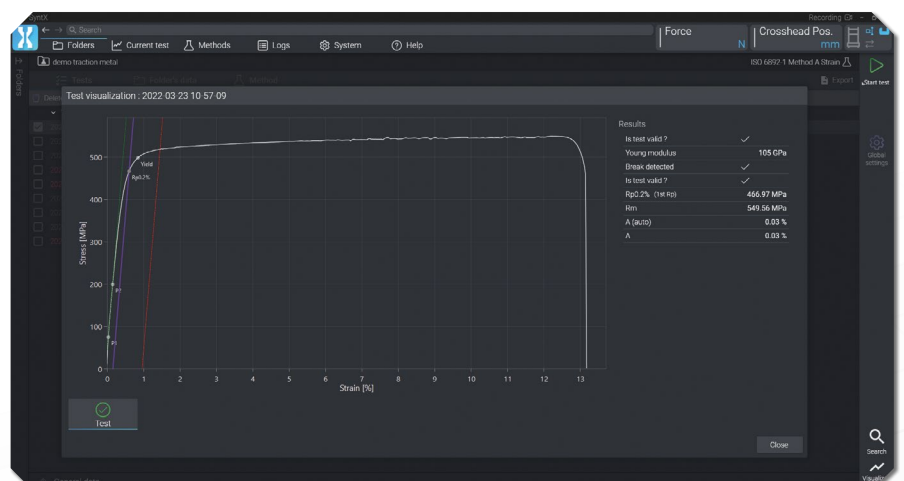


Stress calculation adjustment screen

Features

Combining all the functions of control and control, Synt-X offers the possibility of performing controlled cycles under load or deformation, stops, in displacement or deformation, in a closed loop on all connected sensors.

Main screen



REPORT EDITING

Flexibility

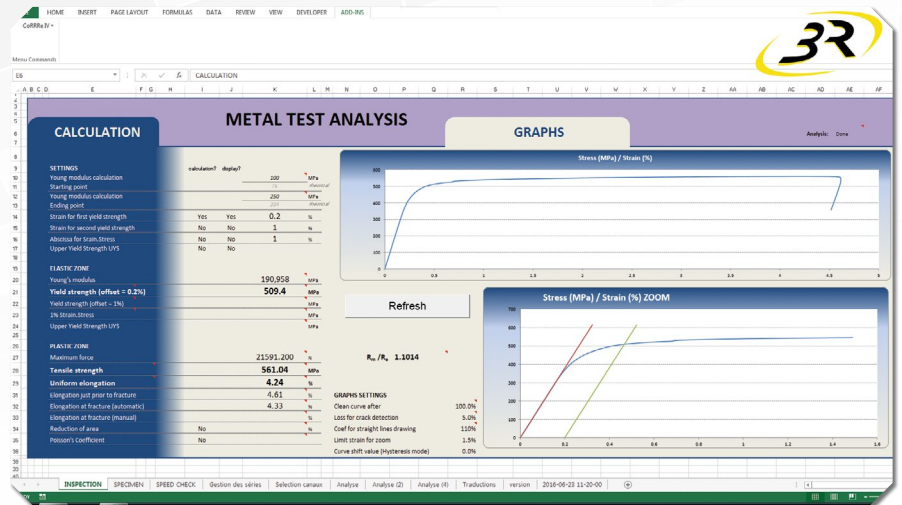
Test analysis is done via an integrated interface that can be modulated and adapted to your needs with Excel.

The software offers no limits for the analysis of normative and specific results.

All major standards are available at the click of a button.

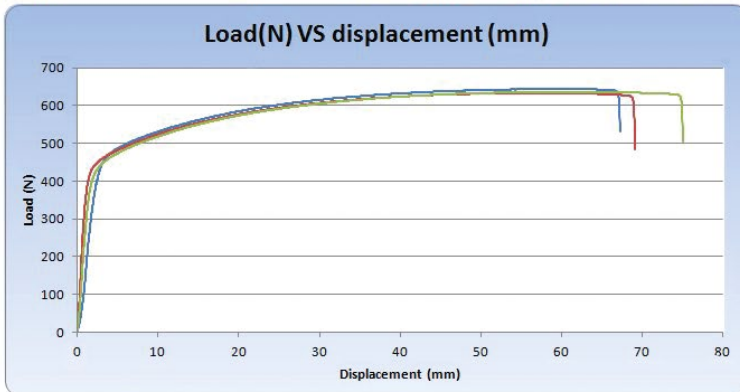
All test data is easily accessible and can be integrated into the database.

They can be transferred and viewed on remote workstations

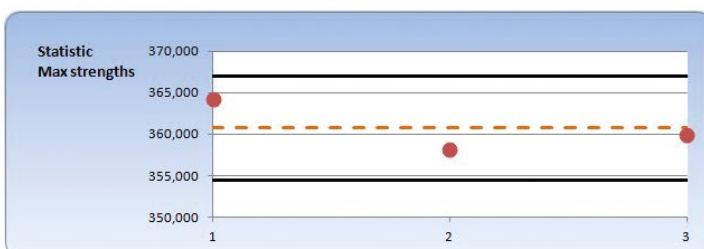


Tensile test report

	Test 1		Test 2		Test 3	
Date	18/11/2011		18/11/2011		18/11/2011	
Time	14:33:14		14:37:35		15:04:32	
Test type	Tensile test		Tensile test		Tensile test	
Test speed (mm/min)	60		60		60	
Detection value (N)	5		5		5	
RESULTS	Max value	Rupture	Max value	Rupture	Max value	Rupture
Load (N)	643,713	529,959	632,980	484,764	635,912	505,682
Displacement (mm)	59,263	67,244	56,826	69,093	59,342	75,021
Strength (Mpa)	364,267	299,896	358,194	274,320	359,853	286,157
Strain (%)	26,222	29,754	25,144	30,572	26,258	33,195



Statistic		
Average of strengths at breaking point	286,79	MPa
Average of Max strengths	360,77	MPa
Standard deviation of max strengths	3,14	
Average of strains at breaking point	31,174	%



Inspector signature

Date
18/11/2011

New sequential calculation tools have been added that allow the user to perform more complex operations.

Editing reports can be done in a simple way and be embedded in Word documents, PowerPoint, web pages, and other media.

The ADVANTAGES of Synt'X software

Fully compatible with Microsoft's Office Pack.

Fully configurable, easily adjustable and customizable.

Connectable via network.

The ADVANTAGES of 3R remote maintenance

All our machines benefit from our remote maintenance service (free of charge during the warranty period), allowing a quick resolution (within a few hours) of your technical questions.

RETROTECH

Machine modernization



You have:

- An old broken machine that is clogging up your laboratory?
- Is your machine faulty, unreliable, or inaccurate?
- Is your machine old and lacking performance?
- Do you need to carry out new tests, new cycles that your old machine is unable to perform?

3R offers the RETROTECH solution for the technological upgrade of your machine:

- **Closed-loop control of load, stress, displacement, deformation, etc**
- **Complex cycles, test analysis, reporting and database integration**
- **Improved reliability and safety standards of your equipment**

Performance

The highest level of modernization on the market, with a complete examination of all sensitive mechanical parts and the complete replacement of the machine's electrical and electronic components, regardless of age and brand.

Efficiency and performance

Each machine is processed independently by our technicians, under the control of our R&D department. The new control system is compatible with existing strain gauges and accessories, and allows for the addition of new equipment and accessories.

Cost efficient

Reuse of your sensors and tools.

Reliability and durability

Equipment completely refurbished with the latest generation of electronics and software. All replaced parts are now available from our after-sales service.

A free study is carried out following a visit to your site.

Do not hesitate to contact us contact!

Adaptability

The RETROTECH service may include the supply and/or design of a specific new support, protection system and upgrade safety standards.

Safety

Custom-made protective doors with safety sensor can be mounted on your old frame.



TOOLING

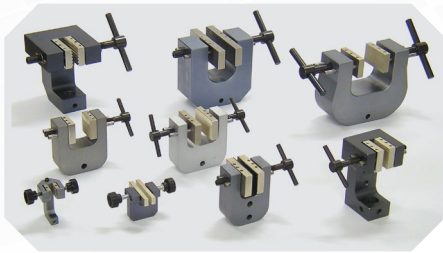
A wide selection of standard and custom accessories are available for all types of tests:

- Compression tests,
- Tensile tests on bars, tubes, ropes, straps, cables, chains, strands, etc.
- Bending tests,
- Peel tests,
- Shear tests,

Non-exhaustive list

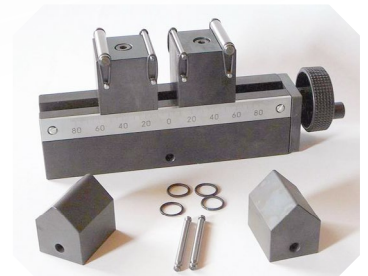
We offer standard tooling that complies with international standards for materials such as steel, alloys, copper, cast iron, plastics, composites, polymers, etc.

We also offer thermal and climatic chambers for controlled temperature and humidity testing. Our research department also designs tools to meet your specific needs.

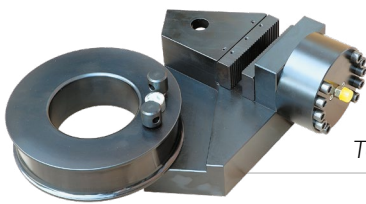


A variety of tooling for tensile testing on specimens of various shapes and sizes

Thermal chambers and ovens



Tools for bend tests



Tools for tensile tests on ropes, cables, etc..

Peel testing toolst



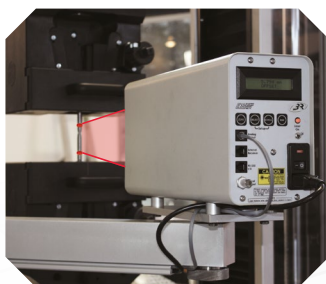
Hydraulic jaws for tensile testing at high loads



EXTENSOMETERS

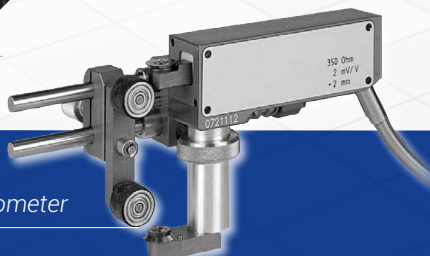
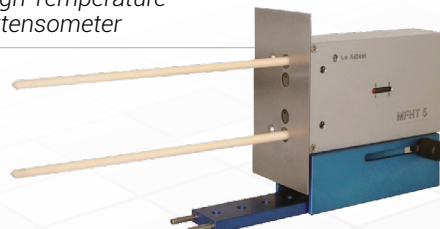
The range of extensometers available at 3R includes models for testing a wide range of materials, including metals, plastics, composites and ceramics, meeting all the requirements of international standards in terms of deformation and displacement.

The range, gauge length, and accuracy can be set to meet specific needs.



Laser extensometer

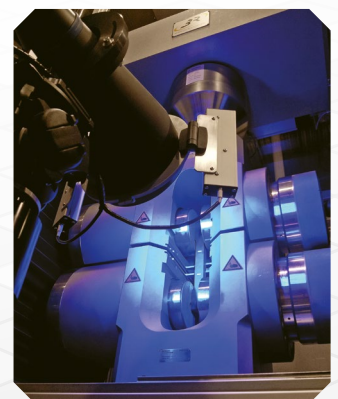
High Temperature extensometer



"Clip-on" extensometer



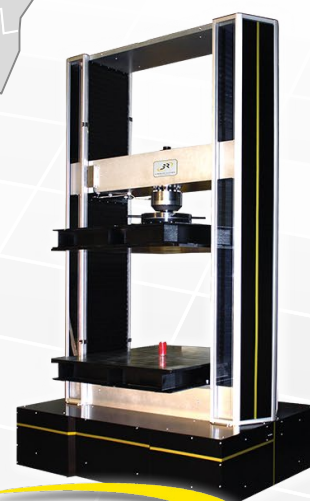
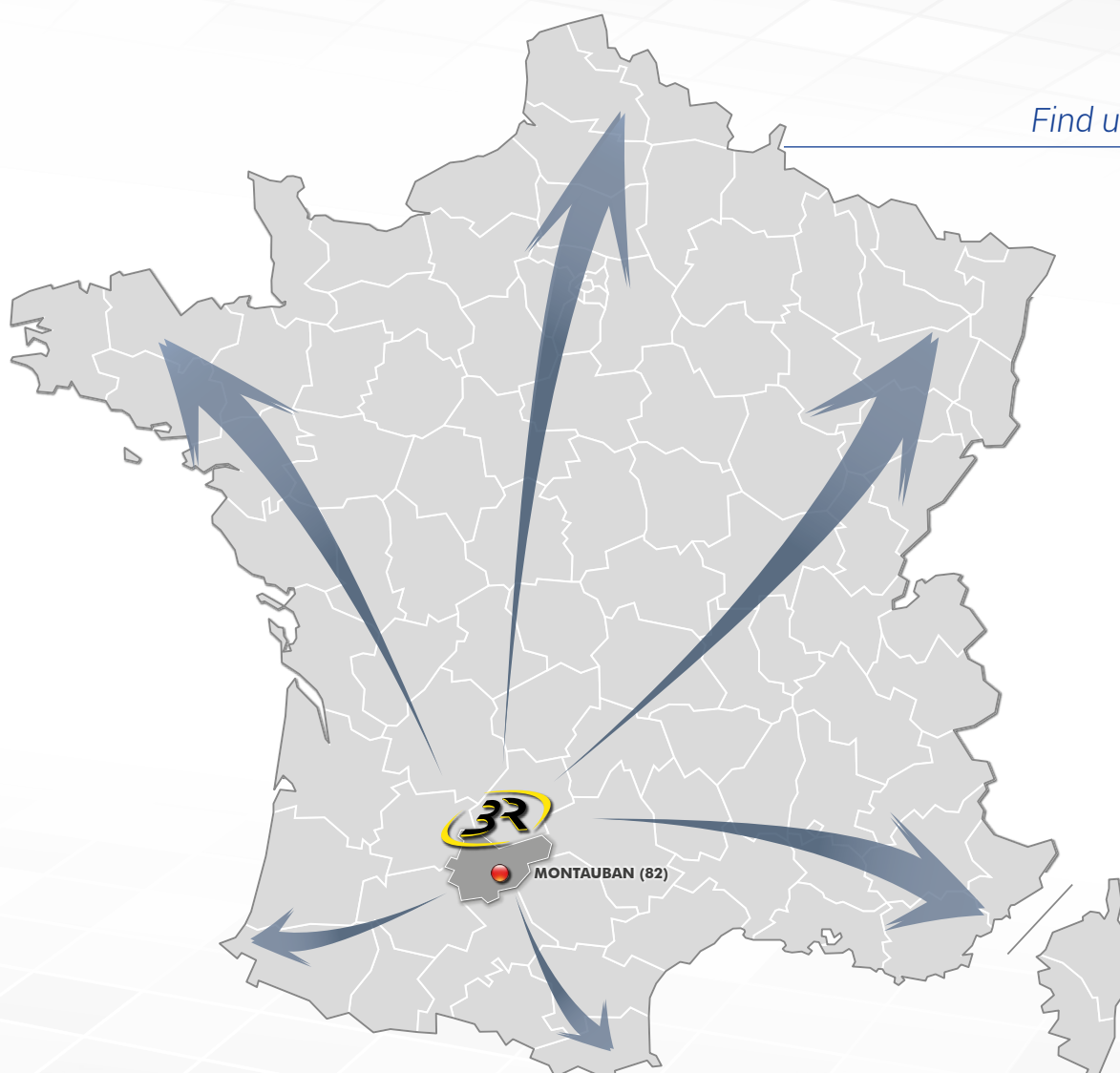
Automatic extensometer



Video extensometer

DESIGNER OF UNIVERSAL TESTING MACHINES

Find us, contact us



RECHERCHES & RÉALISATIONS RÉMY

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