

## CONTROLS

### HIGH QUALITY IN TESTING

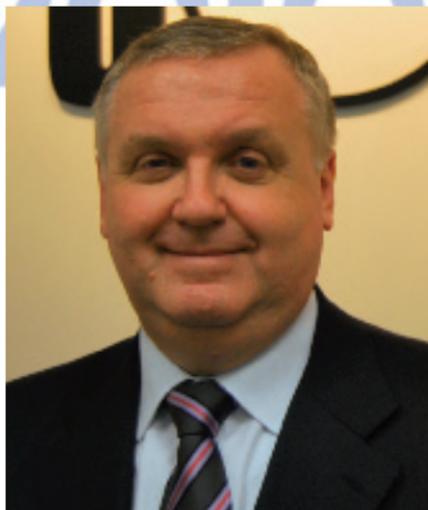
An interview to Mr. Flavio Galli, General Manager Operations and Group Commercial Director. Trend and high quality innovation in Italian testing equipment

**What does BAUMA and therefore the German and obviously the international market represent for Controls?**

**R.:** BAUMA can be considered the only truly global event in the world of machinery and equipment for the construction industry, and cannot be compared to any similar event (such as Intermat, Samoter, Smopyc, Conexpo or others).

For Controls this event represents not only the German market, but the worldwide market, and it is with this perspective that we plan our participation and the products we exhibit. The German market is very important for our activities, particularly those addressed to the Eastern European markets which are traditionally German oriented in their technological and regulatory approach.

When one of our test machines is used satisfactorily by a German customer, it instantly becomes a refer-



ence and a commercial vehicle for many other markets in Eastern Europe, including Russia. Since its foundation 42 years ago, Controls has always had a strong tradition in export sales. Over the past few years our export quota has reached 80% of our turnover, and we have a stable presence in more than 130 coun-

tries around the world, both directly through our 5 branches (in France, Mexico, Poland, Spain and the UK) and through our network of agents and distributors.

**What are the current trends in the test equipment sector?**

**R.:** Our sector is governed by international standards (in particular EN and ASTM) and is therefore subject to the approval of new directives (or amendments to existing standards) which list the test to be carried out and therefore the equipment to be used. We have seen over the past few years a tendency of new standards to privilege a «fundamental» type approach, which aims to verify performance quality and duration over time. These new methods, as well as a full product range, increasingly demand test instruments and equipment with advanced technological contents, and therefore the continuous investments by Controls in the development and production of new test machines. It is only through this continuous commitment of human and financial resources that Controls is able to maintain its world leadership position in this sector.

**What are the demands of the construction world in the field of quality control?**

**R.:** All new reference standards, wherever they come from around the world, increasingly demand and include «performance» type tests which are certainly more appropriate and significant for testing manufactured goods and products used in infrastructure works.

In the road testing sector, for example, dynamic tests on road pavements which simulate the axial loads of the traffic are far more significant than static, traditional tests. The same can be said for dynamic tests on the ground (soil mechanics), which we

CONTROLS was founded in Milan on 1968 with the aim to manufacture and distribute testing instruments, machines and systems for the construction industry and civil engineering and today is the major world producer of testing equipment;

CONTROLS operates on international basis through branches in France, Mexico, Poland, Spain and in the United Kingdom, as well as with qualified Distributors which are able to satisfy the customers by efficiency and know-how technical consulting before and after sales.

The CONTROLS wide range of equipment includes thousands of products which can be divided into 3 main Business Units:

- Concrete Technology: testing on concrete and cements
- Road Testing: on asphalts, bituminous and pavements surface
- Soil and Rock Mechanics Testing

Many are the reasons of CONTROLS success: quality, efficiency, competitive costs, quick answer and first class to the customers. All this has been achieved by a modern industrial organization and a dynamical production system, as well as a versatile management by processes of all the activities and a severe internal checking.

Since 1994 CONTROLS S.R.L. is certified ISO 9001 and on 2004 has achieved the certification according to the new ISO 9001:2000.

A team of Product Managers, specialized on the various Business Units and always updated on the international standards and the testing technology, is at complete disposal in order to offer a reliable and advanced technical-scientific help, as well as to realize the real needs.

Since 1996 CONTROLS has been accredited as a calibration centre SIT n°092 for compression testing machines.



Pilot 4

must remember all infrastructural works rest on, and which becomes such a current theme every time there is a terrifying earthquake (such as L'Aquila in Italy in April 2009 and Haiti or Chile just at the beginning of this year).

Quality controls must increasingly demand the use of test methods which are more suited to the current technologies, with regard to the duration of infrastructures over time.

In this perspective, Controls is working to make these new, advanced test technologies available at reasonable costs for contracting authorities, designers and building companies.

**How much does R&D count in this sector, above all in a time of serious general crisis in the construction world?**

**R.:** Despite the current economic crisis, considered to be the worst of all time, Controls has continued and shall continue to invest greatly in the research and development of new test technologies in all of its business sectors.

We fully believe that the further future development of the company around the world must pass through continuous development and renewal of its products, and it is only thanks to this continuous development that the company will be able to effectively stand up to the increasingly ag-



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gressive competitive actions of its competitors who are springing up in many newly industrialised countries (China, India, Turkey, Brazil, to name just a few).

**What are your star products?**

**R.:** Our product range counts from than 4000 articles and covers all the possible needs of test laboratories in terms of construction materials in

any part of the world, from the most conventional machines to those using avant-garde and research technologies, to general accessories and materials.

Over the past few years we have dedicated a large amount of resources to the development of machines which comply with the new EN Directive 13108-1 for the CE marking of bituminous conglomerate, therefore the whole range of products for road tests (wheel tracker machine, gyratory compactor, roller compactor, automatic binder analyser, ecc.).

In the concrete sector, we are launching a compression test machine with a new automatic hydraulic pump which offers more than 30% energy savings during use and the digital reading of the test results with the possibility to memorise the data concerning more than 100,000 tests (load-time graph and data).

In the soil mechanics field, in which we operate with the historical trademark WF Wykeham Farrance, we have launched a new system for static triaxial tests (AUTOTRIAX) which assures the full automation of the test cycle both on conventional specimens and in unsaturated conditions.

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**PILOT 4: A MACHINE OF THE FUTURE WHICH COMES FROM THE PAST**

The continuous search for new technological solutions backed up with over 40 years of experience has led CONTROLS to an important threshold which shows, yet again, how well directed research investment can result in technological successes both in terms of quality and price.

The company has always worked closely with universities and research centers in sharing ideas and developing technologies that can be industrialized in the field of stringent quality control, which is now well recognized as the basis for successful development by operators in the construction industry.

Materials with increased performance characteristics, high strength concretes and additives to improve performance: the trend over the past few years due to the important development of the sector, simulated by a market ever more aware on the safety and quality of construction. Safety is of particular importance in today's market thus promoting production control so as to fully comply with International Standards. The need to develop new technologies and procedures for quality control in construction is perhaps more appropriate today than ever in the past.

CONTROLS fully understands this need and has made it its own in the field of concrete compression machines by proposing high technological solutions which provide accuracy, high productivity and energy savings.

The new range of PILOT 4 compression machines include «Energy Saving» technology (ES technology) first introduced some 10 years ago on the now famous AUTOMAX 5 series, and today substantially improved and employed in the new PILOT 4 series.

Compression machines use a small quantity of oil of about 0.5 l/min at high pressures around 650 bar. The flow of oil must be accurately controlled so as to

provide a linear distribution throughout the test without sharp fluctuations. International Standards prescribe that load gradients should be maintained constant within a maximum fluctuation of +/- 10%, thus the device of flow control must be very precise.

Servo-valves for flow control are continually positioned via output from the solenoid and provide linear flow.

This way of working allows not only the control of the direction of the flow but also the quantity and the outlet pressure due to the loss of load caused by the opening in the valve.

With proportional valves the quantity is ideally proportional to the input electrical signal, and any differences created by the system as a whole can be accounted for by ad hoc calibration of the system. In concept both proportional valves and servo-valves operate in a similar way by continuously controlling the flow of oil and offer easy programming and great flexibility to the system. Servo-valves offer higher performance but are more expensive and more importantly cannot be used at the high pressures normally associated with concrete compression machines.

Manual flow control valves or stepping motors guarantee an adequate control of a uniform load rate but react badly to small variations which ideally should be corrected instantaneously.

CONTROLS decided to produce a dual stage pump with variable flow which brilliantly overcomes these problems and provides three fundamental characteristics: accuracy of load control, productivity and energy saving.

The new PILOT 4 compression machines guarantee high productivity, up to 30 samples per hour and low energy consumption with savings up to 30% compared with traditional machines. The hydraulic unit is driven by an efficient dual stage volumetric pump

driven by a dc motor with variable speed controlled by a high resolution closed circuit microprocessor. This solution allows on the one hand the limitation of «costly» waiting times between tests thanks to the rapid approach stage (up to 40 mm/min), and on the other hand to control drop by drop the oil flow so as to use only that necessary to perform the test.

Cold oil and a pump that does not heat up avoids the need of a cooling fan whilst perfect mechanical coupling ensures near silent operation at the high pressures required.

On the electronics side a big step forward has been made with a new control board which reads and converts the load on a scale with more than 131,000 points for each channel. A second test frame can be controlled by fitting a pressure transducer or load cell to the second channel and a distribution block to the hydraulic circuit. The operator interface is by a touch screen with icons for easy and immediate use.

Rigidity is the characteristic of the robust welded frame certified for stability to EN 12390-4: solid cross head which distributes the absorbed forces to four welded columns, symmetrical and equal distance from the load axis.

The load, free from unwanted moments, is transmitted to the sample via a robust self locking ball seat with an oil bath which is characterized by its high hardness and non deformability. The load test chamber is large enough to house rectangular load platens for block testing. The compression machine can be furnished with a wide range of optional accessories allowing tests on cement samples, indirect tensile tests on cubes, cylinders and pavers.

CONTROLS as a market leader finds solutions to problems that others are only just discovering. At present it is the only company to take to the limit the «do not waste a drop» concept, because CONTROLS is compression machines.