

Testing, testing, testing

The Laboratorio Tecnologico Mantovano (LTM), a leading Italian company, has successfully developed by "understanding the major importance of the testing sector in civil and road construction works."

LTM says it uses its high-quality equipment and skilled technical personnel to achieve the difficult task of guaranteeing the quality of the construction.

Operating from its Milan offices (at San Giuliano Milanese), which opened five years ago, its technologies for testing road building materials have evolved over this time.

Company management, which has gambled on quality, has also focused on services and operating in innovative sectors, such as thermal conduction of materials.

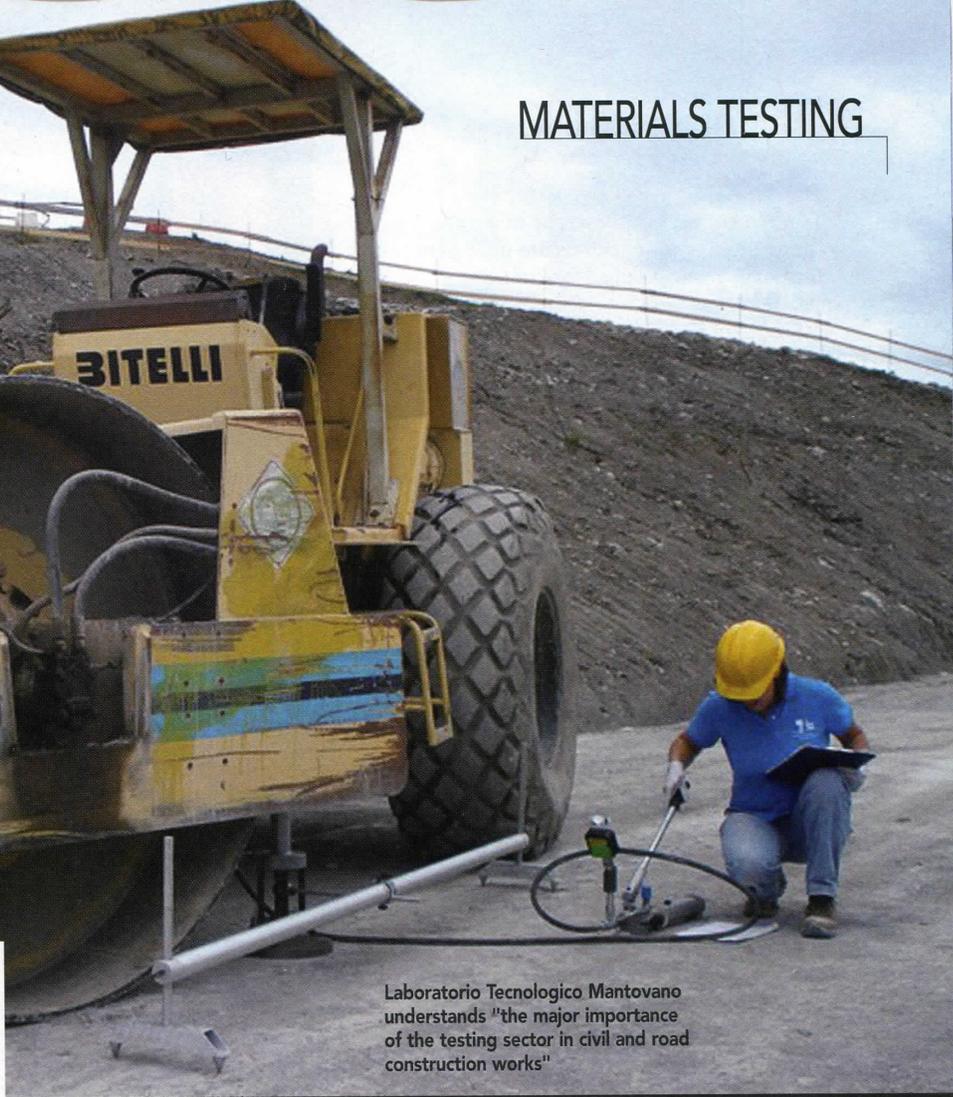
However, what LTM has focused on specifically is attempting to identify the effective subjects of the tests and their meanings, use and marketing, as well as placing the product on the market and its placing in operation and its durability.

The route taken by the Milanese offices has been guided by analysis of the role of the laboratory in the market.

Roberto Ferrari, the LTM laboratory director, explained: "A role which, besides the quality traditionally offered by the test, guaranteed by use of top-quality equipment, skilled personnel and methodologies, which comply with the regulations, now also requires focus on the global quality of the company, which is customer-oriented, since it is the customer who is the centre of our attention, in order to satisfy their requirements."

LTM says that it had three objectives, the first being to organise a laboratory capable of reducing the costs of conducting tests as much as possible.

"A production cycle which lowers the costs of tests can also encourage the user to access it,



Laboratorio Tecnologico Mantovano understands "the major importance of the testing sector in civil and road construction works"

Making sure that materials are fit for the job through sophisticated testing equipment and methods has proved successful for a number of companies, as Patrick Smith reports

thereby improving inspections and controls and, consequently, the quality of the work."

At LTM, they have identified a production line on which the number and quality of the equipment, and the personnel, combined with the organisational structure, can guarantee reduction of the costs to be passed on to the customer, and therefore the costs of the tests.

The second objective was to have a comprehensive suite of the equipment, in order to offer a complete service. This includes introduction of a mobile laboratory and creation of a department containing equipment for dynamic tests.

Complete assistance to customers, in order to help them in understanding the meaning of the tests, was the third objective.

"Customers need assistance and a specialised contact that can instruct them, follow them, and advise them. This is a target in which LTM has invested, creating personnel skilled in this type of activity. This is all-round assistance in which the cost of the final product is also assessed."

The concept of durability, only recently introduced into regulations on bituminous mixtures, makes the task of the testing machines extremely important, since they serve to analyse the behaviour of the mixtures on repeated application of loads which simulate the stress induced by traffic.

At the San Giuliano Milanese offices, a wide range of highly diversified equipment has been bought to satisfy the requirements of today's market and those of future markets.

The laboratory is organised into two sectors: one dedicated to structural safety (concrete and

The Controls' Dyna-Comp roller compactor model 77-B3602



MATERIALS TESTING

► steel) and the other to bituminous mixtures.

A large number of machines are used here, and they have been supplied by Controls of Cernusco sul Naviglio.

"For us, together with the machine, it is fundamental that the personnel be trained as well, not just for the test itself, but also in the best possible use of that particular machine," explained Dr. De Grandis, the laboratory manager. "During the purchase phase, the essential thing for us is to understand which equipment is the most appropriate for the quantity of work for which we plan to use it."

In an important investment, Controls recently supplied two "important machines" to LTM: the universal dynamic machine 77-B3202 UTM-25 equipped with an accessory, model 77-B3080, for fatigue tests on prisms, and the Dyna-Comp roller compactor model 77-B3602. Other Controls' machines at the San Giuliano laboratory include the gyratory compactor 76-B0252; Marshall compactor 76-B4012; Multispeed 34-T0107 (Marshall test), and the sieving machine model 15-D0411.



The Gyratory compactor 76-B0252 from Controls

it produced a compression testing machine for concrete with "an innovative design involving two distinctive measurement scales," the lesser one covering 10% of the larger one.

"The novelty consisted of a hydraulic ram having two concentric stems, one working from inside the other but completely autonomous so that, in practice, two machines are available in one, the more powerful machine for specimens of standard strength and the more sensitive for testing cores taken from tunnel linings.

"A single frame and a single power unit proved an advantageous solution cost-wise and meant that no sacrifices were necessary in terms of performance when compared with the classic, two-machine solution. It is a bit like having a truck which, when needed, becomes a scooter," says Tecnotest.

"That project was well in advance of its time, so much so that only today, after many years, the dual ram machine is largely recognised as a highly practical and technologically advanced solution."

Tecnotest says that it has been able to demonstrate how correctly investing in research and development can result in a success story.

The company points out that in order to effectively obtain two measurement scales in a hydraulic press, apart from the sensitivity of the dynamometers, fine-tuning of the device regulating fluid pressure should also be considered: with only one ram, the lower the strength required by the system, the higher the percentage error in response.

By way of comparison, it is like increasing the size a photo: beyond a certain limit the grains of a film inevitably become more evident and details are lost.

"Using two rams of differing sizes working at the same pressure, different forces are obviously obtained, but with the same number of elementary regulation units. ■

Controls
www.controls.it

Laboratorio Tecnologico Mantovano
www.labtecman.com

Tecnotest
www.tecnotest.it

TWO SOLUTIONS IN ONE

Meanwhile, Tecnotest says that the capacity to rise to the challenge of continual improvement, to design and manufacture machines for research purposes, and to do away with the "prevailing logic of investment finalised to boost industrial output," are all traits representative of its vision.

"Over the years, this approach has enabled us to form ever stronger ties with university laboratories and research centres, thus setting the foundations for industrial production based on innovation as a tangible response to complex problems," says the company.

"With the introduction of building materials promising ever higher performance, leading to ever more ambitious and complex projects for infrastructures, possessing a solid scientific background makes a remarkable difference.

"For this reason, Tecnotest has earned the privilege of being consulted by leading companies and coming up with solutions that have subsequently proved useful for the whole industry."

It cites as an example a project in Italy where



Testing technology allows for more durable construction materials



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- AVOIDS OVERHEATING OF HYDRAULIC FLUID
- GUARANTEES ACCURACY AT LOW LOADS
- REDUCES ENERGY CONSUMPTION



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