INTRODUCTION TO LEONARDO 1.3
A technological system integrator able to supply turnkey solutions to meet every Customer's specific needs

In 1994 the three shareholders of Leonardo decided to join their wide experience in the field of industrial automation and founded an Engineering Company devoted to the development of technologically advanced automation systems to be integrated into industry production lines. Leonardo was immediately born, therefore, as an industrial system integrator and gained wide importance on the market right in a time when many other similar Companies were compelled to stop their activity. The Company, initially born as a project office, had to deal, from its very beginning, with the difficulty to find Companies able to build up the machines projected by Leonardo according to the high quality standards required. The matter was solved by devoting a consistent part of Leonardo activity to the direct manufacturing of the systems designed. The first premises in Lograto, Brescia (450 sqm), turned immediately out to be not wide enough to host the new manufacturing activity, so the Company moved to Maclodio, Brescia, where Leonardo currently lies and occupies an area of 5.000 sqm.

Three main typologies range the products available from Leonardo:

• Measuring and Testing Instruments
• Testing benches for the test of mechanic and electro-mechanic components, suitable for leak detection, strength, capacity tests, and tests involving other physic greatnesses
• Hardware and software for PCs and PLCs to be used into electric boards, supervision systems, control systems and communication nets
Headquarters in Italy
**A technological system integrator**

Leonardo is a performing partner in the metal and mechanics industry, in automotive and in all fields connected to the use of fluids, gases, aerosols. The solutions proposed move in different directions and range from the simple measuring instrument, supplied as a single unit, up to sophisticated units for moving and process supervision. Leonardo grants a complete service starting with the project and the construction, often from a brand new basis, of the mechanic, electric and electronic components, to go on with the installation and the start up of the machine or of the line supplied, which are delivered to the Customer as a turn-key product, to continue after delivery with a top after-sale assistance service and periodical revisions. In order to grant its Customers the best solutions to their specific requests, Leonardo invests consistent resources into research and technological innovation, to make the machines of its production more and more performing, competitive and future-oriented. Leonardo is among the very first Companies in this field having obtained a quality system certified according to UNI EN ISO 9001-2000: this requires all steps of the production process, starting with the relationship with the Customer and order acceptance, going through the project and production activity with the suitable controls needed, to end up with the after-sale service assistance, to be strictly monitored by procedures specifically studied to grant their perfect realization, release, distribution, filing, conservation, and traceability in order to offer a top quality final product.

The Companies using Leonardo products benefit of this policy of utmost quality, too: the measuring machines and testing benches manufactured in agreement with ISO 9001-2000 certification and the functionalities they intrinsically offer grant consistent reductions of reject pieces and a considerable increase of the production quantity and quality.
Designing around Customer’s needs

Right when approaching the specific problems of our Customers, no matter if of production, measuring or testing activity, a strict and sound cooperation relationship starts, an attitude which is carefully kept during all steps of the project activity to meet our Customers’ needs at the best. It is right from our Customers’ troubles that the most fitting solutions are often found and developed to top quality levels, by caring about all points of the mechanic and electric design, of the programming activity of any PLC and PC and of the assembly of the components which have been carefully chosen or supervised during their manufacturing by Companies controlled by or associated to Leonardo. The strict synergy between mechanics and electronics is, in particular, one of the key features which distinguishes Leonardo among the systems integrators, a strategy which is the basic rule to supply our Customers with a turn-key product. Micro–controllers, specific micro–processors, PLC and PC nets, user interfaces, supervision software, process instruments are used in different applications to target to a perfectly Customer–tailored result. We care attentively for the installation and start–up of our machines, too, of course: especially when supplying sophisticated machines abroad, we rely on the support of local technicians, who are educated and guided by Leonardo in every step of the machine assembly activity. The Research and Development activity, behind each new test bench design, takes Leonardo products to an high technology level, probably not affordable by all the companies but almost only by the medium-high class manufacturers.
The importance of the accessories

The wide experience matured these years long led us to identify in the top quality accessories one of the key factors to the successful development of a measuring or a testing system. Accessories play, therefore, a leading role inside our activity and let us stand out among other systems integrators as we are able to supply our Customers with a complete series of complementary elements as special sealing gaskets, master leaks, calibration instruments, and linear profiles which are carefully chosen or designed to meet the highest quality demands characterizing our production. Sealing gaskets, for instance, are a key elements inside leak detection applications: Leonardo manufactures such gaskets by using special compounds, specifically melted, very resistant to the natural wearing process occurring during testing cycles. Beside the high precision of the stopping up, this choice grants a duration of the gaskets even one hundred or one thousand times longer than that offered by the standard gaskets available on the market, thus enabling a dramatically reduced time of machine stop for gaskets replacement and consequent save of time and money. Master leaks constitute another important accessory in our activity: they are manufactured in stainless steel and screwed onto the piece to test, so producing a pre-calibrated leak used to test in a quick and easy way the correct functioning of leak detection systems.

If compared with the solution based on rejected parts with known leakages, the master leaks are better because they have very precise values identified with a code printed on their body, corresponding to the production certificate with the features detected with specific laboratory tests.
Total attention to the customer

Beside the high quality of the systems supplied, Leonardo grants at any time a top after-sale assistance service perfectly tailored to the Customer's needs, able to perform an immediate tuning of all hardware and software modifications on the installations supplied, so to meet any new eventual demand by the Customer and to keep the efficiency of the equipments always on a top performing level. Our after-sales service includes the periodical check of the perfect functionality of the machines and the calibration of pressures, temperatures, leaks and flows through certified transducers. This kind of service is also available on machines not produced by Leonardo.

The huge experience matured these years long has been putting us in contact with many necessities to meet, and our Customers can now enjoy our deep knowledge and problem-solving attitude coming from this wide experience and continuous growth. Flexibility is one of the key features of Leonardo who, thanks to the deep and sound relationship with its Customers and commercial Partners, is able to develop personalized solutions in short times.

Finally, the know-how matured during project development can be used for different applications, though a relationship on an exclusive basis is always kept with the Customer who required the original study.
Instruments for pneumatic test and measurement

Among the systems of Leonardo production available on the market there is a complete line of instruments suitable for leak detection tests, capacity tests, volumetric tests, which are also commonly used in the manufacturing of testing benches and of the most sophisticated industrial machines. Six different product lines are used to perform measurements on systems and components to detect leaks of air, water, oil. The principles applied include leak detection through filling up and pressure chute, through capacity, volumetric tests, detection tests, tests with tracing gas (carbon dioxide [CO₂], hydrogen, helium), and tests with ultrasounds. These tests all are made by the following Leonardo instruments:
Pressure and leak diagrams

Fast and easy user interface

Data filing and SPC analysis in real time
**Testing benches**

**Leonardo** manufactures testing benches for the most different industrial applications, with special reference to functional and duration tests, leak detections, dimensional controls. Our machines – all studied and developed according to every single Customer’s specific needs – can be placed in laboratories or directly installed into a production line. Testing benches constitute the most important sector in the production activity of **Leonardo**, who’s proud to boast a capillary diffusion of its products in Italy as leading supplier for such complete, integrated solutions. Dimensional control activity, in particular, concentrates mainly on wheels and foundry products: to meet the necessary data supervision, collection, statistic elaboration, **Citcet** and **National Instruments** environments (LabView, CVI, LabView Real Time...) are used to meet measuring, laboratory and analysis needs.

**Leak & Flow Test Machines for 100% test in production line**

![Image of testing benches]
Automatic In line Leak & Flow Test of head-covers

Water leak testing

Sniffer detection

Heat exchangers
Functional Testing and Dimensional Control machines for Laboratories and Production

Static and dynamic dimensional control

Contact and laser calipers

Pneumatic calipers

Manual mechanical calipers
Sensors calibration

Chains assembly

Hydraulic testing

Phase variators test

Hydraulic calibration

Motor tuning
Braking clamps control

Bushings insertion in pistons

Pneumatic brakes functional test

Motorbike brakes semi-dynamic test

ABS characterization

Axles bedding
Man – Machine interface (examples)
Testing machines for alloy and steel wheels, rims, discs and tyres

Run Out, Harmonics and Unbalance measurements for wheels, rims and discs

Helium Leak Tester for alloy wheels

Leak Tester for steel rims: only butt weld (on the left), or full rim (on the right)
Impact Tester for 13°/30°/90° tests
Radial Impact Tester
Plunger for tyres

CFT – Cornering Fatigue Test
Rotate Bending Test

RFT – Radial Fatigue Tester
Rim Rolling Tester for wheels and tyres

Strada 40 – New Road Simulator for wheels & tyres
Radial Fatigue & Multiaxial Test with Outer Drum

Multiaxial Test Machines with Inner Drum
For pass-car (on the left) and truck wheels (on the right)
FAQ – Most frequently asked questions

1) How many employee is Leonardo currently composed by?

Leonardo is currently (2013) composed by 40 people.

2) How are Leonardo employees divided into according to their different roles?

3) Which is Leonardo productive and commercial structure?

Leonardo structure is today made up of a main company and a satellite company: Meccanica Galileo, that is in care of the machining operations. Overall the production plant holds about 5,000 sqm and it’s sited in Maclodio (Brescia). A group of companies in the mechanical and electronic world are linked to Leonardo and cooperate with us regularly. A worldwide network of consultants and agents operates in the whole Italian territory and in many different foreign countries, like France, Spain, Poland, Romania, Turkey, Mexico, Brazil, South Africa, Argentina, U.S.A., China, India, Korea and others.
4) Where is Leonardo present in the world with its own installations?

As visible in the map here below Leonardo is already present in many different European countries and really deep rooted as in Mexico and South America, as in South Africa, Turkey, Thailand, India and China.

5) What about the educational degree of Leonardo’s employees?

- Professionals: 20%
- Apprentices: 5%
- Top degree level instruction employees & Engineers: 20%
- High level instruction employees: 55%
6) How are Leonardo's products manufactured?

Leonardo performs the preliminary study, the electric and mechanic project and the programming of the automation systems mainly targeted to testing and measuring benches. The most important feature and strategic peculiarity of Leonardo lays in the integration of mechanics with electronics and software.

7) How is the production divided?

8) Which are the most important industrial applications supplied?
9) How is the calibration of Leonardo's machines done?

Every measuring channel, no matter if of pressure, flow, force, temperature, is calibrated according to internal procedures by skilled people only, who use SIT certified instruments. The same controls and calibrations are also periodically performed by our technicians directly on the Customer's premises.
10) Is Leonardo certified for quality?

Yes, it is. Leonardo is certified according to UNI EN ISO 9001:2008 and it’s also provided with some special homologations, such as the qualification of “Ducati Official supplier”, the partnership with LBF (Fraunhofer) Institute. Leonardo is also credited by “QuESTIO” as Research Center for the Technological Transfer (CRTT).
11) Which was the growth of Leonardo during the last years?

**Leonardo** cares a lot for a sustainable growth, not to neglect its historical Customers. That’s why, these latest years, the structure, the people, the turnover increased a lot, but in a perfectly proportioned way.

![Graph showing the trend of Leonardo sales revenue during the last years.](image)

12) Which National and International Expos has Leonardo taken part?

- [M&AP](image)
- [EMO](image)
- [Control](image)
- [bim](image)
- [Automotive Testing Expo 2011](image)
13) Which social engagement has Leonardo had during the last years?

Leonardo takes warmly part to the different social and cultural activities of Brescia community and to its different events to establish a sound relationship with its Customers, its Suppliers and its Employees which goes beyond the working activity.
Superbike and GP motorbike championship with Ducati Team in Italy

Leonardo’s own soccer team

Roncadelle basket team

Lombardia Trophy (International basket prize)