

Services

# Solutions for every magnetic technology need

by Gianandrea Mazzola

**Laboratorio Elettrofisico is a global company specializing in the engineering, design, development and manufacture of precise magnetizing and magnetic measuring equipment. To serve the automotive industry, currently the company is manufacturing a 4th generation of magnetizing station, with a handling system and two levels of magnetic quality control**

**L**aboratorio Elettrofisico is a global company specializing in the engineering, design, and manufacture of precise magnetizing and magnetic measuring equipment. Founded in 1959, the company is headquartered in the Nerviano area of Milan, Italy. In addition to design and manufacturing operations in Italy, the company has laboratories, testing facilities, support staff, and services centers in the United States, China, and India. It employs nearly 100 people worldwide, including 40 engineers and experts in magnetic analysis, design and engineering, magnetic measurement, automation and programming, and testing and support. In this context Laboratorio Elettrofisico cur-

rently serves more than 2,000 clients around the world, delivering industry-leading solutions for every magnetic technology need.

«Every day – explains the Director of Sales Europe, Marcello Ferretto – we are facing new customers' demands that are more challenging than ever. Thanks to the experience gained in 60 years of playing a central role in this market and to the continuous research and development on innovative products, we are able to offer the best state-of-the-art technical solutions. We are now surely focused on the car electrification market but always thinking about new solutions that can be applied to all industries we serve».

To serve the automotive

Magnetization station



industry, currently the company is manufacturing a 4th generation of magnetizing station (the first one was developed in 2016), with a handling system and two levels of magnetic quality control. Such a magnetizing station is generally used for magnetization of step-skewed rotors with rare earths magnets embedded; customer's product requirements are typically related to full magnetic saturation and low torque ripple.

«From the industrial point of view – Ferretto underlines – we are always asked for: low cycle time, high performance level, compatibility with 4.0 industry, high reliability, accuracy and flexibility. Our magnetic solutions fulfill all the requirements mentioned above and this is proven by the fact that several European OEMs and Tier1 suppliers are using our equipment in their production lines».

## From magnetizing equipment to magnetic measuring equipment

Magnetizing equipment plays a central role in the daily activity of the company, and its R&D department is continuously working on innovative solutions. For instance, one of the research topics concentrates on the improvement of cooling efficiency and optimizing the slots current density.

«We use – specifies Ferretto – the latest generation of finite elements suites from different software houses, including optimization algorithms. Interesting case histories related to magnetization topics are: NdFeB rings, 3 mm diameter, 0.5 mm height, magnetized with 8-pole multipolar axial pattern or 20-pole step-skewed rotor, 800 mm diameter, 1000 mm height, radially magnetized».

Laboratorio Elettrofisico is focused as well on magnetic measuring equipment development as well and has one of the most complete range of magnetic measuring system available on the market.

Measurement of induction profile

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Marcello Ferretto, Director of Sales Europe of Laboratorio Elettrofisico

«However – Ferretto adds – customers' requirements are now moving towards magnetic quality control 100% in the production lines. For this reason, we are developing suitable solutions for magnetic quality control of soft magnetic material assembly, for instance FeSi stator core».

With such equipment, the customer will be able to check the magnetic properties, and losses, of a stator core after mechanical and thermal processes that might affect the magnetic behavior.

«Furthermore – ends Ferretto – we are integrating into our magnetizing station the possibility to check the induction at the rotor's surface; this measurement is performed using a gaussmeter connected to a Hall probe.

The signal is then elaborated by an industrial PC and displayed on an HMI panel. In this way, full magnetic quality control, magnetic flux and induction, is achievable on a mass production equipment. We are available to evaluate your specs, especially the most challenging and demanding ones, and customer satisfaction is our first priority, we never say “this is not feasible”.

We always make it possible! ».

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