With a young and dynamic research and development team, GSC have the long term future in their sights.
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GSC – Research and development in chemical supply

In pursuing ambitious environmental goals, one of the most important departments is certainly R&D. In recent months, many companies have proudly presented their sustainability reports, including GSC group and with it, position themselves to offer high quality products with tailor-made services to meet customer needs for today and the future.

Chemicals not only need to be stable and provide a solid performance, but they must also be easily processable and, more importantly, reproducible. In the first instance, laboratory work is carried out to prepare samples of just a few hundred grams up to a few kilograms. In doing so, technicians can explore new raw materials and different solutions. Following this, subject to appropriate trials, scaling-up can be effectively implemented by means of preliminary and intermediate productions up to testing in a pilot plant, where larger volumes can be produced, and end results analysed.

Significant Numbers

In presenting its sustainability report in February (see *World Leather*, Feb/Mar 2022), GSC provided some insight and data on the company's R&D beliefs and how longevity is being built on within the company. At 41, Adriano Serafini is arguably one of the younger CEOs in the industry, but clearly sees that investment, no matter what the current situation, is paramount. He tells *World Leather*: "Others may have contracted this expense and preferred the logic of synergies and cost cutting. The future is very unpredictable in light of these last years of pandemic and war but, however, we

always think to take into great consideration the expenditure in research as it is in our DNA."

To back this, the figures speak for themselves – with 33% of the workforce dedicated to the research department and with 10% of all expenditure allocated to it, over 50 new products were developed during the reporting period of 2019-2020, and it is clear to see that this is major investment in GSC's "Three pillars of Research and Development":

- Supporting creativity while respecting the environment to implement new products
- Controlling incoming raw materials and production processes to ensure the quality and consistency of each product
- Performing physical/chemical tests in assistance and/or collaboration with customers.

This last point, in their opinion, is key and distinguishes the group from many competitors.

Physical tests

In addition to machines that are now in common use, such as the Veslic for colour fastness, flexometer for flex resistance, and dynamometer for strength tests, it is equipped with specific instrumentation for customer requirements.

The Martindale Abrasion Test is used to test the wear resistance of leather. It is used for the automotive sector, where the breaking strength, pilling, colour changes, and weight loss of the material subjected to wear are analysed.

The Stick Slip Test is used to measure how much noise two materials will generate when they come into contact with one another, which is also known as "the squeak effect". The testing equipment records the result based on the levels of friction between them.

Chemical tests

Collaboration with customers on qualitative and quantitative determinations of substances, from leather or chemical auxiliaries, with the aim of potentially reducing their content for increasingly high performance and environmentally friendly leather, is of great importance. The variety of analytical instruments makes the analytical laboratory one of the most innovative and complete in the sector. Some of the main analyses that the laboratory can provide are aimed at tracking and quantifying aldehydes and biocides using liquid chromatography (HPLC). The determination of aldehydes is carried out on samples of leather or finished products – a parameter dictated by regulations governing their use, so continuous and precise monitoring of what is present in the products is crucial. For this reason, GSC currently registers nine substances within the REACH regulations. In time to come, this may well rise, especially if REACH regulations are applied to polymers, which currently fall outside the requirements for evaluation.

Adriano Seraffini, as CEO, heads up the family orientated business to be a recognised global leader in the leather chemicals market.

Among other equipment is a 4K Microscope, one of the first of a new deep resolution generation, allowing detailed analysis of defects, but also providing a complete investigative tool, enabling problem solving and control of the finishing, layer by layer.

Another issue where the content of the products needs to be monitored is volatile organic substances. (See *World Leather*, Aug/Sept 2021). The so-called VOCs are continuously analysed by the laboratory, using gas chromatography to determine which compounds may be emitted from the products, and to find a correlation with the compounds emitted from the finished leather.

Chemical Stability

Predicting the stability of the product over time, to ensure customer satisfaction and that a product has remained unchanged over time also comes under the strict supervision of the R&D department. A complete characterisation of product stability can be carried out using the proprietary Turbiscan instrumentation. This technique makes it possible to study the chemical and physical variations of the product under analysis, subjected to variable temperature conditions to simulate the shipping conditions they would undergo during transport.