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Opening photo: Chemtec's new laboratory has started a test contracting service.



HIGHLIGHT OF THE MONTH

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# Chemtec Expands its Plant and Develops a Laboratory Test Contracting Service

From an interview with Carlo Guidetti

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“Updated tradition” is not just a slogan for Chemtec, a company established in 2010 and specialising in the formulation, production, and distribution of complete products and technologies for the pre-treatment and waste water treatment processes intended for the coating sector. It also reflects the mission of a business that, although recently established, can rely on thirty years of experience in terms of formulations and expertise.

“The technologies developed by Chemtec are advanced, revolutionary, and characterised by a very limited environmental impact,” states Carlo Guidetti, the owner of this firm located in Corbetta (Milan, Italy). “They are designed to bring new solutions into a traditionally difficult sector with little innovation. We constantly develop new formulations in order to improve the toxicological profile of existing technologies and launch

products that comply with the increasingly restrictive safety regulations. Our corporate philosophy has always been oriented to our customers. This is not limited to the peculiar relationship created during commercial negotiations, but it is understood as a deep collaboration that includes the analysis and understanding of the production environment in which our technologies will be installed, in order to formulate products that are often tailor-made.”

The company is currently expanding its factory in order to provide its customers with a complete service. The aim is insourcing some processes, such as production and logistics, installing new machines, and making the laboratory even more efficient through the implementation of the most innovative tools. "We want to create a structure that gives us more control on our production. Currently, we have an about 1000 m<sup>2</sup>-wide area that houses our production department, laboratory, offices, and warehouse and that will be integrated with an additional production department for water-based products (which now account for half of Chemtec's entire production) and a logistics department. "We will continue to outsource the manufacturing of solvent-based and powder products, but we will ship them from our factory. Although these are not solvents with high VOC contents, flammable, or dangerous, we have chosen not to insource their production. As for water-based products, on the other hand, we opted for an integrated production flow, from the research and development of new solutions up to the formulation, production, packaging, and shipping of end products."

### A new structure for a complete service

By connecting two buildings, Chemtec's factory will take a horseshoe shape. "On one side, we will create a warehouse for raw materials, whereas the end product logistics department will be located on the other side. We will keep an empty area where we will arrange a partly automated packaging area in future. The laboratory, our greatest pride, will

be located on the upper floor. Its team will continue to research and develop new custom formulations, but it will also start a new test contracting service (ref. **Opening photo and Fig. 1**)".

### The development of formulations in Chemtec's laboratory

In addition to the complete management of the water cycle from pre-treatment to discharge, the services offered by Chemtec include coating quality control. "We perform a complete inspection of



**Figure 1: The technical staff of the laboratory.**

coatings' quality level, measuring the conventional parameters of adhesion, impact, bending, etc. on the products treated and coated by our clients. We also carry out neutral and acetic salt spray corrosion resistance tests and accelerated corrosion resistance tests with electrochemical methods such as impedance spectroscopy and the ACET method.

"The latter technique enables us to quickly obtain objective and repeatable numerical data and to understand the causes of corrosion. Indeed, in just 24 hours it is possible to obtain results that not only allow to predict the progress of salt spray

corrosion resistance tests, but also provide information on the causes of corrosion: in this way, we can define targeted actions to solve any problems or improve the finishing performance level.

"Thanks to impedance spectroscopy, on the other hand, we can conduct specific studies to identify, for example, the most corrosion resistant metal sheet among those offered by different suppliers or the most oxidation resistant powder coating among different products with the same nature

but manufactured by different firms. This is the kind of tests that our laboratory has recently performed for our customers, thus helping them to improve the quality of their products in a very short time and without drastically changing their coating processes."

### The laboratory tools

In addition to the devices used for salt spray resistance

analyses, Chemtec's lab is equipped with a cleaning machine for industrial tests and a 200 litre/hour reverse osmosis system with UV filters, entirely conceived by the company's technical staff (**Fig. 2**). "We are starting to offer our Chemtec-branded reverse osmosis and demineralisation plants to the market (**Fig. 3**). We install these machines as a part of pre-treatment and water treatment systems. In the former case, these are devices for lines not produced by Chemtec, whereas in the latter they become accessories or integral parts of physical-chemical systems designed and installed by us."



Figure 2: Analysis tools.



Figure 3: The Chemtec-branded 200 litre/hour reverse osmosis system with UV filters has been presented to the market recently.

For its analyses, the laboratory employs different techniques, as follows:

- high performance liquid chromatography: it enables to detect the concentration of oils and polymers in the baths of both Toran 3®, the one-stage cold pre-treatment system developed by Chemtec, and conventional degreasing plants;
- UV spectrophotometry: this analysis technique is used to detect the cleanliness degree of surfaces. By measuring the surface tension, it is possible to detect the concentration of surfactants and thus obtain scientific data related to the cleaning level of the workpiece;
- impedance spectroscopy: analysis method used for electrochemical systems, including ACET;
- gas chromatography: employed for the control of raw materials and some products (Fig. 4);
- Fourier Transform Infrared Spectroscopy (FTIR): used for the quality control of some raw materials and to perform analyses for customer assistance;
- dynamic surface

tensiometer: it measures the dynamic surface tension of a liquid to determine the exact concentration of a surfactant in a degreasing bath.

"Finally, our laboratory is equipped with a coating room including two 1 m2-wide booths (one for liquids and the other for powders) to coat samples and one drying oven. Here, we can both formulate new products to be offered on the market and perform any coating quality control requested by our customers."

### Conclusions

"We have chosen to invest in order to expand our plant and equip our company with tools guaranteeing scientific, measurable results," says Guidetti. "Such scientific approach obviously involves high costs in terms of both tools and staff training. However, although the hardest one, Chemtec has chosen this road to counteract the increasing spread of superficial solutions found in the pre-treatment and cleaning fields.

Appropriate tools were necessary to achieve this goal: the following step was putting them at the service of any user requiring equally accurate results for their tests. The aim is creating a more scientific approach to the problems that can arise in the manufacturing industry and, in particular, in the coating sector. The way is still long to "update tradition", but it is based on well-established premises." ○



Figure 4: The gas chromatograph for the control of raw materials.