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# INDUSTRY 4.0



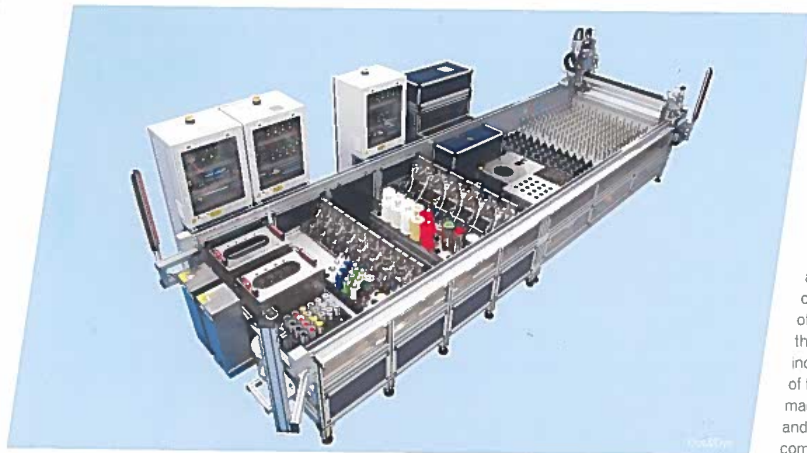
# TECNORAMA

## CEO Speak



**Mario Scallizi**  
CEO, Tecnorama

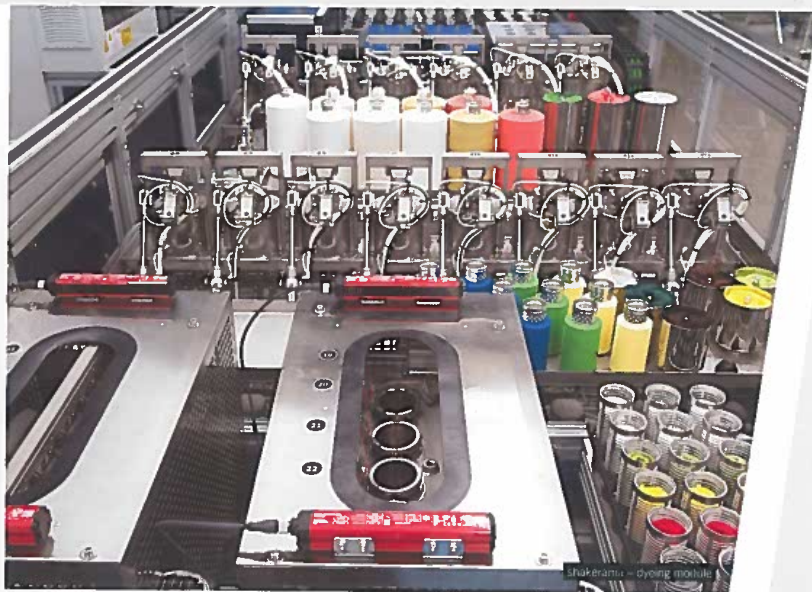
*When Tecnorama was established in 1984, the payoff declared "special solutions for special needs" because the mission of the company is clear from the very beginning: to realise machines able to solve problems that no one else can solve. This is still true: we wish to be present in all markets to promote automatic dyeing systems and support customers with dedicated projects by designing and creating special solutions for every particular need. The Tecnorama vision is to automate dyehouses laboratories with the Dos&Dye system to increase reproducibility parameters with bulk recipes and to automate dyehouses with Dosorama automatic systems for the dyestuffs and chemicals dispensing to optimise the duration of dyeing processes without any waste of product. The quality of our products is worldwide known and recognised, the reliability is guaranteed over time. My personal commitment has been supported for the last few years by a young and dynamic management that is highly motivated. With a great experience in this sector and passion for our products, the team working at Tecnorama aims to satisfy a client's requirements with the best quality and care possible for the coming generations.*



Tecnorama develops and produces machinery for automatic dispensing of liquid and solid dyestuffs and chemicals for laboratory and bulk, dissolving systems with automatic delivery to the different users, full automation for laboratories and small batches by combining automatic dispensing machines with special robotised dyeing machines able to dye any textile materials: yarn, flock, fabrics and knitwear. The company is firmly committed to the study and design of new and original systems to offer the market innovative solutions able to increase quality and process productivity of the dyehouses. Its machines are made with the best quality raw materials and engineered by the most advanced competence and know-how.

Tecnorama has been studying and developing for several decades many original dispensing solutions to increase productivity and quality levels in laboratory performances. Dosorama is the name of Tecnorama's automatic dispensing machines. These systems are recognised worldwide as the most accurate and reliable systems on the market. Tecnorama makes various solutions with different technical performances to cover all kinds of customer requirements and needs. The masterpiece product is the Does&Dye system, the worldwide known laboratory system to automate dyehouses that can automatically manage complete working cycles in the laboratory 24 hours a day, seven days a week.

Tecnorama develops automatic dispensing systems for bulk in order to complete the dispensing automation in the dye-house, such as automatic machines for dispensing dyestuffs and chemicals, either liquid or solid. The advantage which distinguishes Tecnorama systems is the possibility of being able to serve and cover the requests of each dyeing machine, of any capacity. A single automatic system, combination of different machines dedicated to this purpose, can in fact serve all the dyeing machines from 1kg, up to bulk production machines of thousands of kilograms' capacity, either for the fabric, for knitting, for yarn, etc. Minimum dosages of chemical products, managed with high precision, from 5 cc, or 1 gram of dyestuff, can be easily performed and automatically transferred to the dyeing machines requiring them. To complete the system, there are dispensing systems of solid chemicals, such as salt and soda, which can be managed either by solution or by paste, according to the system requirements. For the realisation



of these machines, Tecnorama adopted the most modern technologies and original technical solutions allowing high dispensing performances in terms of both productivity and quality.

### Digitalisation Initiatives

The masterpiece product is the Dos&Dye, the worldwide known laboratory system to automate dyehouses. It is a completely automatic system composed by a Dosorama dispensing machine and a robotised dyeing machine able to work autonomously 24 hours a day, seven days a week. Conceived, manufactured and patented by Tecnorama, it can manage and perform all laboratory dyeing cycles increasing the productivity both for laboratory and bulk. In the laboratory, it reduces the dyeing trials to obtain the exact recipe thanks to the complete reproduction of dyeing cycle

exactly as in the bulk machines in preparing, dyeing, soaping and washing. The right first-time result grants the exact recipe coming from the laboratory in order to drastically reduce the corrections after dyeing and the re-dyeing into bulk machines with a huge saving of the time dedicated to a production batch and the increase of the whole productivity of the dye house. Thanks to the optimisation of production processes and to the overcoming of those limits inherent manual management of the laboratory, the system allows to reduce water and energy consumption for an environment friendly approach and for a considerable saving of time and money.

Dos&Dye has been evaluated from an international testing, inspection and certification institute matching the features required from the national law of some countries to get benefits for 4.0 investments.

Dos&Dye system accomplishes the following features for 4.0 industry: CNC/PLC control, interconnection with factory information system, integration with logistic system, friendly man-machine interface, standard safety compliance, continuous monitoring of working conditions and process parameters and remote control.

Tecnorama provides remote assistance through a software that allows monitoring of the machine process in every phase and operation.

### Current Processes

Adopting a Tecnorama full-automatic system means a decrease in the labour dedicated to sampling and the possibility of working during night or weekends; the definitive efficiency is given by eliminating errors in dispensing and by a considerable

reduction in the number of dyeing to get the exact recipe. This is because the patented Tecnorama multi-pipette dispensing system guarantees an accuracy of the  $\pm 0,01\text{cc}$  and the dyeing machines follow all the phases of bulk dyeing cycles starting from the preparation up to the final operations such as neutralisation and the various washing processes. All this increases laboratory productivity and raises the percentage of right-first-time between the recipes developed in laboratory and the same repeated in bulk. Consequently, the re-dyeing and bulk corrections are reduced bringing both economic and energy savings.

Dosorama dispensing machines are available in different models, depending on the number of dyestuffs used by customers. The number of bottles for solutions ranges from 72 to 436. All the Dosorama use the

Tecnorama multi-pipette patented system, thus eliminating a possible contamination that can happen using other systems. The absence of washing operations between one dispensing and the other ensures high productivity in the recipes dispensing. Dosorama WS prepares the solutions automatically, starting from powder dyestuffs and handling the bottles, without any operator manual intervention.

With dyeing machines Tecnorama offers a wide range of capacities. Turbodye and Shakerama are used for samples from 10gm to 20gm. Dyrama is available in three models: from 50–100gm, 100–200gm and 250–500gm. The customer choice depends on the type of material, loading capacity and liquid ratio required.

### Growth Catalysts

**Innovation:** Tecnorama is always testing and patenting the best solutions to optimise dyehouse workflow both in the laboratory and in bulk. Technological innovation leads the study of the internal research & development centre, investing time and resources for the best results. Industry 4.0 features of the machines are the result of such commitment of the company.

**Production efficiency:** The automation conceived by Tecnorama is complete. Dispensing machines and robotised dyeing machines work autonomously 24 hours a day, seven days a week increasing the productivity both for laboratory and bulk. Saving time, saving energy, reducing human errors are all important factors that lead to improve production efficiency.

**Reliability of the machines:** The complete reliability and the excellent quality of the Tecnorama systems are internationally recognised by the best companies in the sector. The machines use customised software carried out by the R&D centre, and





it is precisely the internal skills that allow the company to offer tailor-made solutions.

**After-sales service:** Customers appreciate post-sales technical training that takes place both in their laboratories and in Tecnorama where it is possible to carry out dyeing tests directly in the internal laboratory. Following the simple instructions given in the use and maintenance manuals and thanks to scheduled maintenance, a customer can easily keep the system up-to-date and efficient. Regular maintenance is easily programmable within one working year and can be carried out by the customer's maintenance department. The systems rarely need direct intervention, but should this happen prompt assistance is assured. Remote intervention is provided on request thanks to the software developed in the IT department which allows technicians to monitor the operation of the machine during each stage in order to provide online assistance, in real time. Moreover, in particular cases, Tecnorama guarantees on-site assistance thanks to the presence of technicians worldwide.

**Environment care:** The Dos&Dye system ensures the high value of the right-first-time in this way the number of re-dyeing and bulk corrections are drastically reduced so that one can save water and energy with a great beneficial impact on the environment. In addition to Dos&Dye, Tecnorama has other systems that help customers in energy saving:

→ **Multi-Fastest**, which is a device to control the wet fastness (like washing, water). The tests are carried out before the dyeing machine is unloaded and the quick result (a test lasts 3-4 minutes) allows one to understand if the fastness is good or if it needs another washing operation immediately.



→ **Ecodyerama**, which is a simple device that tests the clarity of the water used for washing after the dyeing. Once the required level has been reached, the batch is downloaded without additional scheduled washings.

### Challenges Met

Make the work into dyehouses efficient and easy to manage starting from the real needs of dyeing workers and management—this has been the bet of Tecnorama, and the bet that has been achieved. All machines produced by Tecnorama are completely automated and easy to run.

The latest technical innovation for laboratory has been the Shakerama dyeing machine, which is particularly suitable for dyeing knitwear and fabric made of all fibres. The creation of Shakerama marks the final element, introducing a new type of dyeing system with the "shaking" of the liquor and

the textile material at the same time, similar to the working concept of the jet and jet-flow dyeing machines used in bulk. As for the other Tecnorama automatic dyeing machines dispensing of dyestuffs and chemicals, part of dyeing recipes, are done directly and automatically into the dyeing units by the multi-pipette dispensing system. Other chemical products can also be dispensed automatically during the dyeing processes.

### Opportunities Ahead

Tecnorama continuously develops new technologies and designs laboratory machines which respect low water consumption ensuring the reproducibility of the recipes with large bulk dyeing machines. Tecnorama is close to customers' dyeing needs and therefore constantly develops new machines. Tecnorama is currently designing a new dosing machine and planning an expansion of the wide range of dyeing machines for sample and small production **FF**