



Arzignano water treatment plant

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Thanks to its position in one of the rainiest areas in the north of Italy, the Arzignano area has always had abundant aquifers and water springs. This made it possible to develop craft and industrial businesses reliant on water; with the industrial revolution water was also one of the key elements which led to the development of the textile (which no longer exists) and marble sector in this area. Starting from mid-20th century, the local economy became reliant on the predominant development of the chemical-tanning industry; indeed, the Arzignano tanning district occupies the top spot in the world for manufacturing but especially for its technology and respect for the environment.

Such an important result in the artisan and one-thousand-year-old leather sector has been achieved thanks to the cooperation of all 'actors' involved; more specifically, a very important role is played by the effluent treatment plant of Arzignano which treats wastewaters and is managed by Acque del Chiampo, the biggest authority in Arzignano. I like to think of this huge water treatment facility as a sort of digestive system. Using a metaphor, a person can live long and eat many dishes full of sugar, alcohol regularly... if they have a perfect digestive system and metabolism which enable them to process everything correctly. The same goes for the effluent treatment plant. The sewage coming from almost 150 tanneries arrives directly at the treatment plant thanks to the sewerage. Here it goes through a series of treatment stages I shall now sum up: fine screening and sand trapping, smell homogenisation and treatment, primary sedimentation, biological treatment using oxidation-

nitrification and de-nitrification of activated sludge, separation of activated sludge using dissolved air flotation and finally clariflocculation and disinfection, which take place together with treated civilian sewage.

I have recently visited the effluent treatment plant and, despite living in this area and having visited it before, I cannot deny how surprised I was to see the investment made to adjust to the changes needed and required by the leather market. It is difficult to convey the sense of the complexity and professionalism displayed by the operators, but also the high focus given to the environment. I would like to stress that this attention is not limited to the effluent treatment plant but nowadays it is shared by all 'actors' operating in the Arzignano tanning area.

Thanks to their availability, I have interviewed several people, all extremely sensitive and competent in their work which is essential for this area to survive. Andrea Pellizzari, current CEO of Acque del Chiampo, is an example. This company has several State authorities among its shareholders. In addition to industrial sewage, it manages the civilian sewage of ten municipalities in this valley, thus balancing and reducing the polluting load of industrial sewage. This does not make its task any easier, complicating it indeed.

In these years the company has had to face a series of issues which raised the possibility of having to close it down on several occasions. A clear and well-known example of this is the clash between some tanners and the management of Acque del Chiampo: the former accused the management of



wrong investments, of not listening to the real needs of the tanning district and of having ordered the effluent treatment plant to be closed on several occasions, thus not giving the possibility to dump the sewage from the tanneries and obliging the whole tanning district to close down for short periods. However, the management of Acque del Chiampo has complained on several occasions about the regional and national regulations on treating water which do not take the specific nature of the tanning district into account, in addition to the lack of transparency of several tanning and chemical companies who are accused of not being prompt in providing the necessary information to plan sewage treatment and respect the environment and the law.

I have interviewed several tanners and representatives from chemical companies operating in this area to also understand their point of view. The conclusion that can be drawn is that they all are right to a certain extent: the issue is extremely complex, thorny and also political and when politics is involved in Italy there is a concrete risk of complicating matters further and introducing limitations in a system which needs to be dynamic instead.

Strangely enough, the challenges arising from the tensions, regulations, politics, rivalry between companies operating in this sector, by market needs and sometimes also by the lack of transparency of the parties involved, have made the Italian tanning field stronger, which is strongly evident in Arzignano.

I would like to explain this concept better and would like to introduce the following example: the issue of chrome. In the last few decades, the main issue affecting the effluent treatment plant was the reduction of dangerous substances, chrome is first of all, namely sewage coming from the tanneries. Tens of millions of euros have been invested to limit this problem which doesn't seem to have a solution. In 2009, the economic crisis originating from Lehman Brothers and the consequent reduction in work helped to put some limits to the way water was managed. At the same time, several tanners, whose survival skills and flexibility are unique in my opinion, managed to overcome the macroeconomic crisis by attracting new customers requiring tanning which did not involve chrome. So, after a few years, the Arzignano district

became the main producer of 'wet white' leathers. A problem which had been worrying Acque del Chiampo and local tanners for quite some time was then solved by creating new opportunities. Clearly, our focus on limiting and keeping the level of chrome under control still exists, but this shift in the production of leathers had led to new and unexpected problems arising in the analysis of tanning sewage. The search for a solution to these new problems has changed the destination of the latest investments.

This has been the main worry for the management of the effluent treatment plant: water treatment cannot be stopped because it would paralyse the district. On the other hand, the main parameters of wastewaters after treatment must be respected. The strength of this district also lies in contrasting interests, tanners, chemical producers and the management of the effluent treatment plant can find a common objective in the survival of the Arzignano district. As a result, even if all 'actors' are not clearly coordinated and have different ideas, they all go in the same direction and this has yielded excellent results which enable chrome tanning to go along with alternative tanning methods, increasing the productivity of the Arzignano district in the last five years. As can be imagined, this has taken quite a few people by surprise.

Another problem has arisen recently: a new regulation which basically cuts down the amount of perfluoroalkylated substances (Pfas) in wastewater to zero. It's an extremely sensitive issue which comes from problems beyond tanning. Indeed, it comes from past pollution in the aquifer which was probably caused by a company operating in the pharmaceutical sector based a few kilometres from Arzignano and which polluted the subsurface several decades ago. A trial is under way. In order to prevent these problems from happening again, the authorities have adopted a zero tolerance approach and have imposed the complete elimination of these so-called Pfas. What has the reaction of the district been? At the start there were some meetings with the parties involved, then there was the threat of having to close down the effluent treatment plant because the readings in water following treatment still showed traces of Pfas and because the management of Acque del Chiampo





does not only bear civil responsibility, but also criminal responsibility. As a consequence, even a very important project recently completed by Acque del Chiampo to reduce our footprint was shelved to enable everyone to focus on this priority. This is a very serious issue which affects the health and the future of the new generations in this area. Even the chemical producers for leather have tried to give their contribution, but they have been encountering several problems and lack of preparation from their suppliers of raw materials to provide them with the correct information. Despite this, Acque del Chiampo is bent on setting the Pfas value to zero in wastewaters and cannot wait. This issue has also a political connotation with protest movements which have been organised to safeguard the health of future generations. Based on my experience, I believe the district will overcome this moment and find a solution, even if it may only find a partial solution in the short-term. Indeed, some Italian producers of chemical products are working with the tanneries to create a greener line of products. Tanners have been questioning some tanning processes and have been looking for new solutions. I am confident something positive will come out of the issue with Pfas which will also enable us to adopt innovative processes which are more environmentally friendly.

This is the central theme I would like people to reflect on: leather tanning also leads to pollution. But we must not be afraid of using this word because if tanning is done paying the utmost attention to the environment, we can cut down pollution to the minimum.

This way we can give continuity and a more industrial connotation to leather manufacturing, one of the oldest and most fascinating professions in the world. To do it, we must all be united, including the authorities in charge of treating tanning sewage (even if they are control authorities).

All of this gives added value to that system that every day consolidates the leadership of the Arzignano district, because I believe that this real osmosis here in Arzignano is

much more advanced and deeply rooted than in any other tanning area.

Some data from Acque Del Chiampo:
(Data refers to 2017)

- Investments of €9.3 million
- Revenue of €47,685,053
- 19km of sewerage network connected for industrial use
- Prices of water for civilian use in line with those in other areas in Italy (on average, an Italian family of three people uses 192 cubic meters of water a year and pays approximately €400 euros for this service)
- Company structure of Acque del Chiampo:
 - ISO 17025 certification with chemical and microbiological analyses of approximately 20,000 parameters to be monitored a month
 - 20,000,000 cubic metres of water treated every year
 - Surface occupied by the effluent treatment plant: 155,000 sq.m. 🌐

