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The company

Eurodia, a specialist in membrane eco-processes

Eurodia Industrie S.A, one of the world's leading specialists in membrane processes for the food industry, was created in 1988 by its chairman, Bernard Gillery. The company is currently owned by the Japanese group Tokuyama Corporation, an electro-dialysis membrane manufacturer. Eurodia is based in Pertuis, France and has approximately forty employees. It also has a subsidiary in the United States, Ameridia, and sales offices in China and Russia to complement its network of agents,

24
MILLION EUROS

The sales of Eurodia for 2010. This represents a growth of approximately 20% in comparison to the average of recent years.

distributors and licenced suppliers located across five continents. In addition to its activities in the wine production industry, Eurodia is also a leader in the sugar and dairy industries and offers innovative processes for developing new chemical molecules from renewable resources. Its 2010 sales are approximately 24 million Euros.

News

Eurodia groups all of its "oenology" activities under the "Oenodia" brand

In autumn 2010, Eurodia, one of the world's leading specialists in membrane processes for the food industry, created Oenodia®, its department exclusively dedicated to wine professionals. This is a logical evolution for Eurodia's oenology activities, which have been evolving differently from the rest of the company. Rather than being staffed by chemical engineers as in the company's other business areas (sugar, dairy, green chemistry, etc.), Oenodia employs oenologists (some of whom are engineers), trained primarily in the art of winemaking. They also have experience in the vineyards, thus sharing the winemakers' respect for the vine, command of production techniques, and knowledge of the challenging market.

This unique profile allows Eurodia to offer solutions tailored specifically to the requirements of the wine professionals. Designed, tested, and patented in partnership with INRA (the French National Institute for Agricultural Research), the membrane eco-processes offered by Oenodia are currently used for tartrate stabilization, acidification, and de-alcoholization. These processes guarantee efficient, economic, environmentally friendly, and perfectly controlled techniques for their users.

Over the past fifteen years, Eurodia has equipped over 150 wineries across the world including cooperatives, large groups, and independent winemakers. As a result, 3% of the world wine production is now "stabilized" using

its technology. While this is a great achievement, Oenodia now intends to go even further. Current trends in the global wine industry are particularly favorable to allow more growth.

150
WINERIES

worldwide already use the eco-processes developed by Oenodia for tartrate stabilization and acidification.

With consumers continuing to demand ever more natural products, Oenodia's membrane eco-processes are the only treatments which guarantee stabilization or acidification (also known as pH adjustment) without additives, while at the same time saving energy and eliminating wine loss. With climate change permanently affecting wine production, Oenodia's acidification and de-alcoholization eco-processes (using the Memstar process, marketed exclusively in Europe by Oenodia starting in January 2011) will help maintain the quality and taste of the wines. With market globalization and increased competition among various wine-producing countries continuing to impose greater quality standards, tartrate stabilization by electro-dialysis gives an optimal result, whatever the color of the wine and regardless of transport and storage conditions.



OENODIA'S MEMBRANE ECO-PROCESSES ARE THE RESULT OF A SUCCESSFUL PARTNERSHIP BETWEEN THE FRENCH NATIONAL INSTITUTE FOR AGRICULTURAL RESEARCH AND EURODIA INDUSTRIE'S R&D ENGINEERS.

Technology

Electrodialysis, a reliable, economic, and efficient process



Cenodia uses the same technology for both tartrate stabilization and acidification, namely electrodialysis. This has already been tried and tested in many other fields such as green chemistry and the sugar and dairy industries. However, Cenodia is currently the only company in the world to apply this technology successfully to wine production.

How does it work?

The principle is simple: for tartrate stabilization, a filter press module comprising a large number of parallel mounted cells is used. The even compartments receive the wine and the odd compartments the water.

The two fluids never come into contact, but the membranes allow the passage of ions between them. "Cationic" membranes (which only allow the positive ions or "cations" to pass through) are alternated with «anionic» membranes (permeable to "anions" or negative ions). The creation of a small electric field is all that is needed to facilitate this transfer. Potassium and calcium (cations) and tartrate (an anion), all of which are abundant in wine, are the first ions to be extracted and filtered out in the water circuit. The benefit of this process is that, by adjusting the intensity of the current, it is possible to regulate the process with extreme precision so as to remove just the right amount and thus prevent

the formation of tartrate crystals. The appropriate treatment rate is determined using a device specially designed by Cenodia; the Stabilab. This calculates the wine's instability based on conductivity. For acidification, the operation is similar but uses a bipolar membrane instead of the anionic membrane. The only difference is that this time, only an excess of cations, or more specifically potassium, is removed. A joint development project by the French National Institute for Agricultural Research (INRA) and Cenodia has indeed shown that this was the main cause of high pH. Therefore, by removing potassium, we allow the wine's natural acidity to develop.



ELECTRODIALYSIS IS THE ONLY PROCESS THAT CAN GUARANTEE **100%** RELIABLE TARTRATE STABILIZATION, WHATEVER THE COLOR, QUALITY, OR QUANTITY OF WINE TREATED AND REGARDLESS STORAGE CONDITIONS.

Testimonials

Wine professionals talk about their experience.....

Nicolas Quillé
General Manager
PACIFIC RIM (USA)

« At Pacific Rim we focus on environmentally friendly practices. We find the Electrodialysis very appropriate for the production of our Rieslings made from Organic Grapes making it possible for us to cold stabilize organically.»

Jurie Germishuys,
cellar master
BOLAND KELER (AFS)

« As winner of the International Winemaker of the Year award at the IWSC in 2001 our company is very serious about wine quality. In our on-going quest to improve our wine quality, we found that ED has given us an advantage not only in quality, but also in our strive to be more environmentally responsible. »

Tom Tiburzi,
sparkling winemaker
Domaine Chandon (USA)

« Using STARS electrodialysis for cold stabilization of sparkling base wines offers Domaine Chandon several advantages over the conventional method of deep chilling the wine to force tartrate precipitation. First, important in moving towards Green technologies, is the conservation of resources offered by greatly reducing energy needs, both electricity for operating the chilling equipment and natural gas needed in heat exchanging the sparkling base wine back up to temperature for second fermentation in the bottle. Also conserved is the significant amount of wine that would otherwise be lost in the tartaric acid slurry resulting from the conventional method. Additionally, no longer an issue is the lost wine and tartaric acid that had been going down the drain, loading the winery's waste treatment facilities. Of course, when precipitating acid from the wine, the wine can go out of structural balance, necessitating the addition of tartaric acid before starting conventional cold stabilization, with STARS our need for supplemental tartaric acid has dropped significantly. Throughout the process there is labor cost savings from no longer needing man-hours to stage tanks for batch process cold stability, filtering out tartrates, cleaning the tartrate crusted tanks and heat exchanging to warm the super chilled wine. Finally, a most important, but hard to quantify in terms of cost benefit, is improvement towards production logistics: With conventional cold stabilization process it can be challenging to predict exactly when a wine can be ready for bottling, however, with electrodialysis, production planning can be precise. »



Interview

Three questions to Bernard Gillery, Chairman and founder of Eurodia Industrie

Why have you created CEnodia?

To emphasize our commitment to winemakers! Wine is a food product unlike any other. It represents a culture, the personality of those who make it, and the expression of a region and its terroir. In the wine industry, there are rules, but there are no standards. Each case is unique. So it is far removed from the systems in the dairy or sugar industries or green chemistry, which still account for three quarters of Eurodia's business. From the start, we consciously chose to entrust our commercial development and our service approach to oenologists rather than chemical engineers. Now, we want to go a step further, by clearly declaring our commitment to the spirit of wine. So, our oenology department has become CEnodia.

Why this name?

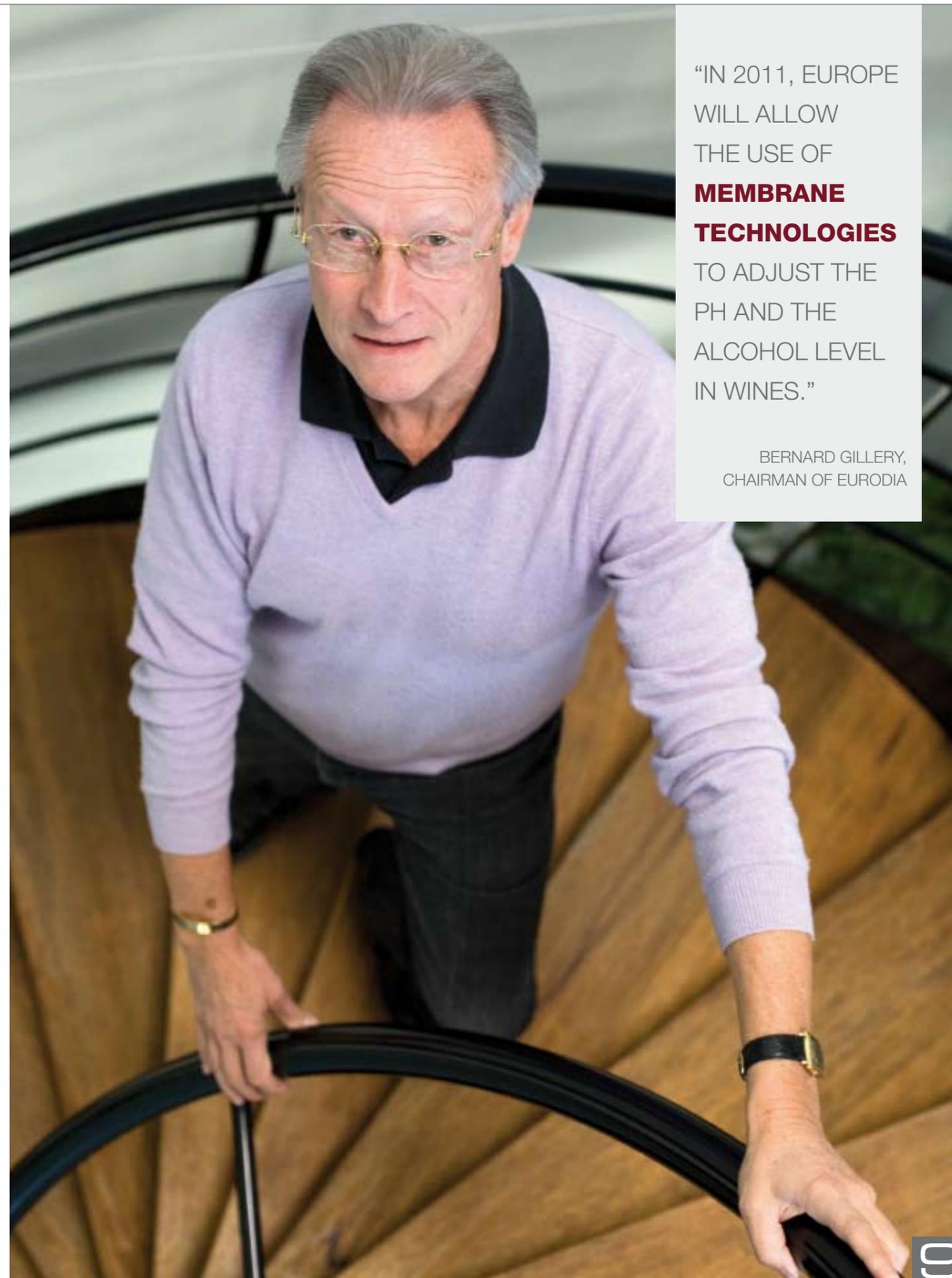
Because it says it all: "oeno" represents our knowledge of wine; "dia" reflects electrodialysis, the technology

that we alone apply to wine processes. Finally, CEnodia sounds like Eurodia, so the connection is made, since the creation of CEnodia in no way marks a break with Eurodia. To the contrary - more than ever, CEnodia needs the technological knowledge and innovative ability of the Eurodia teams to support wine-makers in their continual quest for the highest quality.

Why launch CEnodia now and not fifteen years ago when you invested in the wine market?

It is impossible to compare the resources and ambitions of that time with what we have managed to put in place today. At the time, there was potential. Now, there is a strong economic reality: sales of 5 to 6 million Euros, which is approximately 25% of Eurodia's turnover, 6 oenologists working for our customers, 8 technicians, plus the staff of our partners. These talented individuals support and maintain over 150 facilities and partners throughout

the world, who, through mobile units and their presence in the vineyards, supply our technologies to small and medium sized operations. In addition, the growth potential is significant. More than ever, we believe in the future of our subtractive technologies (no additives). Within the next few years, climate change, consumer trends, awareness of environmental issues among producers, and even the emergence of new export markets will reinforce the interest in our processing solutions. In the near-term, it is particularly promising because of announced regulatory changes. In 2011, Europe will allow the use of membrane technologies to adjust the pH and the alcohol level in wines. Regarding acidification, to date, there is no equivalent to our eco-process. And for de-alcoholization, we have signed an exclusive partnership to market the Memstar process. Combining reverse osmosis and perstraction membrane, this has already been tried and tested across the world. Clearly, CEnodia has a bright future ahead.



"IN 2011, EUROPE WILL ALLOW THE USE OF **MEMBRANE TECHNOLOGIES** TO ADJUST THE PH AND THE ALCOHOL LEVEL IN WINES."

BERNARD GILLERY,
CHAIRMAN OF EURODIA

Bernard Gillery Chairman and Founder of Eurodia Industrie S.A

Bernard Gillery, an experienced chemical engineer, is the Chairman and Founder of Eurodia Industrie S.A. Previously a commercial engineer with several French engineering companies, in 1986, he joined SRTI, a subsidiary of the Thomson Group, as Commercial Director of the technical support

department. When Thomson decided to refocus on its core business, Gillery, together with other former SRTI employees, founded Eurodia. In 1988, he signed a licencing agreement with the Japanese group Tokuyama, an electro-dialysis membrane manufacturer. In 2000, in view of the rise in Eurodia's wine business, he decided to set up

offices near the geographic centre of the European wine-production areas at Pertuis in Provence. At the same time, he purchased a vineyard in Lubéron and, in association with Sylvain Morey, created the Bastide du Claux winery at La Motte d'Aigues. This winery produces Côtes du Lubéron wines as well as reputable Chardonnays.

Yannick Le Gratiet Director of Oenodia, the Oenology department of Eurodia Industrie S.A

Yannick Le Gratiet, a graduate in agronomy from IUT Schiltigheim, France, began his career as an Agricultural Technician specializing in experiments with phytosanitary products on large crops within chambers of agriculture

and companies such as BASF and Elf Atochem. In 1993, he completed an oenology course at the Institut Universitaire de la Vigne et du Vin (Institute of Vine and Wine) in Dijon, after which he was involved in several winemaking operations in Bordeaux, Languedoc

Roussillon, the Loire Valley, Beaujolais, and Alsace. In 1996 he joined Eurodia as an Oenologist responsible for the commercial and technical development of the oenology business. In this capacity, he also coordinates the activities of several worldwide partners.



YANNICK LE GRATIET JOINED EURODIA INDUSTRIE IN 1996 WITH SEVERAL YEARS OF EXPERIENCE IN BORDEAUX, LANGUEDOC, AND ALSACE WINERIES.

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