QUALITY WINE, HIGH PRODUCTIVITY

Maintain high levels of quality through effective wine filtration

Zaccagnini, an internationally renowned wine producer, relies on Eaton's Beco Protect PP Pure pre-filtration solutions to guarantee the quality and safety of its products. The development of a more efficient filtration and regeneration process has helped improve the winery's productivity.

Superior quality from grape to glass: This is the motto of Zaccagnini, a winery in Abruzzo, Italy, which has made quality its strength for over forty years. While remaining a family-run business, the company founded in 1978 in Bolognano (PE) has grown to Become an internationally renowned producer. Zaccagnini currently manages over 740 acres (300 hectares) of vineyards and produces more than 3 million bottles (approx. 595,000 gallons or 2.25 million liters) every year, 70% of which are exported to no less than 45 countries, including Japan and South Africa.

Challenge: Frequent and complex regenerations reduce productivity

Guaranteeing the flavor quality of Zaccagnini's final product depends largely on the filtration. This process makes it possible

Eaton's Beco Protect PP Pure depth filter cartridges are helping the company maintain „superior quality from grape to glass" while improving efficiency and productivity at the same time.
(Image: Azienda Agricola Ciccio Zaccagnini s.r.l. Tutti i diritti riservati.)

to preserve the product's organoleptic properties and remove the microorganisms that could potentially compromise its microbiological stability and limpidity.

For a highly export-focused company like Zaccagnini, achieving these objectives is essential. This is because microbiological stability issues would not only be costly but would also damage the company's international reputation. Zaccagnini uses a highly sophisticated filtration process to address these risks.

Before being bottled, the wine undergoes a pre-filtration process to remove any suspended solid particles. Furthermore, the colloidal structure of the wine, which has a significant effect on its organoleptic properties, also needs to be filtered in order to preserve these properties as far as possible — and to prevent filter clogging downstream of the process. This means that pre-filtration is fundamental, not only in terms of quality assurance and product safety but also for Protecting the membrane filter cartridges that come into play prior to bottling.

It was in this pre-filtration step that Zaccagnini had to tackle a number of challenges linked to its limited particle holding capacity for the filter cartridges used. For example, the surface of the filter medium filled up rapidly and the filter cartridges clogged early. This necessitated frequent regenerations, which in turn ended up reducing the service life of the cartridges. Moreover, the filter matrix and filter material of the cartridges required particularly long and complex flushing operations, which reduced productivity even further. In order to solve these problems, Zaccagnini turned to Eaton for expert advice.

Reliable and effective retention and increased service life increase productivity

In order to develop a solution that met the customer's needs, Eaton conducted a detailed analysis of the entire filtration process. Subsequently, tests were carried out to compare the existing filter system with the new solution proposed by Eaton.

Eaton's Beco Protect PP Pure filtration solution recently installed at Zaccagnini's production plant has already successfully filtered more than 620,000 gallons (2.83 million liters) of wine. (Image: Azienda Agricola Ciccio Zaccagnini s.r.l. Tutti i diritti riservati.)

„Eaton has been extremely helpful and attentive to our needs from the outset, considering not only the filter system but the entire process, helping us to improve the efficiency of the various filtration and regeneration steps," commented Concezio Marulli, director of Zaccagnini. „Being able to test Eaton's new solution at our plant alongside our existing solution enabled us to quickly identify the weak points of the filtration process and implement improvement strategies."

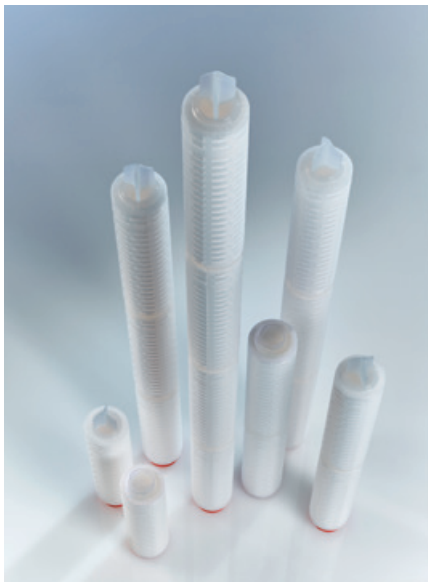
The solution suggested by Eaton consists of a housing with 30 Beco Protect PP Pure depth filter cartridges that have a nominal retention rating of 0.6 µm (with a ß ratio higher than 5000 and a retention efficiency of 99.98%). These filter cartridges are made of a pleated polypropylene filter material that ensures a high and reliable level of retention that remains consistent over time. The filter cartridges also offer a high flow rate thanks to a large filter surface area. As a result, their particle holding capacity is far greater than that of the solution previously used by Zaccagnini

Concezio Marulli, enologist and director of Zaccagnini.(Image: Azienda Agricola Ciccio Zaccagnini s.r.l. Tutti i diritti riservati.)

Zaccagnini boasts over 740 acres (300 hectares) of vineyards and produces more than 3 million bottles every year, 70% of which are exported to no less than 45 countries.(Image: Azienda Agricola Ciccio Zaccagnini s.r.l. Tutti i diritti riservati.)

and they require considerably less frequent flushing.

The robust design of the filter cartridges ensures high mechanical and thermal stability, which means they are resistant to flushing even at high pressures and temperatures. The maximum pressure during flushing is 8.7 psi at 176 °F (0.6 bar at 80 °C), while temperatures during steam sterilization can reach up to 250 °F (121 °C). The 100% polypropylene filter material is highly resistant to the various chemical detergents used during flushing. All of these features ensure that Beco Protect PP Pure filter cartridges can be regenerated and reused in a short amount of time and increase the service life. This also results in reduced water and detergent consumption.



Beco Protect PP Pure depth filter cartridges consist of pleated polypropylene featuring a long service life and a high and reliable efficiency. (Image: Eaton)

With their ability to retain most of the substances that could clog the downstream filters, Beco Protect PP Pure filter cartridges are the perfect solution for Protecting membrane filter cartridges as they reduce the number of regeneration cycles needed and have a longer service life.

More efficient filtration, optimized production

Eaton's Beco Protect PP Pure filter solution has achieved positive results in terms of productivity, having already successfully filtered more than 620,000 gallons (2.83 million liters) of wine.

Being able to regenerate the filter system more quickly and easily has also enabled Zaccagnini to switch more swiftly from filtering red wine to filtering white wine (and vice versa) using the same filter cartridges. The winery has been able to halve the number of filter cartridges in use, changing from two cartridge housings to one, which has helped make the production process more efficient.

„Eaton has demonstrated truly unrivaled expertise, enabling us to analyze and improve our filtration process and making the whole process more efficient and productive," commented Concezio Marulli. „We also greatly appreciated the company's high transparency — they always shared the data they collected during the various analyses with us, which enabled us to find the optimal solution."

Due to Zaccagnini's positive experience, the company has continued collaborating with Eaton and has expanded its project. The winery has now started using Beco Protect PP Pure depth filter cartridges in another plant and is also testing a new Eaton solution for final filtration using membrane filter cartridges. □

Lorenzo Pierantoni

Application Engineer
Eaton Filtration Italy s.r.l.
www.eaton.com