

Filtro EVO

Depth filtration for a quality extra virgin olive oil



www.aeb-group.com

AEB: EXCELLENCE IN FILTRATION

EVO FILTER is the result and the achievement of **an excellence project in filtration**, dedicated in particular to **extra virgin olive oil** and for all **uses where depth filtration is normally used**, especially with filter sheets (cartons).

The extra virgin olive oil, if left even for a short time in contact with the sludge (residues from the production process), loses its distinctive characteristics of cultivar and more generally, those necessary for its identification as extra virgin olive oil.

AEB has been offering **lenticular modules for several years to filter freshly produced oil**, with layouts providing only one filtration stage.

This mode has produced a **considerable increase in the quality level of extra virgin olive oils** treated in this way, **but with a "technological" limit, caused by the complexity of the residues** present in the oil from recent pressing.

Solid particles composed of cellulose or earth, water, waxes, colloids (protectors) with a pectic base, etc., present in suspension in the new oil in considerable quantities, are retained in the filters in different ways.

Two filtration stages with differentiated permeability (upstream "wider", then "narrower") allow total filtration yields on average at least 3-5 times higher than those achievable with a single stage, resulting in considerable savings.





THE ADVANTAGES OF MODULE FILTRATION WITH DIFFERENTIATED PERMEABILITY

The advantages of two-stage filtration with differentiated permeability modules are manifold:

- 1 The filtration process takes place completely with no contact with air;
- **2** Housing unloading is extremely easy thanks to the panel allowing to manage the oil thrust with nitrogen gas by connecting a cylinder;
- 3 The inverter and the geared motor make it possible to **filter even at very low flow rates** (this is usually the case with crushers) and avoid pressure surges;
- 4 Significant time and effort savings in filter management;
- 5 Reduced filtration costs.

THE AREAS OF APPLICATION OF THE EVO FILTER

Use in the oil sector

SECTOR	MODE				
Oil mill	• Directly downstream of the separator by synchronizing the pump speed with the flow rate of the separator;				
	• Filtering batches of oil from crushing and stored for a few hours in the tank;				
	• Filtering oil stored for a long time in the most appropriate mode (in series, parallel, etc.).				
Industrial oil companies	• In finishing after press filters or flood bell filters of considerable size (30-100 m ²);				

Use in other industries:

• Pharmaceutical companies or companies processing by-products of the food industry for use by the pharmaceutical industry;

In the food and beverage industry in general, where it is possible (oenology, breweries, essential oils, etc.).

2

FUNCTIONALITY AND TECHNICAL DATA

EVO FILTER is made of polished 316 stainless steel.
The filtering section is composed of n. 2 filter housings
that can contain from 1 to 4 x 12" or 16" modules.
The housings are supplied with pressure gauge unit, inlet specula and quick couplings for venting and emptying of the containers by means of

Different filtration modes depending on requirements

nitrogen or gas at choice, adjustable gas inlet pressure.

The highly operational design allows a versatile use of **EVO FILTER.** In fact, by properly managing the dedicated manual valves, it is possible to filter in the following ways:

- **single housing,** at choice, excluding the second one;
- both housings in series (direct flow from first to second);
- in parallel, i.e. by adding the filtering surface of the modules contained in the two housings.

From the control panel it is possible to manage the filtration speed, the emptying of the individual housings and the oil suction pipe.



Oil recovery and transfer

The machine structure and the recovery & cleaning section consist of:

- a 250 litre total containment tank resting on 4 pivoting wheels with parking brake;
- a 20-litre tank for the recovery of unfiltered oil.

Both tanks are equipped with a drain tap to facilitate the transfer of the oil contained in the tank.

Monitoring of filtration quality

The delivery (outlet) pipes of the 2 housings are equipped with **specula** for monitoring the filtration quality determined simply by **visual evaluation** of the clarity of the filtrate.

Cleaning in maximum comfort

The cleaning of the empty housing is very easy. Just follow two simple steps:

- **Prepare a washing solution:** fill the containment tank together with 2% **Nerlik Liquid** (specific alkaline detergent) with water until the levels already marked on the tank are reached;
- 2 Housing cleaning: by using the machine pump and simply opening the valve, it is possible, by recirculation of the washing solution, to clean the empty housings (one at a time) and the pipes involved.

The power supply

The filter is equipped with a **Liverani feed pump** with 1,5 kw 400 volt rubber impeller equipped with inverter and gear motor. This equipment allows to synchronize the flow rate of the filter even with very low upstream flow rates.

Power supply/Utilities:

- 1 Power supply: 400 volt 16 A 3P socket + E
- 2 Air/nitrogen supply: tube diameter 8 with 5 bar constant pressure
- 3 Suction and discharge fittings supplied: DIN 40 Female



A COMPLETE RANGE

Different models of EVO Filter are available. Each model is combined with specific lenticular modules and is characterized by a well-defined filtering surface.

ТҮРЕ	N. OF MODULES	TYPE OF MODULES	FILTER. SURFACE (TOT. M ²)	DIMENSIONS (W X L X H CM)	VOLUME WHEN EMPTY (LITERS)
12.02	2	12"	7,2	230 x 110 x 190	73
12.04	4	12"	14,4	230 x 110 x 240	146
16.02	2	16"	14,4	230 x 110 x 190	95
16.04	4	16"	28,8	230 x 110 x 250	190

Flow rate (average)*: approx. 5 L/m²/minute ΔP max: 4 Bar

Filtration cost (average)*: 0,03-0,07 € x Liter

* Figures for the costs recorded at the mill in the 2019/2020 olive oil year



CONVENTION BETWEEN AEB AND CNR-IBE IN-DEPTH STUDIES ON THE EFFECTIVENESS OF THE EVO FILTER AND THE QUALITY OF THE OIL



Our Group has entered into an agreement with CNR-IBE (Institute for Bioeconomics) for applied research activities in order to carry out, during the olive oil campaign 2019-2020, tests to verify and validate the effectiveness of the EVO FILTER in improving the quality characteristics of extra virgin olive oils resulting from the immediate filtration at the end of the pressing operations.

The study, which covers an entire year, has shown that the oil filtered with EVO FILTER, has maintained its characteristics of excellence as evidenced by the analysis below.

IBE, THE BIOECONOMY INSTITUTE

The Institute for BioEconomy, part of National Research Council - CNR IBE - was born on June 1, 2019 from the merger of the Institute of Biometeorology (IBIMET) and the Institute for the Valorization of Wood and Tree Species (IVALSA), which over the years have developed expertise and complementarity in the strategic sector of the bioeconomy. The Institute, in its offices in Sesto Fiorentino (Firenze) and Follonica (Grosseto), studies and develops strategies for the enhancement of the characteristics of excellence in the production of extra virgin olive oil, also through the protection and conservation of Italian and world olive cultivars.

END OF NOVEMBER 2019

Experimental trials with CNR-IBE 2019



Output oil before filtering



Instrumental analysis with nephelometer



*NTU (Nephelometric Turbidity Unit)

END OF NOVEMBER 2019

Sensorial analysis

END OF MAY 2020





Test oil

Oil filtered with EVO filter



Test oil

Oil filtered with EVO filter

5







Two months after extraction, the control oil (unfiltered) has clear defects linked to the hints of mould and winy, an unmistakable sign of fermentation phenomena occurred in the oil during storage, the main aromatic notes are very attenuated.

Two months after extraction, the filtered oil is still characterized by a green, fresh and very intense fruity, with distinct notes of cut grass and artichoke. Balanced the strong notes of bitter and spicy. Excellent oil, very fine and elegant, it shows a weak astringency.

