



EXTRACTION







Extraction

Getting the maximum yield is the goal of every oil mill, regardless of whether they choose to use two or three phase extractors.

The decanter, used in latest generation technologies, is the best tool for obtaining the best pressing, while delivering the perfect mix in terms of oil quantity and quality; the by-products created at the same time, make all parts of the olive profitable.

Pieralisi: innovation and know-how dedicated to quality since 1888

Passion, tradition and innovation. These have been the core values of the Pieralisi Group since 1888, when its first workshop opened in the small town of Monsano. Today, the Pieralisi Group is the world leader in providing state of the art separation solutions using centrifugal force.

Pieralisi systems deliver optimal performance - both for **continuous cycle** and **batch processing** - enhancing, on one hand, the quality of the oil, which is even richer in polyphenols and, on the other, making it possible to harness the full potential of the by-products so they can be another source of income for the oil mill.

With Pieralisi Group's long-standing experience in the industry, it is the only one of its kind able to supply its customers, all over the world, with **a turn-key product** for the **entire olive processing cycle**: from leaf removal to washing, to crushing and malaxing, followed by extraction and separation.

The Pieralisi Group continuously invests in innovation. It has filed hundreds of **international patent applications** (25 are currently active), which embody and demonstrate its commitment to the research and development of new technologies.





Safety and assurance for excellent results



Safety and assurance play an increasingly important role in a world where mechanical engineering is becoming increasingly complex.

This is why Pieralisi, UNI EN ISO 9001 and UNI EN ISO 14001 certified, takes great care in the design and manufacture of its machinery in accordance with quality assurance and safety standards to ensure compliance with key directives such as the Machinery Directive 2006/42/EC, the Low Voltage Directive 2014/35/UE, the Electromagnetic Compatibility Directive 2014/30/UE and the ATEX Directive 2014/34/UE.

The control panels, designed in accordance with strict quality and safety standards, are custom built in order to meet the specific requirements of each stage of the production process.

Oil mill operations are facilitated by the highly intuitive devices and the correlation between the panel and system which is simple and easy to understand, focusing in particular on the safety indicators. Pieralisi's advanced control systems can be linked to other machinery at the oil mill to create an extensive digital network and are also set up for remote communication, if desired. Pieralisi issues CE certification pertaining to the entire oil milling system during installation which is further proof of the attention it pays to the needs of the oil miller and its company.







Extraction

When it comes to extraction, yield is a key factor in the final result. Pieralisi Group stands out for its long-standing success in this area.

The ancient method of pressing by means of crushing gave way to the modern centrifuge-based system of extraction with the subsequent introduction of Decanters. These were, in fact, created to ensure that the oil is excellent in terms of yield, throughput and organoleptic quality.

A few years ago, after in-depth studies and meticulous designs, Pieralisi introduced DMF extraction technology, one of the company's greatest accomplishments, as well as a cutting edge technological solution for the extraction of olive oil.

One advantage of this system is, since there is no need to add water when processing the olive drupes, the efficiency of the yield which remains stable even with unusually large productions.

This technology, which uses a two-phase system, produces a dehydrated pomace similar to that from a three-phase system which recovers the pulp from the pomace, called "pâté" (i.e. olive paste).

In addition to the multiphase innovative technology, Pieralisi has a new range of centrifugal extractors for two and three phase processing which offer:

- high yields
- the need to add only a small amount of water for three-phase processing
- reversibility in two/three phase processing.

The advantages of Pieralisi innovations



Extraction

- Pieralisi extractors are all designed to maximise the oil yield which, as a matter of fact, is a key element.
- Electronic control of the bowl speed (rpm) and differential speed of the scroll via the new oil mill control panels.
- All of the parts subject to wear, such as the scroll, product inlet distributor and the pomace discharge bushes are coated with wear protection.
- The scroll in Pieralisi decanters are more durable for olive washing operations and have a unique rake on the back which greatly increases its durability.

DMF technology

- Produces a dehydrated pomace similar to what comes out of a three-phase system.
- This technology has the advantages of **processing without adding water** (two-phase) plus the versatility of a decanter able to operate in either continuous or **batch processing mode**.
- This makes it possible to recover a certain quantity of pomace called "pâté"
 made up of wet pulp without any traces of kernels directly inside the bowl.

This pâté is ideal for various uses (e.g. soil conditioner, animal feed supplements, a possible ingredient for human consumption, mixed with other biomass for biogas production), thereby turning a by-product to be disposed of into added value for the miller.





Multiphase extraction





In multiphase processing, the centrifugal extractor is designed to have three outlets: one for the oil, one for the pomace and one in the middle for the pâté. This type of extraction has the advantages of processing without the addition of water (two-phase) plus the versatility of a centrifugal extractor able to operate both in continuous and in batch processing mode.

Multiphase extraction allows for the recovery of a certain quantity of pomace - called "pâté" - made up of wet pulp without any traces of kernels directly inside the bowl.

Multiphase processing produces a dehydrated pomace similar to that from a three-phase system.

Two-phase extraction





In the two-phase extraction process, the centrifugal extractor has only two outlets: one for the oil and the other for the water and pomace.

This type of extraction system makes it possible to reduce or eliminate completely the addition of water to the paste, with the double advantage of cutting down on the use of natural resources (water) and to reduce the production of wastewater which has a considerable impact on the cost of running an oil mill.

The moisture content of the pomace obtained from the two-phase process is roughly 60%.



Three-phase extraction





After the malaxing stage, the olive paste is conveyed into the centrifugal extractor (decanter) by a mono pump with an adjustable flow-rate. The decanter is designed to separate the two liquid phases - oil and vegetable water - which are discharged through two different outlets, while the solids are discharged through a third outlet located on the opposite side.

This is possible by adding hot water to the incoming paste, which produces a considerable amount of vegetable water to be disposed of. The moisture content of the pomace obtained is roughly 50%.

Second centrifugation



In the olive processing cycle, an additional stage may be included to extract the remaining oil out of the pomace. This process involves a malaxing phase, and then, by means of a mono pump, centrifugation using a second decanter, which can operate in two, three phases or multiphase. The final product is called "second extraction oil". In case of three-phase processing, the pomace, originally processed using a two-phase system, can be dried, obtaining vegetable water to be disposed of.





EFFE SERIES				
	installed power kW	L mm	W mm	H mm
EFFE 1	5.5	1640	1050	1090
EFFE 2	7.5	1840	1050	1090
EFFE 3	7.5	2040	1050	1090

The EFFE series of centrifugal extractors are designed to work in three and two phase in a way that all parts subject to wear, including fluid discharge head the are completely interchangeable.

A major feature of this model is the variable frequency drive (VFD) applied to the main drive motor, which reduces electricity consumption during start-up.

Adjustable feeding point

The holding time of the fluids (water-oil) or pomace in the bowl can be extended based on the quality and characteristics of the olives.

Adjustable level for liquid phases

It is possible to decrease or increase the volume of water and oil in the bowl, thereby increasing the holding time, depending on the quality and characteristics of the olives.

Variable scroll speed settings

The differential speed of the scroll can be adjusted, thus changing the amount of time the pomace remains along the rim of the cone, and consequently the residual moisture and fat content of the pomace, depending on the characteristics and quality of the olives.

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VANGUARD SERIES

	installed power kW	L mm	W mm	H mm
VANGUARD 3502	11	2430	1530	1470
VANGUARD 3503	15	2850	1530	1470
VANGUARD 3504	15	3300	1530	1470
VANGUARD 5703	45	4950	2200	2000

The VANGUARD series centrifugal extractors, with their cutting-edge technology for two and three phase processing, offer extremely high output and excellent yields. They are a practical demonstration of total efficiency applied to olive oil extraction.

Adjustable feeding point

The holding time of the fluids (water-oil) or pomace in the bowl can be extended based on the quality and characteristics of the olives.

Adjustable level for liquid phases

It is possible to decrease or increase the volume of water and oil in the bowl, thereby increasing the holding time, depending on the quality and characteristics of the olives.

Variable scroll speed settings

The differential speed of the scroll can be adjusted, thus changing the amount of time the pomace remains along the rim of the cone, and consequently the residual moisture and fat content of the pomace, depending on the characteristics and quality of the olives.

- All materials in contact with the product are made of stainless steel.
- All of the parts subject to wear, such as the scroll, product inlet distributor, the pomace discharge bushes are coated with wear protection.
- Soft starter with variable frequency drive (VFD).
- Alternate-motion solids scraper with pneumatic control (optional).
- Insulation from the ground by means of anti-vibration supports.





SCORPION SERIES

	installed power kW	L mm	W mm	H mm
SCORPION 5.5	22	3150	1500	1760
SCORPION 5.7	30	3560	1500	1760
SCORPION 5.9	30	3970	1500	1760





The SCORPION series of centrifugal extractors represent the last leap forward in the Pieralisi decanter range. With their state-of-the-art technology for two and three phase processing, these extractors deliver extremely high output and excellent yields. The SCORPION series of centrifugal extractors, at the same flow rate, require the use of considerably less water than the other Pieralisi extractors.

Adjustable feeding point

The holding time of the fluids (water-oil) or pomace in the bowl can be extended based on the quality and characteristics of the olives.

Adjustable level for liquid phases

It is possible to decrease or increase the volume of water and oil in the bowl, thereby increasing the holding time, depending on the quality and characteristics of the olives.

Variable scroll speed settings

The differential speed of the scroll can be adjusted, thus changing the amount of time the pomace remains along the rim of the cone, and consequently the residual moisture and fat content of the pomace, depending on the characteristics and quality of the olives.

- All materials in contact with the product are made of stainless steel.
- All of the parts subject to wear, such as the scroll, product inlet distributor, the pomace discharge bushes are coated with wear protection.
- Soft starter with variable frequency drive (VFD).
- Electronic control of the bowl speed (rpm) and differential speed of the scroll (models with Rotovariator optional).
- Alternate-motion solids scraper with pneumatic control (optional).
- Insulation from the ground by means of anti-vibration supports.





SPI SERIES

	installed power kW	Lmm	W mm	H mm
SPI 111 S	15	2890	1650	1465
SPI 222 S	30	3495	2025	1850
SPI 333 S	30	3900	2025	1850
SPI 335 S	30	4050	2050	1720
SPI 444 S	45	4970	2235	1985
SPI 555 S	45	5000	1860	2000
SPI 666	55 (+45)*	4950	1750	2050
SPI 888	75 (+55)*	6000	2250	2290
SPI 999	75 (+55)*	6000	2780	2290

*For models with hydraulic variable speed drive





The SPI series of centrifugal extractors, with their state-of-the-art technology for twophase processing deliver extremely high output and excellent yields. They are a practical demonstration of total efficiency applied to olive oil extraction.

Main features

- All materials in contact with the product are made of stainless steel.
- All of the parts subject to wear, such as the scroll, product inlet distributor, the pomace discharge bushes are coated with wear protection.
- Soft starter with variable frequency drive (VFD).
- Electronic control of the bowl speed (rpm) and differential speed of the scroll (models with Rotovariator / hydraulic variable speed drive optional).
- Insulation from the ground by means of anti-vibration supports.





LEOPARD SERIES

	installed power kW	L mm	W mm	H mm
LEOPARD 2 S	7.5	2000	1380	1100
LEOPARD 4	18.5	3200	1710	1410
LEOPARD 5	18.5	3500	1710	1410
LEOPARD 6	37	4230	2020	1730
LEOPARD 8	37	4640	2020	1730
LEOPARD 10	55 (+45)*	4900	2000	2030

*For models with hydraulic variable speed drive

The measurements shown refer to L: total length; W: total width; H: total height





LEOPARD, the cutting-edge technological solution for the extraction of olive oil, is the result of DMF technology (Multi Phases Decanter) technology.

LEOPARD is the only two-phase decanter centrifuge that produces dehydrated pomace similar to that from a threephase decanter; it also recovers the pulp ("pâté") from the pomace, ideal for use in agricultural applications and animal feed.

It is the only decanter able to combine modern extraction technology without the addition of water during batch processing, thanks to the bowl discharging device, automatically handled by the control panel with touch screen buttons.

More competitivity for the miller

- Top quality oil extracted without adding water.
- By far the highest yield achievable on the market today.
- Very low water and energy consumption.

Innovative DMF technology

- This technology has the advantages of processing without adding water (two-phase) plus the versatility of a decanter able to operate in either continuous or batch processing mode.
- This makes it possible to recover a certain quantity of pomace - called "pâté"- made up of wet pulp without any traces of kernels directly inside the bowl. This pâté is ideal for various uses (e.g. soil conditioner, animal feed supplements, a possible ingredient for human consumption, mixed with other biomass for biogas production), thereby turning a by-product to be disposed of into added value for the miller.
- Produces a dehydrated pomace similar to what comes out of a three-phase system.

Biomass and energy saving





In general, the term "biomass" refers to any organic matter that comes from plants or animals, from which energy can be generated through biochemical or thermochemical processes. These substances are available as direct or residual products from the agricultural-forestry sector, such as by-products or waste from the agri-food industry or waste from the distribution chain and final consumption.

By its nature, biomass is a resource widespread across the territory; some of this resource is already available because it consists of various types of residues from primary and secondary activities, other instead could be produced by specific crop production activities on dedicated land.

Advantages

- Does not require the use of costly technologies.
- **Easy to produce** even in poor countries, pollution from biomass is low and may foster sustainable development.
- More efficient use of natural resources, since the waste materials used to make it would otherwise be simply thrown away.
- Generates a series of useful and profitable by-products, including low cost fertilizer.
- A key resource for rural areas, where its production could in fact greatly improve the availability of electricity for billions of farmers and farms, thus encouraging growth in production.

The Pieralisi Group puts its extensive experience and know-how to work in helping to promote the use of biomass, in particular plant-based biomass, for the generation of thermal energy. We can show you how!





Pulp kernel separation

Pieralisi, always attentive to enhancing the value of by-products from the olive oil industry, has an innovative pulp-kernel separator, designed with goal to create added value for the miller. The pulp-kernel separator is able to process pomace obtained from the two-phase, three-phase processing and the Pieralisi multiphase system. This machine makes it possible to recover the plant biomass which can then be used to generate thermal energy, thereby providing greater efficiency to the entire extraction cycle.

The kernel has a high heat value and it is highly sought after for the supply of multi-fuel boilers, turning the cost for a by-product to be disposed of, into an added value for the miller.







KERNEL SEPARATOR WITH CYLINDRICAL ROTATING GRID

	installed power kW	suitable for	L mm	W mm	H mm
SANSONE S1	22.55	2phase-DMF	1940	1400	1760
SANSONE S2	22.55	3-phase	1940	1400	1760

The kernel separator with cylindrical rotating grid is the perfect solution for separating the kernel from the pomace coming from two-phase, three-phase and multiphase olive processing.

The particular geometry of the spinning beater allows the processing without adding water and with the lowest use of energy per processed unit, achieving energy savings of up to 50% during processing.

Advantages of the rotating grid

The rotating grid operates in either co-rotating or counter rotating mode, with respect to the beater, and has the following advantages:

- maximum kernel yield;
- thorough cleaning of kernel to be subsequently used for fuel;
- no pulverization of kernel scraps;
- no risk of the separator getting clogged up.



VIBRO-FILTER TANKS

installed power kW

EFFE 2/3

0.18



With inspection window installed power kW

LEOPARD 4/5 0.36 VANGUARD 3502/3503 *



With inspection window installed power kW

LEOPARD 6/8 SPI 211 S/222 S/333 S * SCORPION 5.5/5.7/5.9 * VANGUARD 3504*

0.36



With inspection window and folding vibro-filter installed power kW

LEOPARD 10 SPI 444 S/555 S SPI 666/888 0.36



* Optional inspection window





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