

**25 YEARS
WARRANTY**

SEWAGE TREATMENT DIVISION

Technical catalogue
2011

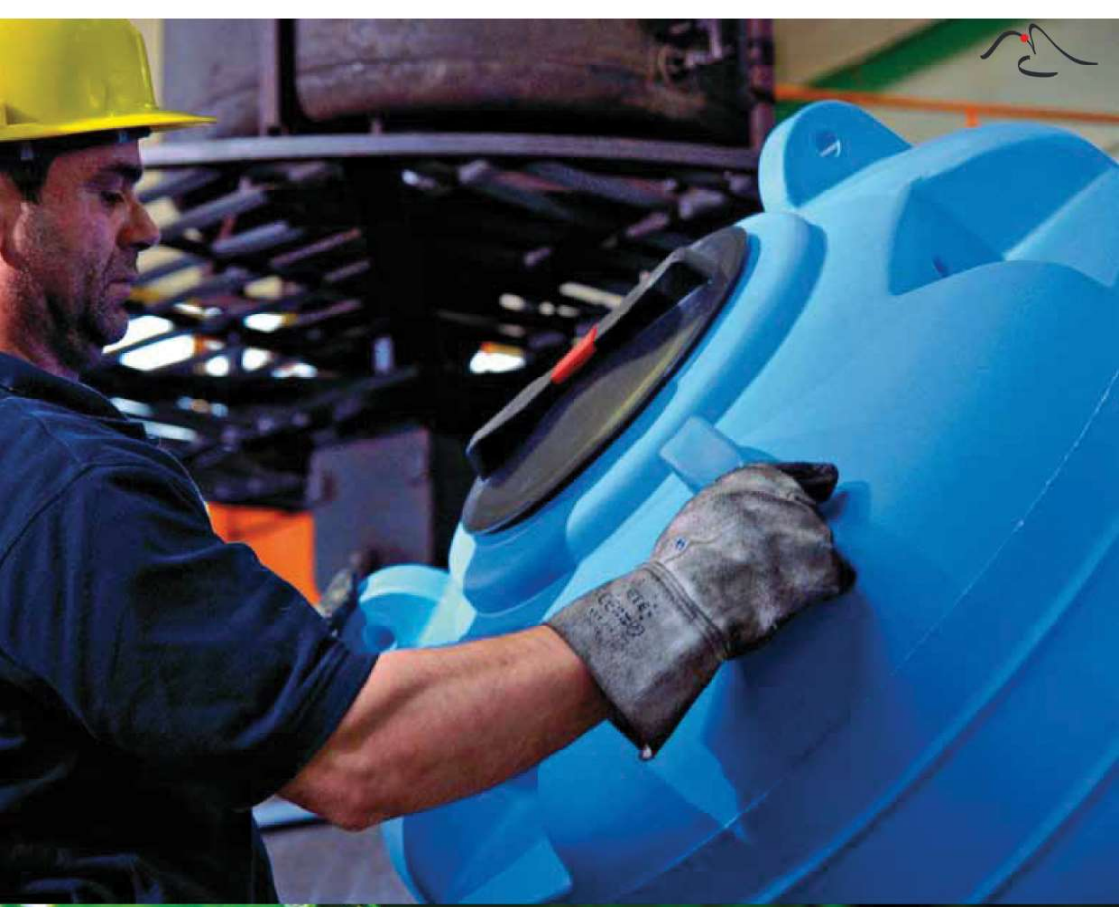


Mediterranea Commerciale



Technical catalogue 2011

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Sewage Treatment
Division





THE COMPANY

This surely is a dynamic company in continuous expansion present throughout Italy and abroad (France, Spain, Hungary...). The company was founded in 2000 as part of the System Group, leaders since 1980 in the production of complete pipeline systems (pipes, fittings, specials,...).

Right from its founding, our company was soon specialising in the production of corrugated and smooth tanks in linear polyethylene manufactured using rotational moulding technology. The factory, located in Lunano in the province of Pesaro/Urbino covers an area of 18000 square metres and includes a production department of 5000 square metres, an outdoor area for storage/handling of 13000 square metres and an office complex of 400 square metres housing the administration, commercial, transport/logistics and technical departments.

Underground modular tanks INFINITANK allow the creation of big water storage thanks to the connection of 4 basic elements: Head, Central, Tee and Elbow; so an infinite range of tanks can fulfill any customers' need. The Linear configuration is ideal for big sewage treatment.

Our new GARDEN DIVISION has a great choice of polyethylene products (tanks, watering posts and plant pots) with an innovative and accurate design that gives a touch of elegance to our gardens.

Numerous accessories are also available for all the tanks: sludge and sewage delivery pumps, electric panels, flanged joints, brass pipe unions and many other items.

PRODUCTS

The company's products are used for creating systems and plants for purifying domestic sewage, treating runoff from hardstandings and for storing potable water and other foodstuffs and compatible liquids. The SEWAGE TREATMENT DIVISION, also produces grease separators, Imhoff and septic tanks, percolating filters, activated sludge plants as well as surface runoff treatment plants and gravity or coalescent filter oil/grit separators. All supplied with technical specifications, certificates and underground installation instructions. The WATER DIVISION instead has a vast range of tanks available in various models able to satisfy any space and volume requirements. The tanks designed for installation above-ground are blue in colour (Verticale, Box, Jolly...) while those for underground installation are black and/or grey (Cisterna and Panettone).

WHAT WE OFFER

- Technical assistance during the plant design phase
- On-site technical support
- A large network of agents and retailers throughout Italy
- Prompt delivery



ADVANTAGES



CONVENIENCE

The smooth internal surface of the products makes them **easy to clean and maintain**, while their **lightness** makes them easy to transport and quick to install, with the **cost being much less than** steel, fibreglass or concrete. All this guarantees substantial savings in both time and money.

STRENGTH

Rotational moulding technology allows the production of plastic tanks with **one-piece structures**. The absence of welds, which could weaken parts of the structure subjected to internal stresses, guarantees **high strength and robustness**.

RELIABILITY

Tanks in linear polyethylene are ideal for storing potable water and for numerous other applications. Polyethylene, in fact, is a **material guaranteed atoxic** and as such can also come into contact with foodstuffs.

DURABILITY

The **raw materials** used in the production of the tanks guarantee maximum reliability in terms of resistance to corrosion and oxidation, they also **prevent the formation of algae** and, thanks to the use of **anti-UV additives**, ensure that the product does not deteriorate over time.

VERSATILITY

We do manufacture a **vast range** of tanks available in various shapes and capacities, ranging from 50 to 10,000 litres, able to satisfy any space and volume requirements. Furthermore, for particular installations or on request from the customer, it is possible to provide made to **measure holes** and connect the products together to obtain large storage volumes.



INNOVATION

Rotational moulding is used in **numerous sectors**, for example it is possible to manufacture items for agriculture, boats, furnishings, packaging, liquid storage containers (food and otherwise), safety products as well as components for the automobile, construction and thermohydraulic industries.

SAFETY

The **ease of handling** and the lightweight nature of Rototec tanks guarantee absolute safety on-site.

RESPECT FOR THE ENVIRONMENT

The linear high density polyethylene used for the production of the tanks is a **100% recyclable** raw material.





TREATMENT PLANTS USING ROTOTEC TANKS

By combining these treatment tanks, it is possible to create a series of plants that can treat domestic and similar sewage in a manner that satisfies the limits laid down by **Legislative Decree 152/2006** for discharge into public sewers, watercourses and to land. The plants are sized according to the number of users expressed in terms of a Population Equivalent, where **Population Equivalent (PE)** is the biodegradable organic load having a biochemical oxygen demand (BOD₅) of **60 grams of oxygen per day**. To calculate the population equivalent of users with domestic type discharges, refer to the table on page 11. All the plants are characterised by a primary treatment system followed, where necessary, by secondary treatment and, depending on the final destination and consequently the required limits to comply with, tertiary treatment. **Primary treatment** consists of a grease separator in which grey water (i.e. that from washbasins, bidets, showers, dishwashers, etc. containing a high quantity of oils, foams and greases) is treated and an Imhoff tank into which the waste material from toilets is flushed directly.

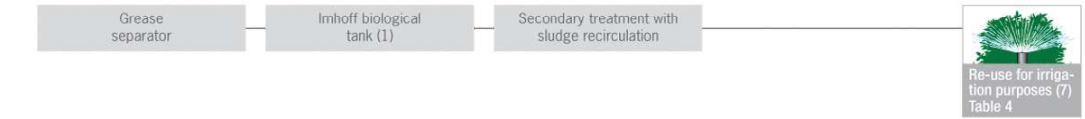
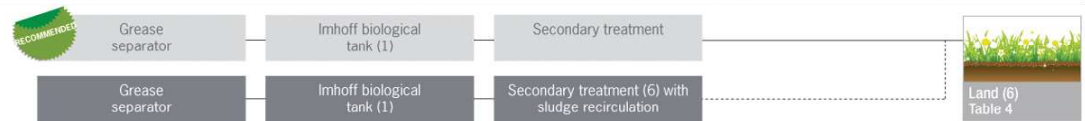
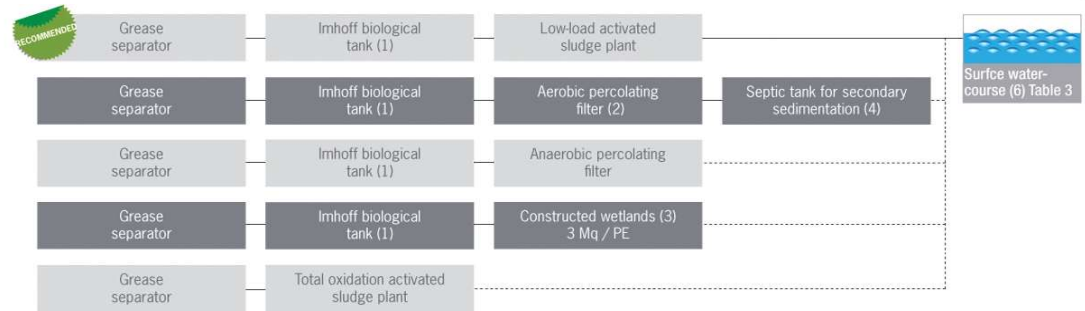
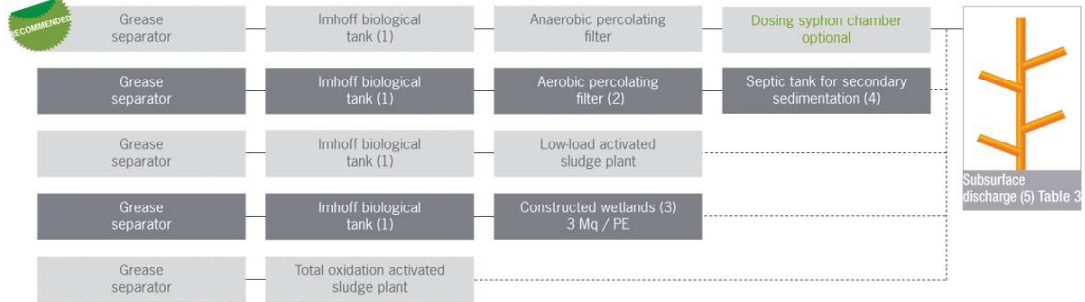
Secondary treatment, and where necessary tertiary treatment, located downstream of the primary treatment make use of chemical-physical-biological processes to break down the principal pollutants in order to arrive at the limits specified for the final discharge. These secondary treatments can consist of: percolating filters (aerobic or anaerobic), activated sludge plants or constructed wetlands. The treatment processes taking place inside the tanks make use of **physical phenomena** (e.g. floatation, sedimentation) that separate pollutants, such as greases, foams and sedimentable solids, from water, **chemical processes** (e.g. oxidation of malodorous compounds) and **biological** processes that transform the pollutants (principally organic) into a more stable sludge that accumulates in the tanks. For this reason, the

accumulated material must be periodically removed by specialist personnel. The sludge removal operations guarantee the **efficient operation of the plants** by preventing deterioration in the quality of the final effluent and by ensuring that an excessive presence of putrescible sludge does not lead to the onset of septic conditions, with the resulting emission of malodours, especially in the summer months. The frequency of these operations depends on the characteristics of the sewage. However, it is highly recommended that the tanks are inspected every one or two months. As some treatments make use of biological processes that depend on the bacterial flora naturally present in sewage, it is advisable to **minimise as much as possible the discharge of chemical substances** into the sewers, such as sodium hypochlorite (bleach), strong acids and bases and disinfectants in general. These substances, in fact, can have a negative effect on the micro-organism populations and lead to a reduction in their purification activities. For activated sludge treatment systems, it should be remembered that these require 10-15 days to become fully active. This time, however, can be reduced by adding the ROTOTEC BIOACTIVATOR directly to the sewage. As far as the consumption of electricity is concerned, the plants are very low-energy consuming and only require power to feed the blowers in the case of activated sludge treatment. The installation of a lift station and electric pump becomes necessary when the effluent needs to be lifted (for example when the final discharge point is higher than the outlet). The table reported on the page alongside shows all the plant solutions possible according to the location of the final discharge point.





Plant solutions according to the location of the final discharge point (*)



Notes on the table:

- For the primary treatment of sewage, Italian law imposes the use of Imhoff tanks and only allows the installation of septic tanks when replacing existing plants. Some local authorities, however, still prescribe the installation of single-chamber, two-chamber and three-chamber septic tanks.
- The aerobic percolating filter has its outlet at the bottom of the tank. If there is insufficient height difference at the installation site, a lift station must be installed in order to be able to deliver the effluent to the required level.
- In the case where constructed wetlands are used as secondary treatment (downstream of the Imhoff tank and grease separator) an absorbent bed of surface area 3 square metres per treated PE is necessary. When, instead, the wetlands are used as tertiary treatment, a surface area of 1 square metre/PE is necessary.
- In order to prevent the discharge of solid particles from an aerobic percolating filter, a septic tank must be installed downstream of the filter as secondary sedimentation. The same requirement also applies downstream of an anaerobic percolating filter when discharging effluent to land. In both cases, the tank should be underlined.
- For discharging to a soil absorption system, some local authorities simply require primary treatment of the effluent (grease separator + Imhoff tank) while others also require secondary treatment. ROTOTEC always recommends this second option, which guarantees a much cleaner effluent, thus avoiding problems of odorous emissions and blockages in the distribution pipes.
- According to current legislation, a significant body of water is intended as being a body of water with less than 120 days per year of zero flow. In other cases, the body of water is defined as non-significant and any discharges into it must be considered as discharges to land.
- In this case, the sequence of tanks is as follows: grease separator (grey water) – Imhoff tank – anaerobic percolating filter – activated sludge plant. The activated sludge plant is provided with an air-lift type sludge recirculation system which returns the sludge to the percolating filter, thus guaranteeing optimum treatment results in terms of organic matter as well as nitrogen and phosphorus. In all cases, however, it is advisable to contact our technical office.

(*) In all cases, nevertheless, prior to installing the proposed plant, it is advisable to seek the advice of the authorities responsible for issuing the discharge permit.



CALCULATING THE POPULATION EQUIVALENT AS A FUNCTION OF THE TYPE OF USERS SERVED

The concept of **Population Equivalent (PE)** is useful for expressing the load on a treatment plant from a particular user in standard terms comparable with domestic users. The equivalence can refer to the hydraulic load, to the load in suspended solids or, more commonly, to the organic load expressed as BOD5. Population Equivalent is a conventional concept based on the mean contribution from a type user equal to 60 g/BOD5 per inhabitant (Law Decree 152/2006). It is, nevertheless, particularly useful in that it allows a simple comparison to be made between the loads from very different users, expressing each user as an “equivalent population” load.

Residential building			
_____	x	$\frac{1}{\text{Coefficient}}$	= _____
Residents			Population Equivalent

Charitable institutes and rest homes			
_____	x	$\frac{2}{\text{Coefficient}}$	= _____
Beds			Population Equivalent

Offices			
_____	x	$\frac{0,3}{\text{Coefficient}}$	= _____
Employees			Population Equivalent

Dance halls			
_____	x	$\frac{0,2}{\text{Coefficient}}$	= _____
Customers			Population Equivalent

Restaurants			
_____	x	$\frac{0,3}{\text{Coefficient}}$	= _____
Place settings			Population Equivalent

Hospitals			
_____	x	$\frac{0,3}{\text{Coefficient}}$	= _____
Place settings			Population Equivalent

Cafes and bars			
_____	x	$\frac{0,07}{\text{Coefficient}}$	= _____
Customers			Population Equivalent

Motorway restaurants			
_____	x	$\frac{2}{\text{Coefficient}}$	= _____
Seating per hour			Population Equivalent

Campsites and holiday villages			
_____	x	$\frac{0,8}{\text{Coefficient}}$	= _____
Guests and personnel			Population Equivalent

Hotels, guest houses, holiday farms, colleges (Guests and personnel, excluding restaurants and bars)			
_____	x	$\frac{1}{\text{Coefficient}}$	= _____
Guests and personnel			Population Equivalent

Cinemas and theatres			
_____	x	$\frac{0,13}{\text{Coefficient}}$	= _____
Seats			Population Equivalent

Schools and educational institutes			
_____	x	$\frac{0,26}{\text{Coefficient}}$	= _____
Students, personnel			Population Equivalent



GREASE AND GRIT SEPARATORS

IRRI-GO BIOLOGICAL TANKS

SEPTIC TANKS

ACTIVATED SLUDGE PLANTS

PERCOLATING FILTERS

CONSTRUCTED WETLANDS

SOIL ABSORPTION SYSTEM

DEEP SECONDARY TREATMENTS

OIL SEPARATORS

STORMWATER RUNOFF TREATMENTS

LIFT STATIONS

CHAMBERS

ACCESSORIES

UNDERGROUND INSTALLATION



TECHNICAL CHARACTERISTICS

The grease separator is a physical pre-treatment process that removes oils, foams, greases and all substances of specific weight less than that of the effluent. Greases and oils produced during normal domestic activities derive from the consumption of butter, margarine, lard and vegetable oils. They also originate from waste meat and vegetables and from some cosmetic products. Greases are insoluble in water and have a low density. In the presence of surface-active agents (detergents), they create stable foams of floating materials that can cause an accumulation of putrescible substances in the sewerage pipes and render oxygenation of the sewage difficult, which also has a detrimental effect on the biological treatment processes located downstream.

The grease separator is nothing more than a stilling tank in which the substances of specific weight less than water are separated by floatation (surface). The reduced velocity of the fluid also allows sedimentation of a part of the suspended solids which deposit at the bottom of the tank. As temperature has a considerable influence on the operation of the grease separator, the separation process becomes 100% effective when the temperature does not rise much above the melting point of the greases, estimated as being around 20°C. The Rototec gravity grease separators consist of a polyethylene tank, circular in plan, containing two semi-submerged inlet and outlet pipes positioned at different heights. The useful volume of the tank is divided into three compartments: an inlet zone in which the turbulence of the inlet flow is dampened, a second zone in which the separation takes place together with temporary accumulation of the solids and a third outlet zone for the treated effluent.

The longer the retention time of the sewage in the grease separator the more efficient is the removal of the floating materials. This retention time must nevertheless be more than 3 minutes at peak flow. **The grease separators are certified in accordance with UNI-EN 1825-1 norm and guarantee a sewage retention time of at least 4 minutes at peak flow (Qmax), taking into account the available volume only, i.e. that not occupied by greases or heavy sediments.** This guarantees retention times at mean daily flow rates of more than 15 minutes. A correctly maintained plant can treat sewage in accordance with that laid down by law decree n° 152/06.

USE AND MAINTENANCE

The substances removed by floatation accumulate at the surface of the grease separator in the form of a surface crust, while the heavier solids settle at the bottom of the tank to form a deposit of putrescible sludge. It is advisable to provide for the periodic removal of the accumulated materials, which reduce the effective volume required for the passage of the effluent, thus reducing the retention time and, as a result, compromising the efficiency of the plant. An excessive accumulation of sludge in the grease separator can cause septic conditions to develop with the resulting malodorous emissions, in particular during the summer. In this respect, it is advisable to contact the appropriately qualified personnel who will remove the accumulated surface mass and settled sludge as well as any film adhering to the surfaces of the tank, paying particular attention to the sediments that could obstruct the effluent inlet and outlet. The frequency of these operations depends on the amount of greases, oils and sedimentable solids present in the effluent. However, it is highly recommended that the separation chamber is inspected every one or two months.

SPECIFICATION ITEMS

Vegetal oils, foams and heavy sediments separator for grey water (washbasin, kitchen, shower,...) from residential buildings or similar, polyethylene (PE) one-piece structure, manufactured in **ISO 9001/2008 certified company**, in accordance with Legislative Decree n°152/2006 and certified in accordance with **UNI-EN 1825-1 norm**, for underground installation, fitted with inlet pipe with watertight gasket in NBR rubber and 90° elbow in PVC for dampening and distributing the flow, and with outlet pipe with watertight gasket in NBR rubber, deflector T and pipe in PVC, for discharging treated effluent. The top is fitted with biogas vent and two threaded covers in polypropylene (PP) for inspection, emptying and cleaning purposes; optional threaded extensions; Grease separator mod.....useful volume..... It, dimensions.....X.....X.....cm

N.B.: Underground installation instructions on page 107

1. Grease separator and grit separator. For domestic use



Certification UNI - EN 1825 - 1 CE

Use Primary treatment of grey water from residential buildings (kitchen, showers, washing machines, bidets...).



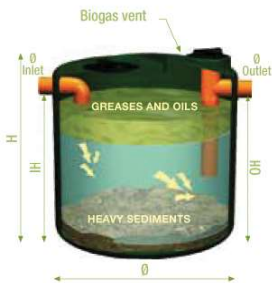
Corrugated grease separator



Item	Ø mm	H mm	IH mm	OH mm	Ø/O mm	Cover	Extensions	Useful vol. lt.	Grease vol. lt.	Sed. vol. lt.	NS l/s	P.E.
NDD 1000	1150	1220	880	810	110	CC455-CC255	PP45-PP30	774	90	200	2	30
NDD 1500	1150	1720	1360	1290	110	CC455-CC255	PP45-PP30	1193	128	320	3,1	40
NDD 2000	1150	2280	1970	1900	125	CC455-CC255	PP45-PP30	1800	250	520	4	60
NDD 2600	1710	1350	1000	930	125	CC455-CC355	PP45-PP35	1971	220	550	5	70
NDD 3200	1710	1625	1240	1170	125	CC455-CC355	PP45-PP35	2435	256	640	6,4	80
NDD 3800	1710	1855	1480	1410	160	CC455-CC355	PP45-PP35	3026	330	800	7,9	90
NDD 4600	1710	2125	1700	1630	160	CC455-CC355	PP45-PP35	3510	400	910	9	110
NDD 7000	2250	2367	1810	1740	200	CC600-CC455	PP65-PP45	6711	900	1400	13	200
NDD 9000	2250	2625	2030	1960	200	CC600-CC455	PP65-PP45	7534	1200	1800	15,5	250

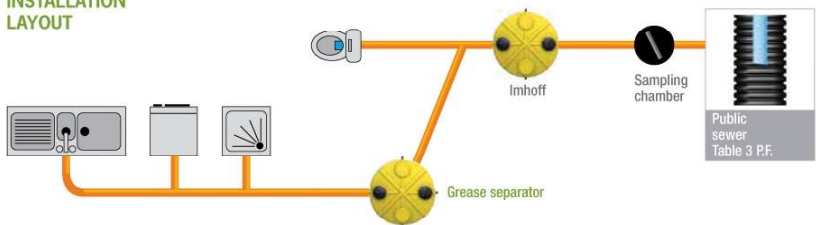


Smooth grease separator



Item	Ø mm	H mm	IH mm	OH mm	Ø/O mm	Cover	Extensions	Useful vol. lt.	Grease vol. lt.	Sed. vol. lt.	NS l/s	P.E.
DD 50	430	430	270	200	100	CC255	PP30	39	5	10	0,1	1
DD 150	580	660	510	440	100	CC255	PP30	121	16	32	0,3	5
DD 300	630	970	770	700	100	CC255	PP30	218	30	59	0,5	10
DD 500	790	790	630	560	100	CC255-CC140	PP30	276	32	72	0,7	15
DD 800	1480 x630	1090	870	800	110	CC355-CC255	PP35-PP30	693	80	180	1,8	20
DD 1000	1160	1140	910	840	110	CC455-CC255	PP45-PP30	874	92	230	2,3	30
DD 1500	1160	1610	1390	1320	110	CC455-CC255	PP45-PP30	1360	150	360	3,5	40
DD 2000	1160	2075	1810	1740	125	CC455-CC255	PP45-PP30	1822	220	500	4,2	50
DD 3000	1450	1940	1650	1580	125	CC455-CC255	PP45-PP30	2564	300	690	6,5	80

INSTALLATION LAYOUT





2. Grease separator and grit separator. For production activities

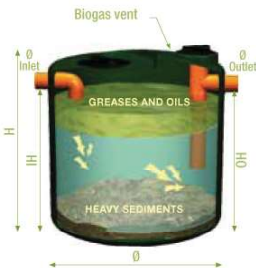
Sizing UNI - EN 1825 - 2

Use Primary treatment of grey water from production activities such as public canteen services, butchers, fast-food, restaurants, bars, school, military and prison canteens, sausage and salami factories, dairies, fried food vendors, fishmongers.



Corrugated grease separator

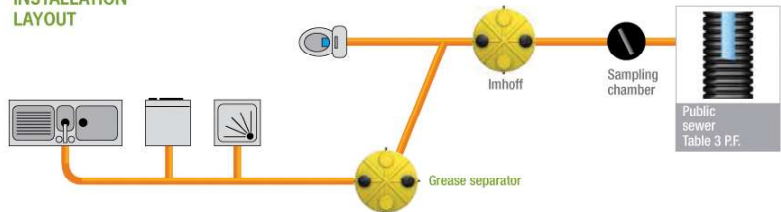
Item	NS l / s	Abattoirs kg meat/day	Restaurant place settings/day	Hotel place settings/day	Canteen place settings/day	Motorway restaurant place settings/day
NDD 1000	2	100	140	160	300	570
NDD 1500	3,1	170	230	250	500	875
NDD 2000	4	240	330	350	714	1250
NDD 2600	5	260	360	380	780	1360
NDD 3200	6,4	320	450	470	970	1690
NDD 3800	7,9	380	530	570	1142	2000
NDD 4600	9	430	600	640	1285	2250
NDD 7000	13	670	866	928	1857	3250
NDD 9000	15,5	830	1066	1142	2285	4000



Smooth grease separator

Item	NS l / s	Abattoirs kg meat/day	Restaurant place settings/day	Hotel place settings/day	Canteen place settings/day	Motorway restaurant place settings/day
DD 300	0,5	24	33	35	70	125
DD 500	0,7	34	46	50	100	175
DD 800	1,8	86	120	128	250	450
DD 1000	2,3	115	150	160	330	575
DD 1500	3,5	173	240	250	500	900
DD 2000	4,2	220	310	330	650	1150
DD 3000	6,5	336	465	500	1000	1750

INSTALLATION LAYOUT

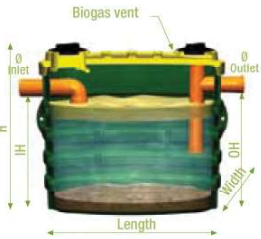


ELIPSE grease separator



Ideal for underground installation in tight spaces

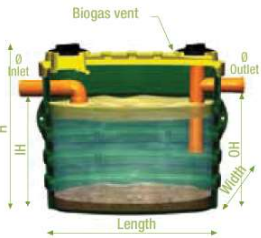
The Elipse model corrugated tanks have been specially designed for more difficult installation conditions. In fact, they guarantee lightness and watertightness while possessing a form that allows easy transport through confined spaces and subsequent underground installation under cellars, basements and pavements. Furthermore, their elongated shape improves the separation efficiency of sedimentable solids and floating matter, resulting in a high-performance treatment. Elipse is the solution.



ELIPSE grease separator for domestic use



Item	Length mm	Width mm	H mm	H1 mm	H2 mm	Ø I/O mm	Cover	Extensions	Useful vol. lt.	Grease vol. ft.	Sed. vol. lt.	Q max l / s	P.E.
NDD 1200	1900	708	1630	1250	1180	110	CC455- CC355	PP45- PP35	1142	120	300	3	35
NDD 1700	1900	708	2140	1700	1690	110	CC455- CC355	PP45- PP35	1775	200	450	4	50

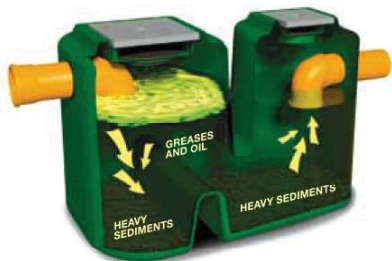


ELIPSE grease separator for production activities

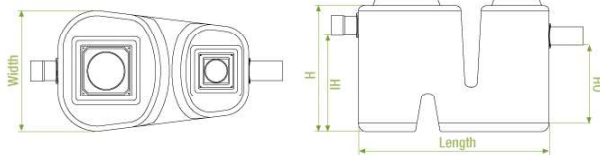
Item	NS l / s	Abattoirs kg meat/day	Restaurant place settings/day	Hotel place settings/day	Canteen place settings/day	Motorway restaurant place settings/day
NDD 1200	3	150	200	240	440	840
NDD 1700	4	200	280	300	620	1100



Grease separators with separation baffles



Grease separators for the primary treatment of grey water from residential buildings (kitchen, showers, washing machines, bidets...), public canteen services, butchers, fast-food shops, restaurants, school, military and prison canteens, sausage and salami factories, dairies, fried food vendors, fishmongers. The grease separators are certified in accordance with standard UNI-EN 1825-1 and guarantee a sewage retention time of at least 4 minutes at peak flow (Q_{max}), taking into account the available volume only, i.e. that not occupied by greases or heavy sediments. This guarantees retention times at mean daily flow rates of more than 15 minutes.



Grease separators with separation baffles



Item	Length mm	Width mm	H mm	IH mm	OH mm	Ø I/O mm	Cover	Extensions	Useful vol. lt.	Grease vol. lt.	Sed. vol. lt.	NS l/s	A.E.
NDD 200	1000	635	675	490	440	100	CC255-CC130	on request	205	30	50	0,5	10
NDD 300	1100	700	775	585	535	100	CC255-CC130	on request	303	40	80	0,7	15
NDD 400	1150	750	890	695	645	100	CC255-CC130	on request	409	55	110	1	20

ACCESSORIES

Polypropylene one-piece extension



Item	Length x width x height cm	Colour
PM20x20G	20 x 20 x 20	Grigio
PM20x20V	20 x 20 x 20	Verde
PM30x30G	30 x 30 x 30	Grigio
PM30x30V	30 x 30 x 30	Verde

Polypropylene pedestrian cover



Item	Length x width cm	Colour
CP20G	20 x 20	Grigio
CP20V	20 x 20	Verde
CP30G	30 x 30	Grigio
CP30V	30 x 30	Verde

Cast iron cover (for vehicular traffic)



Item	Length x width cm	Colour
CCG20	20 x 20	-
CCG30	30 x 30	-