



Sustainable development solutions in environmental technology:

Waste water treatment and biological Wc devices for summer cottages, holiday homes, small houses

environment RAITA technology is a company

specialising in environmental technology.

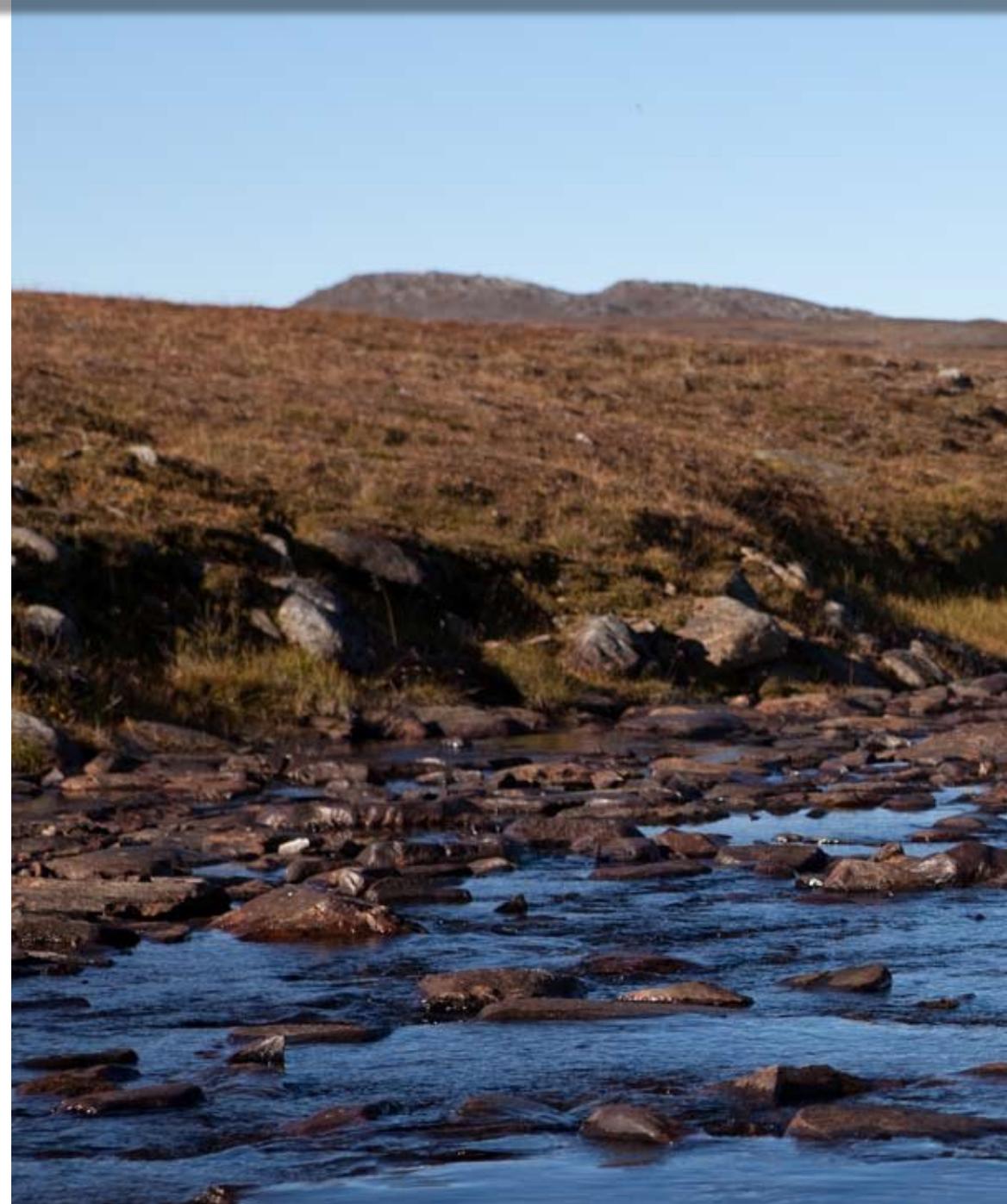
the company's products and methods are based on longtime experience in the environmental technology field. the business was established in the early 1950s as a provider of water purification equipment and expanded in the 1960s to include waste treatment equipment, in the 1970s to include a permit for biological Wc systems, and in the 1980s to composting. in addition to the sale of individual products, the business has included delivery of overall processes for more challenging sites. today, we offer customers extensively developed environmental technology solutions for waste water treatment solutions for sparsely populated areas, Wc systems and composting solutions.

our devices are high-quality systems developed in Finland.

A successful implementation is the result of a delivery chain realised by collaboration between professionals in the field. it includes:

- 1.
2. mapping out the customer's needs
professional, customer-oriented planning
3. (in collaboration with an independent designer) high-quality technical implementation and equipment installation (in collaboration with
4. an independent implementation firm)
flexible maintenance service "tailored" to the customer's needs

contact us to learn more about implementation of RAITA sustainable solutions.





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BioBox treatment equipment, biological treatment for summer cottages (washing and rinsing water)

treatment based on biological microbe treatment is done using filtering elements which enable a more effective bio-filtering (biofilm) process in small spaces. microbes in the elements remove organic material, unclean materials and nutrients from waste water.

Because of the large surface area of the elements (comparable in ground filtering to 410 m²) and good air circulation, treatment is very effective.

BioBox works well at sites where usage capacity varies. the enhanced filter reacts quickly to changes in the level of use. treated water can be directed to a trench or bed of stones, or filtered into the ground. A filtering foam (Bm) can also be used to direct the water into the ground.

treatment removes organic material, unclean materials and nutrients in accordance with tighter regulations for shoreline and ground water areas (Bod 90%, P 85%, N 40%).

Usage costs are small – filter elements are cleaned at 2-4 year intervals and replaced every

10-15 years. maintenance is easy to do on your own. Filter elements are lifted and cleaned by brushing or washing.

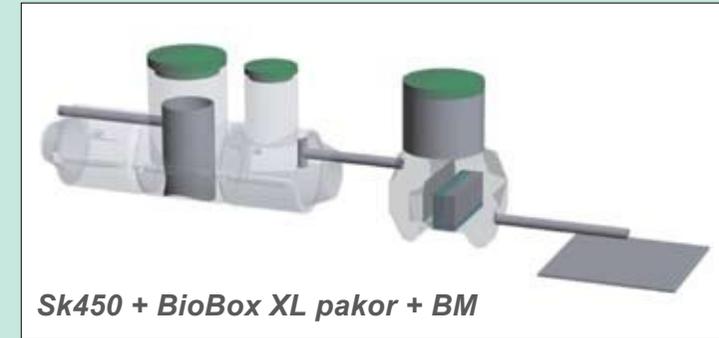
the effectiveness of treatment facilities can be increased by:

- pre-treating waste water in a coagulation well (sK)
- installing two or more BioBox units directing treated water to further treatment with filtering foam or bio-module filtering (Bm)

the waste cleaned from elements is composted or sent to a waste treatment plant. A sludge truck is not needed for emptying the materials. sludge can also be treated in a sludge unit (sAV) if a coagulation well is used.

BioBox treatment is suitable for small amounts of water (max 400 litres/ 24 h), for example buckets of water carried by hand.

BioBox XL treatment is suitable for larger amounts of water (max 600 litres/ 24 h).



Models, equipment level, auxiliary equipment:

Model	Capacity litre/ 24 h	SK450	SK600	SK1200	SAV	BM	Pakor
BioBox M	400	+	-	-	+	+	+
Bio-Box XL(+)	600/750	+	+	+	+	+	+



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EV composting eco-toilets

Summer cottages, holiday homes, private houses, public sites

EV is an environmentally friendly, dry, multi-purpose eco-toilet model. the largest amount of nutrients in waste water is concentrated in urine. the eV eco-model includes various possibilities for treatment of urine and moisture:

ECO: Urine is treated in conjunction with composting, and almost all moisture and nutrients are utilised in the process in the composting container. moisture which is not treated in composting can be drained into an overflow container.

SEP: Urine is separated in the upper part of the toilet seat and directed into a separate container.

ECO-SEP: Urine is separated in the upper part of the toilet seat and directed into a separate container.

the Bio-filter is in its own compartment in the container or in a separate bio-filtering unit (Bs). Urine is not filtered through excrement, and the microbe content of the fluid is not high. moisture which is not treated in composting can be drained into an overflow container or directed into a waste water system.

When urine is utilised in composting, only a small amount of excess fluid (1-5% of the amount of urine) and nutrients are utilised in composting, which decreases the amount of waste to be emptied. A person produces about 1-2 litres of urine in a day (for example 3 people produce about 150-300 litres of urine in 50 days).

All EV eco-toilets are also suitable for indoor use. if needed, they can be equipped with a fan (PU).

An extra container and extra cart (LV) is available for all models, doubling the capacity so that the container/cart acts as a composting container until the end of the process.

Models, equipment level, auxiliary equipment:

Model	Capacity	ECO	SEP	ECO-SEP	Seat level	Seat	BS	LV	PU
EV MINI	60	+	+	+	-	-	+	+	+
EV MINI L	120	+	+	+	-	-	+	+	+
EV 60	60	+	+	+	+	+	+	+	+
EV120	120	+	+	+	+	+	+	+	+
EV 200	250	+	+	+	+	+	+	+	+
EV 400	400	+	+	+	+	+	+	+	+



Biological AQ Wc

Holiday homes, private houses

the AQ biological Wc uses a Wc seat (1-3 units) for rinsing and transport.

A separator unit installed over the composting space separates fluids from solid waste. solid waste (excrement, paper) goes into the composting unit and fluid (urine, rinsing water) into the nutrient removal unit. solid waste is composted, and fluid is treated and directed after treatment into the same waste water system with washing and rinsing water.

AQ toilets significantly reduce the production of waste water at properties. Wc waste makes up the largest part of a property's overall waste water. treatment of "washing and

rinsing water" is easy to set up using simple treatment methods.

An extra container and extra cart (LV) are available for all models, doubling the capacity so that the container/cart acts as a composting container until the end of the process.

The Wc seat used is either a normal Wc seat, in which case separation of fluid is done in the nutrient removal unit (NP), or a separating seat model (seP), in which case urine is captured in a separate container.

Technical equipment is located in a heated area, cellar or recess below the building or in a separate building.

Models, equipment level, auxiliary equipment:

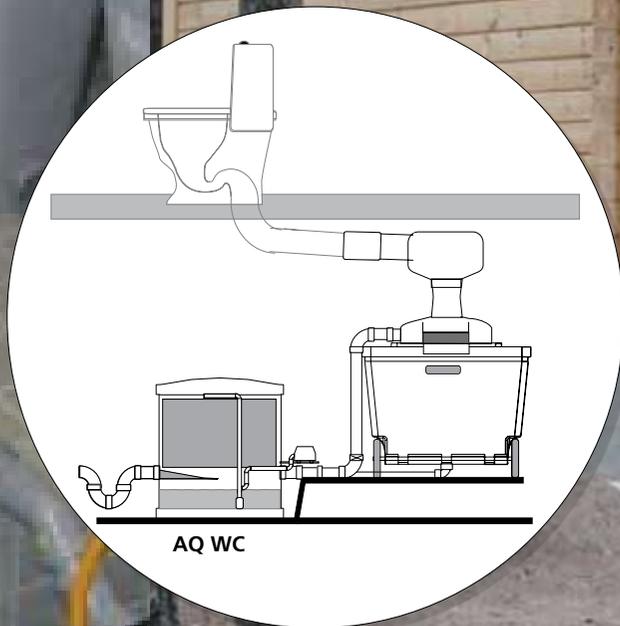
Model	Capacity kilos/day	NP	SEP	LV
AQ 60	60	+	+	+
AQ 120	120	+	+	+
AQ 200	250	+	+	+
AQ 400	450	+	+	+

8 delivery includes equipment, pipes between the separator, composting and NP unit (not the Wc seat).





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Hs treatment equipment for holiday homes, pump houses for small houses

treatment based on biological microbe treatment is done using filtering elements, which enable a more effective bio-filtering (biofilm) process in small spaces. microbes in the elements remove organic material, unclean materials and nutrients from waste water.

Because of the large surface area of the elements (comparable in ground filtering to 30-40 m²) and good air circulation, treatment is very effective.

the effectiveness of the biological process is increased by recycling waste water through a filter and at the same acidifying it.

Hs treatment equipment works well at sites where usage capacity varies. the enhanced filter reacts more quickly to changes in the level of use.

treated water can be directed to a trench or bed of stones, or filtered into the ground. A filtering foam (Bm) can also be used to direct the water into the ground.

treatment removes organic material, unclean materials and nutrients in accordance with tighter regulations for shore and ground water areas (Bod 90%, P 85 %, N 40 %).

sludge accumulated in a coagulation well is emptied once a year. sludge is emptied by a sludge truck to be taken away, or can be dried and composted at a sludge unit (sAV) at the property.

the filter for draining out water and the bio-filter elements are cleaned once every 2-4 years as needed. Waste cleaned from elements is composted or sent to a waste treatment plant.

Air pump (40 W) seals are replaced every 2-4 years.

the period of use for treatment equipment is long due to its maintainability.

the height of the Hs treatment unit can be increased with raised parts (Pakor).

Ready-to-install treatment package:

All ready-to-install treatment packages contain all containers and equipment.

Re-fitted treatment unit (SA):

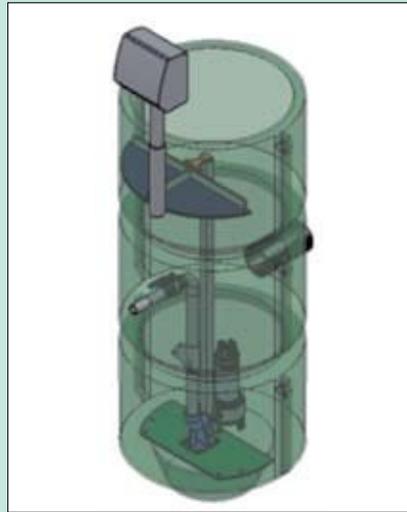
the treatment unit's design makes use of existing wells at the property as pre-treatment wells. delivery of sA models includes a process container, housing for technical devices and equipment.

Models, equipment level, auxiliary equipment:

Model	Capacity litre/ 24 h	Pakor	SAV	BM
HS1 SA	1000	400/600	+	+
HS1	1000	400/600	+	+
HS2	2000	400/600	+	+

Larger models also available





Pump Houses

Using a pump, a property's waste water can be transferred to a better waste water treatment location or be linked to a larger system.

our extensive selection of wells also includes solutions for problematic sites. the heart of the pump house is a technically strong pump placed in the correct location. our selection includes the best products from leading pump manufacturers (Grundfos, Xylem, Flygt, Abs). the height of the pump well can be increased with raised parts (Pakor).

Models, amount of equipment, auxiliary equipment:

Model (diameter, mm)	Height (mm)	Pakor	Medium trough pump	Large trough pump	Shredder pump
PK 600	800/1200/2200	400/600	+	+	+
PK 900	1400/2200	400/600	+	+	+
PK 1200	1200/1800	400/600	+	+	+

Larger models also available



containers

our septic containers and precipitation wells in sizes up to 4.5 m³ are manufactured by rotational moulding of polyethylene plastic (Pe). Larger containers are of fibreglass.

Precipitation wells are equipped with a drainage filter. Precipitation wells are used for pre-treatment before biological treatment (f.ex biobox or bio-modules).

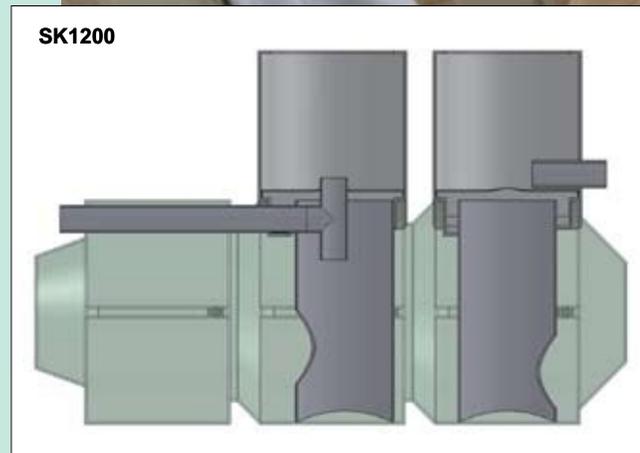
Septic containers can be equipped with a surface alarm.

Containers are delivered with an anchoring package. our containers have a 10 year warranty.

Septiccontainer models, equipment level, auxiliary equipment:

Sealed containers		Septic tanks		Combo containers	
Model	Material	Model	Material	Model	Material
1300	Pe	420	Pe	6000/2000 I	LK
2000	Pe	1200	Pe		
2600	Pe	1900	Pe		
4000	Pe	2300	Pe		
4500	Pe	4300	Pe		
6000	LK				
10000	LK				
16000	LK				

Larger containers are also available.

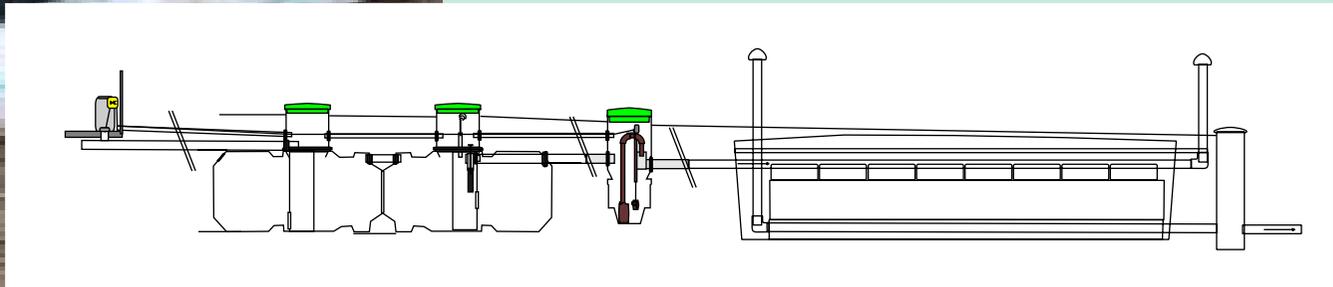
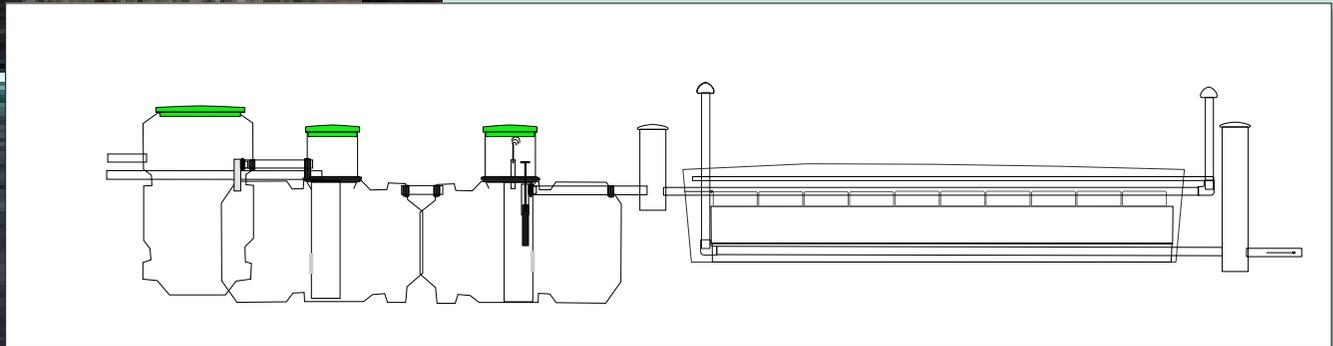




Bio-module systems, phosphorous removal systems

Bio-modules work as a growth platform for waste water treatment microbes. due to the design of the modules they contain a large growth platform as well as good air circulation. treatment with bio-modules in underground disposal or filtration areas can be done in a small space.

A phosphorous disposal system can be implemented during or after biological treatment.
our models include ready-to-install packages for various types of sites.





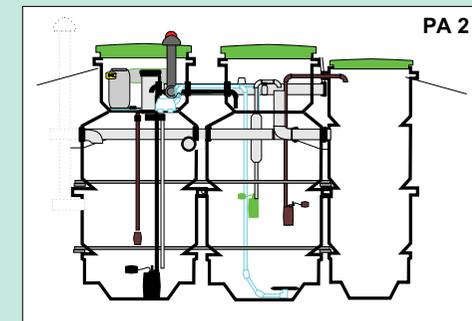
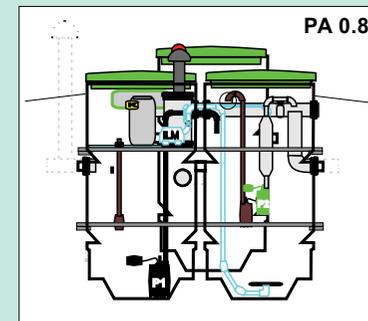
Treatment facilities for 1-3 households: effective, easily maintained waste water treatment

treatment equipment for a small house is economical to purchase, reliable and long-lasting. Usage costs are made up of energy, chemical and sludge emptying. the annual cost is about 30-50 euros/user. technical maintenance is recommended every 1-3 years. the cost of an annual maintenance contract is 30-50 euros/user.

Usage costs vary with the size and level of use of the treatment facility. Linking a number of properties to the same treatment facility enables significant savings in purchasing and usage costs. Linkage is done with a gravity sewer or pressure sewer (pump).

our treatment facility deliveries include numerous

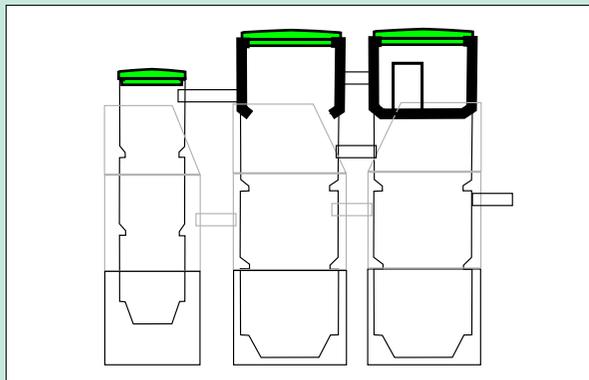
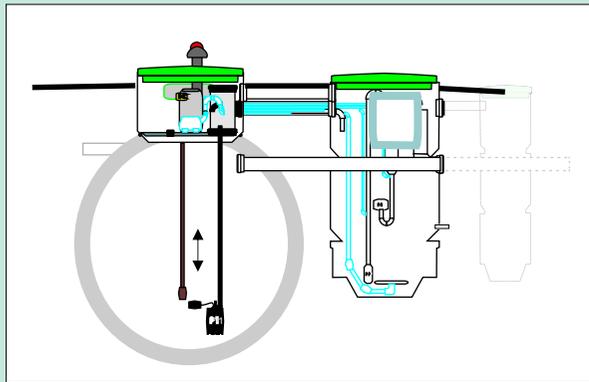
- services: equipment as well as instructions for installation
- and use
- inspection of the treatment
- installation start-up of the treatment process instructions for users



Treatment facility deliveries for various types of small houses:

Ready-to-install treatment package:

All ready-to-install treatment packages contain all containers and equipment.



Re-fitting and well treatment facility:

the treatment unit's design makes use of existing wells at the property as pre-treatment wells and sludge wells. the PA KAIVO sA model is installed in old septic tanks, and delivery of sA models includes a processing container.

in all our models, sludge created in the treatment process is treated and dried to be composted in a drying container (KY) located with the treatment facility, or optionally sludge

can be collected in a separate container (Ls) which is emptied by a sludge truck into a municipal sewage treatment site.

the effectiveness of small treatment facilities adheres to the tighter requirements of regulation 209/2011 (waste water in sparsely populated areas). treatment facilities have been tested under the supervision of authorities (including the Finnish environment institute) as well as at numerous actual usage sites.

Models, equipment level, auxiliary equipment:

Model	Capacity users	Capacity household	KY	LS	GSM
PA KAIVO SA	5-10	1	KY 30/KY 120	Ls 450/1000/ 2000	+
PA 0.8 SA	6	1	KY 30/KY 120	Ls 450/1000/ 2000	+
PA 0.8	6	1	KY 30/KY 120	Ls 450/1000/ 2000	+
PA 1 SA	9	1-2	KY 30/KY 120	Ls 450/1000/ 2000	+
PA 1	9	1-2	KY 30/KY 120	Ls 450/1000/ 2000	+
PA 2 SA	16	1-3	KY 30/KY 120/KY 200	Ls 1000/2000 4500	+
PA 2	16	1-3	KY 30/KY 120/KY 200	Ls 1000/2000 4500	+

Larger models also available



Additional solutions:

Infra – products for waste water treatment for housing co-operatives, towns, agriculture and industry are in our brochure.

Learn more about models and the operations of various products at www.raita.com

We adhere to our own environmental and quality programme. We also require high quality from our business partners in manufacturing, installation and deliveries. (iso and ce).

Environmental technology for larger and more challenging sparsely populated areas

environment RAITA technology is a company specialising in environmental technology. the company's products and methods are based on long-time experience in the environmental technology field.

thanks to extensive experience, environment RAITA technology can also realise treatment facilities at larger and more challenging sites and entireties.

Request a competitive bid for a solution for your site

our products represent cutting edge technology in the field, offering effective and reliable methods for today's needs.

BAt (best available technology) means highquality technical implementation at a competitive price.

We offer our customers a more extensive operating model (page 2).



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