



International reference list



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BioKube – Decentralized Waste Water Treatment Systems.

The Danish cleantech company BioKube sells wastewater treatment systems designed to unconditionally fulfilling the very strict Danish cleaning requirements – some of the strictest in the world. The technology is very robust, requires little maintenance and is energy efficient. In use in 43 countries.

Large international installed base

BioKube system for treating wastewater has large global possibilities and BioKube systems have been sold and installed in 41 countries. See [here BioKubes international network](#). The illustrations in the following pages are from some of the more than 2.000 BioKube systems BioKube has delivered internationally where the technology is in use. Another 3.000+ BioKube systems are installed in Denmark, BioKubes home market.

Modular designed systems

BioKube has developed a technology where a few standard modules in series make it possible to build wastewater treatment systems up to 2.000 m³ of wastewater per day. The modules are factory manufactured, delivered ready to install on site in containers and quickly erected as a fully operational wastewater treatment system.

Even for a big wastewater plant, the assembly time of the BioKube units on site is only from 1 – 6 days.

The modules can be installed in many ways on site ranging from mounted in concrete tanks, installed above ground or delivered fully functional and complete in 20 and 40 foot containers for temporary use and relocated to another location as needed. A 40 foot container will treat wastewater for a mining camp with 1.000 people.

Automatically self-adjusting technology

The basic concept in the Biokube systems imply a wastewater plant where a fully controlled and automated system of timed inflow of wastewater to submerged aerated filters with bacteria giving a highly stable cleaning process. The process automatically adjusts itself to fluctuations in the incoming water. The technology is equally suited for use in a small city with stable inflow of wastewater as well as in a vacation resort with long periods of non-use due to off-season periods.

After extensive and continues testing of available filter media, BioKube has chosen BioBlock® from Exponet as the most suited filter media. See about BioBlock® [here](#)

Fulfills the most stringent cleaning requirements

The technology was developed in Denmark which has some of the strictest environmental requirements and enforcements in the world. Biokube is in Denmark dominant in the field of local decentralized wastewater treatment. All systems are continually monitored and laboratory measurements of cleaning results are yearly reported to the local and national authorities.

The measured cleaning results are 50 % better than even the very strict allowed outlet values. The cleaning results for all 3,000 BioKube systems in Denmark are COD < 30,9 mg/l, NH₄-N 2,6 mg/l, P < 1,2 mg/l. See the cleaning results for all Biokube systems in Denmark [her](#).

Treated wastewater can safely be reused

The technology allows water to be treated so it can safely be reused, if there is a local water scarcity. As an example, almost all systems delivered to The Middle East are equipped for reuse of the treated water.

Technology can function in a large temperature range

The technology can cope with large fluctuations in temperatures ranging from 50° C in the dessert in Libya and Kuwait to minus 30° C in Northern Scandinavia.

Documented certified cleaning results

BioKube has archived our excellent results due to the very strict requirements for treating wastewater in Denmark – with higher cleaning requirements that are enforced; the technology simply has to be better!!

BioKube BioContainer – systems in 20 or 40 foot standard containers

BioKube BioContainer systems are designed for the rugged use needed for temporary employment and then relocation to a new site. As example the 25 BioKube BioContainer systems used at oilfields in The Middle East are relocated every 3 to 6 months as the production camps are moved. The sites are typically very remote and often without access to water and the feature of the treated water being clean enough

to be reused is an important feature as is easy and straightforward maintenance based of extensive manuals from BioKube.

The main markets for BioContainer systems are oil production sites and mining camps. BioContainer systems are in use with the largest international oil and mining camps. [Link to more info](#)



20 foot container installed at a mine operated by an international mining company in Guinea, West Africa



Two 40 feet BioContainer installed at building site in Oman. The BioContainer are operated by large construction company.

BioKube SATURN – modular system installed above ground 300 – 2.000 m3

BioKube SATURN systems are optimized towards locations where little space is available. The footprint for a 3.000 m3 per day system is only 30 x 50 meters. As all BioKube systems SATURN can be delivered with mechanical pre cleaning and sludge handling. This greatly reduces the daily operational demands. [Link to more info.](#)

SATURN systems are also optimized towards requiring a minimum of groundwork. The system requires only a concrete slab for the SATURN cleaning units and 3 small buffer tanks one with a coarse screen.



BioKube cleaning unit under installation in Holland. Each unit will clean 150 m3 wastewater pr. day



SATURN system 7,500 PE system in Ghana. The system cleans wastewater from the apartment buildings seen in the background.

BioKube BioReactor – modular system in concrete tanks 100 – 1.000 m3

The typical market for BioReactor systems are small to mid-size towns where focus is on a stable cleaning process with a minimum requirement for service. For a Bioreactor system BioKube recommends service and maintenance checkup once a month only.

All BioKube systems can be equipped with remote surveillance to make sure the plant fulfills the 24/7 requirement of operation. [Link to more info.](#)



BioReactor system under installation in on site built concrete tanks



BioReactor system in operation. Notice the very even distribution of the aeration.

BioKube Jupiter – self-contained 50 – 500 m3

The typical market for Jupiter systems is villages, hotels and resorts. One of the requirements here is that the system can cope with large variations in the amount of incoming water. As an example a holiday resort will have periods of low-season with very few guests and here the system must automatically be able to handle this situation.

Jupiter units are delivered fully functional and ready for operation after a simple and straightforward installation either below ground or above ground as the local situation dictates. [Link to more info.](#) See here a [video of Jupiter](#) system installed in Kuala Lumpur.



Jupiter installed at Kofi Anan, United Nation officers training center in Ghana.



Jupiter system in operation at University in Kuala Lumpur, Malaysia. Installed above ground. Note the even distribution of the aeration.

BioKube Mars – Venus and Pluto – single house systems 1 – 100 m3

BioKube Mars, Venus and Pluto systems are used in single houses in the open country. This is BioKubes original market in Denmark. In Europe there are more than 20 million houses in the open country



60 PE Mars system installed at a boarding school in Denmark. The system fits easily into the environment.



5 PE Venus system installed at a farm in Denmark

BioKube systems are free from noise and sound

There is as the pictures below illustrate no smell and noise from a Biokube system. Especially the picture from Bangkok is very illustrative. A town Hall open air restaurant is situated on top of a BioKube BioReactor system. BioKube had, quite frankly, never expected

that our wastewater treatment system would be used as the floor for a public open-air restaurant. [See here basic cleaning process](#), and here [video illustration from Thailand](#) of the process



BioKube BioReactor installed at a town hall in Bangkok, Thailand. The BioKube is installed below the elevated concrete floor. The area is used also as the Town Hall open air restaurant.
Really proves NO smell, NO noise, small footprint

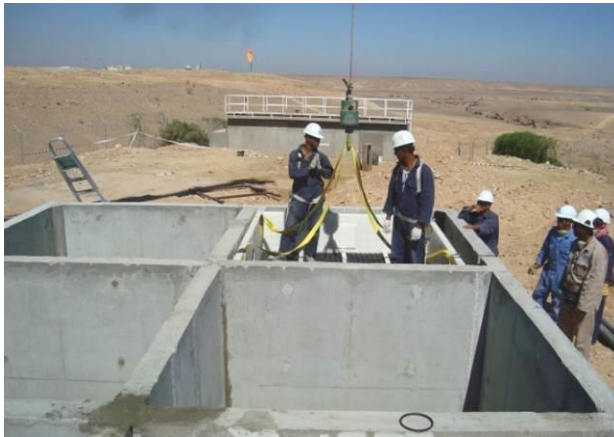


Jupiter system installed at high class resort in Poland. The system is installed just adjacent to the resort spa and pool area.
Proves NO noise, No smell and very efficient cleaning capabilities.

BioKube systems are delivered Plug-and-Play

BioKube supplies detailed drawings for the necessary groundwork such as the concrete tanks for a BioReactor system or a small concrete buffer tank for a SATURN system. The installation of the BioKube cleaning units is easy and strait forward, much like

children building with LEGO. If more wastewater is to be treated, you just install more Biokube cleaning units. [See here video](#) of installation in Yemen of Bio-Reactor system.



BioReactor systems are installed in on site built concrete tanks. Biokube supplies the detailed drawings for the tanks.



BioReactor cleaning units are delivered ready to install in 20 or 40 feet containers. Typical time for installation 1 – 5 days before system operational.

BioKube technology can cope with both low and very high temperature

BioKube systems have without problems been in operation in areas with extreme temperatures. This is the case in Northern Scandinavia with winter tem-

peratures at minus 30° C or at oilfields in the dessert in The Middle East with temperatures up to 50° C.



Jupiter system installed in Norway. The sub freezing winter temperatures are no problem for Biokube



BioContainer system in operation in the dessert in southern Libya. Daytime temperatures can reach over 40° C. No problem for Biokube.

Example 1

BioKube for single houses. BioKube Pluto, Venus and Mars systems

Single house systems.

BioKube small systems clean sewage water for from 5 to 50 persons and are offered as 5 – 10 - 15 – 20 – 30 – 40 – 50 and 60 PE systems.

Size depends on number of people.

As the amount of sewage water to be cleaned increases – and thereby the organic material to be degraded increases - you simply need more bacteria and consequently a bigger BioKube system. This is true for all BioKube systems either for a single house or a 10.000 m³ / day system.

On the picture below, it is evident that a BioKube Venus for 10 PE is about twice the size of a Venus for 5 PE

Size depends on the cleaning requirements.

The size of the system also depends on how clean the outgoing water must be according to the local requirements.

As the cleaning requirements increase, you need more bacteria to degrade the nourishment in the wastewater.

The picture below illustrates, that a BioKube Pluto built for cleaning requirements of COD < 125 mg/l and BOD < 25 mg/l is about half the size of a BioKube

Venus built for cleaning requirements of BOD < 10 mg/l and COD < 75 mg/l.

BioKube systems can fulfill any requirements.

With our modular design all BioKube systems can be delivered to fulfill any national requirements. These possibilities include only reduction of organic material, reduction of NH₄, reduction of phosphate, removal of total nitrogen, limitation of E-coli including use of UV lighting or Ozone).

Reference list for small systems.

BioKube has installed over 2.300 BioKube small systems in Denmark alone. And there small systems installed by our distributors in the 42 countries where we have distributors.



BioKube small systems

Mars 5000
Mars 3000
Venus 2200
Venus 1850
Pluto

Example 2

BioKube systems for Resorts and cities - Jupiter or BioReactor systems

Plug and Play Waste Water systems.

BioKube systems for Resorts, small cities and Industry are delivered completely furnished ready to install. Locally you only need to build concrete tanks. Connect the pipes and power and the system is in operation.

Very little maintenance.

One of the big advantages of a BioKube system is that it is very low on maintenance. There are few mechanical parts that can fail and they are all delivered from first class manufactures guaranteeing a long service life and easy access to service and spare parts.

Local BioKube partner supplies service.

BioKube products are always sold, delivered and installed by a national BioKube agent. He is certified by BioKube.

Remote surveillance via GSM.

BioKube systems can be equipped with remote surveillance over the GSM network. And the systems can be delivered with double water pumps and air blowers that run alternatively. They can be reset over the GSM net if one pump or blower fails so the sys-

tem runs on only one. This gives a very high rate of stability.

BioKube Jupiter og BioKube BioReactor

The cleaning sections of all BioKube systems are divided into an aerated zone where the bacteria live. The difference between a BioReactor system and a Jupiter system is that a Jupiter system in the delivered tank contains both the aerated zone and the settlement zone.

All BioKube systems are delivered as Plug and Play; they only need to be installed in the onsite built concrete tanks.

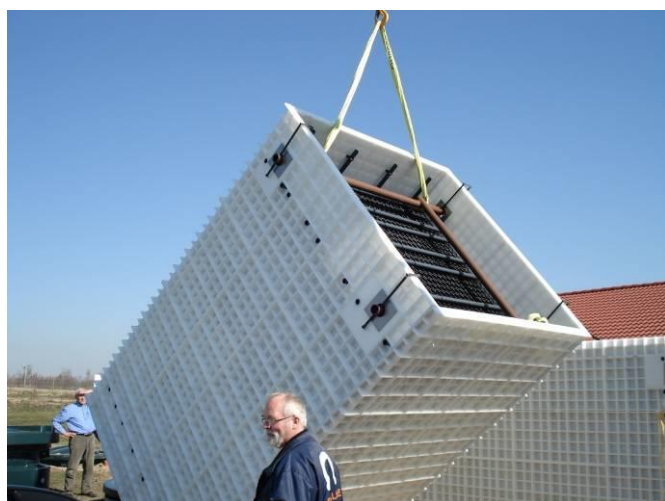
Keep total cost down, utilize local labor.

With BioKube BioReactor and Jupiter systems, you to the maximum extent possible use labor. This keeps the total cost down.

How big a system can you buy?

The biggest Bioreactor BioKube deliver is the BioReactor/150. Each of these units will clean 150 m³ / day if the requirement is BOD < 25 mg/l. With requirement BOD < 10 mg/l you need two BioReactor/150 to clean 150 m³ waste water

Tank for BioReactor/150.



Each unit will for BOD < 25 clean 150 m³ / day. Consists of aerated zone, settlement zone is part of the onsite built concrete tank. Equipped with all air blowers, diffusers and other mechanical parts.

Tank for Jupiter system.



Each unit consists of both an aerated zone and a settlement zone. Requires less concrete work since everything is contained in one unit.

Exampel 3

BioReactor for Town Hall at Notambouri, Bangkok Thailand. System is 3 x BioReactor 75

Cleaning requirements: BOD < 10, COD < 75 SS < 20.

The water is treated with UV and outlet to a clean lake next to the Town Hall used by the public for recreation.

The system in Notambouri is built right next to the

Town hall. There was very little space in the center of a large city.

The system is placed literally in the Town Hall open air restaurant. The tables are placed on the covers of the waste water system

BioKube installed next to Town Hall



The BioKube wastewater system is installed below the slightly raised tiles. The little house contains the Technical installation.

The area is today used at Town Hall open air restaurant



The area where the BioKube is installed is used for the town Hall restaurant. Proof of no noise and no smell.

BioReactor system under installation



You see the BioReactor installed in onsite built concrete tanks. Settlement zone in concrete tank.

BioKube requires very little space



The BioKube was built directly next to the Town Hall. The available space was very limited proving that a BioKube system has a very small footprint.

Exampel 4

BioReactor for industry – 1.800 m³ / day vegetable factory, Poland. System used 8x BioReactor 150

The system is only required to pre-clean water from a vegetable factory. After treatment in the BioKube, the water is led to the municipality's wastewater treatment system.

800 m³ / day system installed.



The system requires a number of BioReactors installed in onsite built concrete tanks.

BioReactor 150 in operation.



You clearly see the aerated zone in each BioReactor and the surrounding settlement zone in the concrete tank.

As a system for household wastewater, a system using 8 BioReactor would treat 650 m³ / day if the requirement was BOD < 25 or 450 m³ / day if the requirements were BOD < 10

How big is a BioReactor 150?



Each BioReactor will fit into a 20 foot container – 3 will fit into a 40 foot container.

How big a concrete tank?



Picture illustrates the necessary size for a 1.800 m³ / day BioKube BioReactor system. The footprint is much smaller than a traditional system.

Exampel 5

Jupiter for Hotel - Brodnica, Poland. System is 3x Jupiter 75 system

The cleaning requirements are EU standard, COD < 125, BOD < 25, SS < 30

BioKube Jupiter installed at hotel.



The construction work for a BioKube Jupiter system installed at a hotel.

BioKube Jupiter.



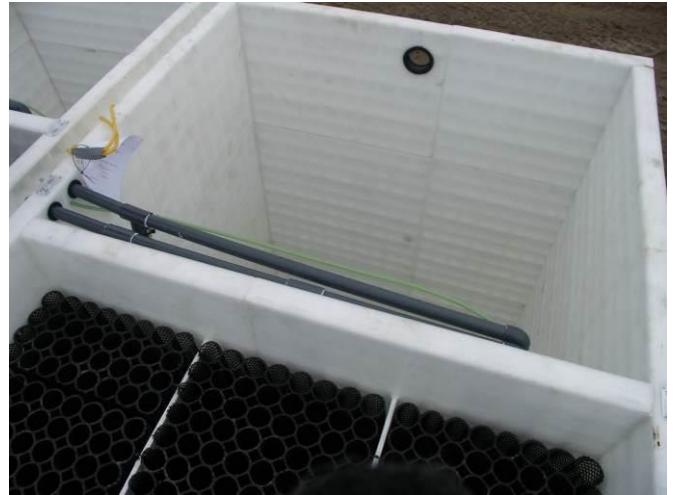
The BioKube Jupiter system installed in concrete tanks. Because all systems are contained in the Jupiter system, the concrete can be of less good quality

System under installation.



The Jupiter units will be placed in the area being built and finished with protective concrete. Note the septic tank next to the Jupiter foundation

Detail of Jupiter.



Note that each Jupiter systems has an aerated zone with BioBlocks and a settlement zone with no BioBlocks. A Bi-oReactor has only an aerated zone with settlement zone in the concrete tank.

Exampel 6

Jupiter luxury hotel English Point in Mombasa, Kenya System is 3 x Jupiter 25

The BioKube is installed at a luxury hotel directly on the harbor front in Mombasa.

The requirements which unconditionally must be met were:

➤ Installed in hotel basement

There was no land available at or near the hotel and consequently the system must be installed in the hotel basement.

➤ No smell.

With installation in the hotel basement it was a requirement that there was absolutely no smell from the system

➤ No noise.

With the system installed in the basement of a luxury hotel, it was a requirement that there was absolutely no noise that could be heard by the hotel guests.

➤ Water to be reused

Water reused for irrigation so system equipped with UV lighting.



Three Jupiter 25 installed in basement of English Point hotel



Treated water to be reused so system equipped with UV lighting. Easy access for maintenance and service.



View from English Point Hotel over harbor in Mombasa clearly illustrating that there is no space available for wastewater system



View from English Point Hotel over the beach area

Exampel 7

Jupiter for hotel - Hotel Krotiri, Greece. System is 2 x Jupiter 75

Cleaning requirements: COD < 75, BOD < 10, SS < 20.
UV for safe reuse of the treated water.

BioKube systems are very well suited for isolated hotels where the guests require a good local environ-

ment and will not accept unclean sewage water or a bad smell.

Jupiter 75 system under installation.



Each Jupiter fits into the onsite built concrete tank.

Jupiter 75 under installation.



The tanks are built precisely for each system according to specifications delivered from BioKube.

Jupiter 75 installed in tank.



You see the aerated zone and the settlement zone.

BioKube systems are delivered complete on site.



Each BioKube system containing all mechanical parts is delivered on site ready to install.

Exampel 8

Jupiter for military training center - Kofi Annan UN Training Center, Ghana. System is 3 x Jupiter 75.

Cleaning requirements: BOD < 10, COD < 75, SS < 20.
UV installed for safe reuse of treated water. Water reused for irrigation.

Kofi Annan UN training center, Ghana



The system is installed for the United Nations at their Kofi Annan Officers Training Center in Accra in Ghana. Jupiter system installed next to main building of the Kofi Annan training center.

Opening ceremony at Kofi Annan



The installation of the first high class wastewater treatment system in Ghana was celebrated as a special occation.

Aerated zone of Jupiter 75



The very even aereation of the Jupiter cleaning zone is clearly vissibale

Jupiter 75 under installation in the onsite built concrete tanks



The only unknown in installint the system was "is the concrete tank the correct size" (it naturally was, based on the detailed drawings from Biokube)

Exampel 9

Jupiter for slaughter house - Metro food processing facility, Romania The system is 3 x Jupiter 50.

The system cleans wastewater from a small slaughter house on food processing facility for Metro in Romania.

Cleaning requirements: COD < 75, BOD < 10, NH₄ < 5, NH₄ < 5.

Jupiter 50 under installation



The Jupiter systems are delivered ready to install in the concrete tanks.

Jupiter 50 under installation



Installation time on site is typically only 1 – 2 days for a small system like Jupiter

3 x Jupiter 50 installed



The picture shows that each Jupiter section has an aereated zone with BioBlocks followed by a settling zone.

The bacteriological growth on the BioBlocks.



The special design if of the BioBlocks guarantee that the system does not clog up. In the different chambers Bio-kube uses different size BioBlocks.

Exampel 10

BioContainer transportable system - designed for camps at mines and oil fields

BioContainer contains the whole system in one 20 foot or 40 foot container. Or the system can be built with settling tank and cleaning unit in two separate containers

The systems are built for very rugged transportation in the oil- and mining environment.

BioContainer system used by Japanese army at a camp in Djibouti in the Horn of Africa.

BioContainer at camp operated by Carillion in Oman.



The system is delivered in two 20 foot containers. The system is equipped with UV lighting and the treated water is reused.

The delivered system consists of two 40 foot containers. The system is equipped with UV lighting and the treated water is reused.

BioContainer installed at oilfield in Northern Iraq.

BioContainer in at oil exploration site in the desert in southern Libya.



The system is delivered in one 20 foot container.

The temperature reaches 50 degrees C, and still the system fulfills the cleaning demands.

Exampel 11

BioKube Saturn for larger to mid-size cities.

BioKube Saturn are big systems optimized towards a minimum of ground works.

A Biokube Saturn is installed above ground and only the buffer tank is below ground. This keeps the total installation cost very low.

BioKube Saturn system consisting of 6 cleaning sections.

BioKube Saturn system.



Each Biokube Saturn unit will treat 150 m3 household waste water to BOD < 25 mg/

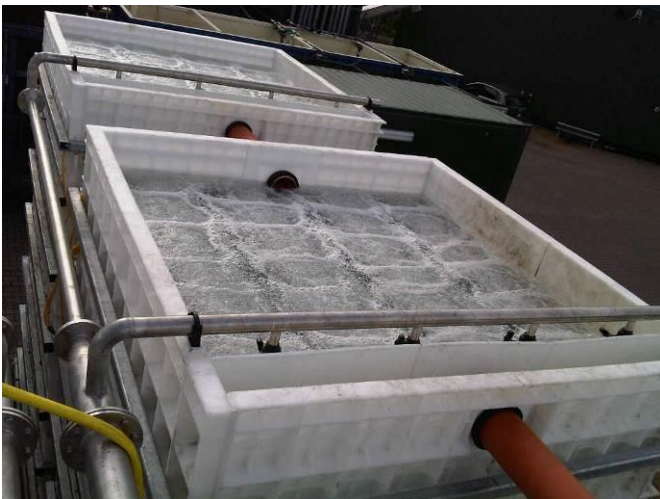
The Saturn systems are installed above ground so as to involve a minimum of ground work.

The Saturn system does not contain a settling zone like the Jupiter and BioReactor systems.

Both raw sludge in the incoming water and biological sludge are typically removed in a flotation device.

BioKube Saturn.

BioKube Saturn.

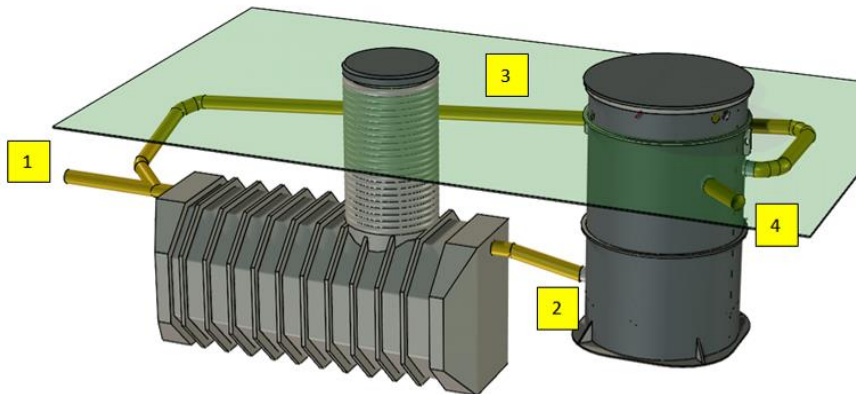


The picture shows the aerated treatment zone.



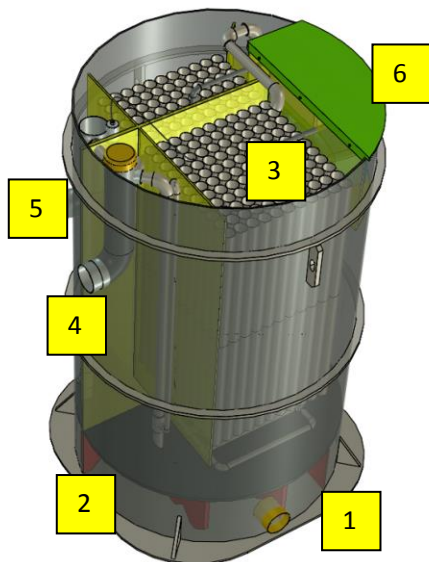
A Biokube SATURN system is 4 meters high. Each system contains inner and outer steel bars to take the inside water pressure.

Drawings of BioKube systems to illustrate design



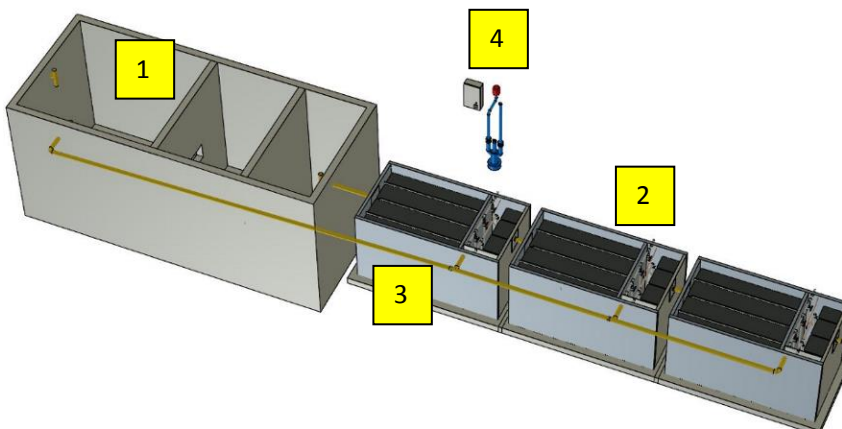
BioKube Venus with settling tank

- 1) Water from the house enters the septic tank where all particles are retained
- 2) Water gravitates to Venus buffer tank in bottom of system
- 3) To ensure good cleaning stability water is recirculated back to settling tank
- 4) Cleaned water leaves the system



3D drawing of Mars system

- 1) Inlet to Venus after settling tank
- 2) Buffer tank in bottom of Venus
- 3) BioBlock with bacteria that degrade the organic material
- 4) Return sludge and recirculation to settling tank
- 5) Outlet of cleaned water
- 6) Internal technical box with control unit and air blowers.

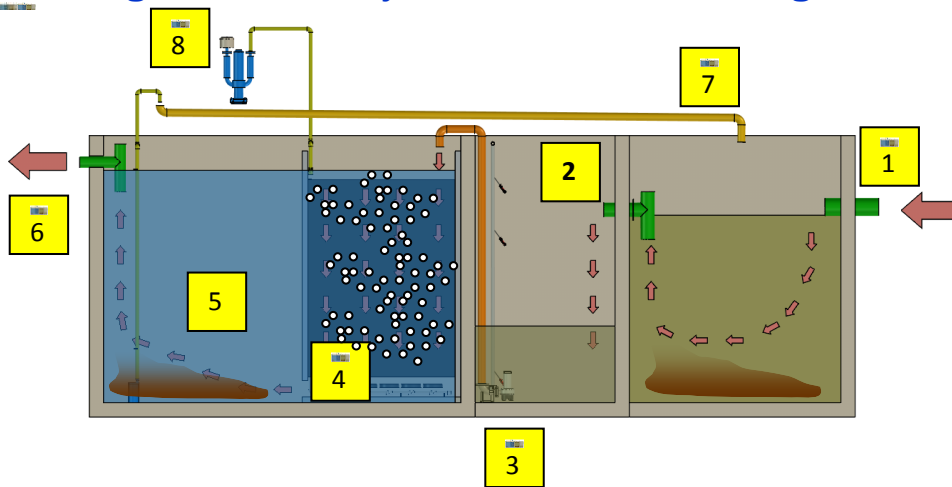


BioKube Jupiter with 3 steps.

Will clean to BOD < 10 and NH4 > 5

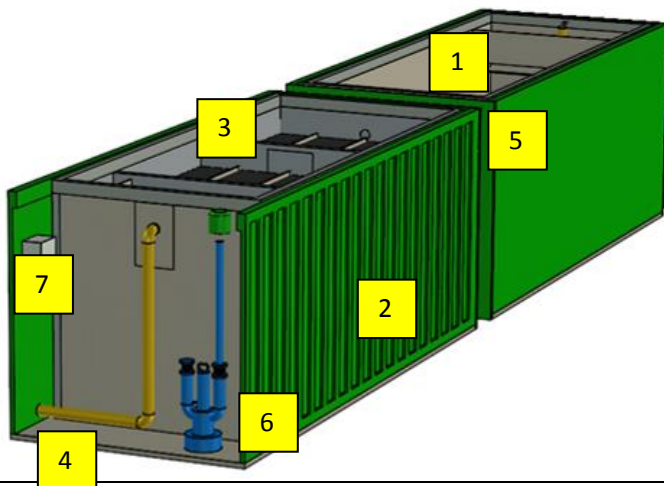
- 1) Settling tank in front of system where all particles are removed.
- 2) Jupiter three stem cleaning units
- 3) Return sludge and recirculation to settling tank to ensures good cleaning stability
- 4) Each system has one central air blower and control box.

Drawings of Biokube systems to illustrate design



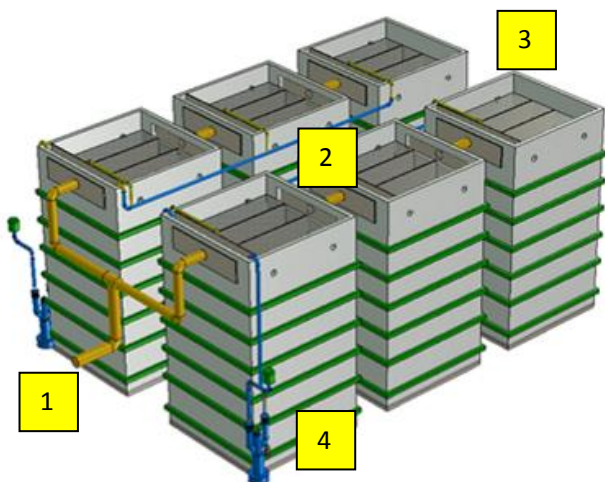
BioKube BioReactor cleaning section.

- 1) Inlet into septic tank where all solids stay
- 2) Water gravitates from septic tank into buffer tank
- 3) Timed inflow to cleaning unit
- 4) Aerated cleaning unit
- 5) Settling zone to remove biological sludge
- 6) Outlet for cleaned water
- 7) Sludge return
- 8) Central air blower



BioKube BioContainer system (here illustrated as 2 x 20 foot containers)

- 1) Settling tank in separate container
- 2) Treatment container
- 3) Aerated cleaning units
- 4) Outlet (can be equipped with UV lighting)
- 5) Return sludge to settling tank
- 6) One central air blower
- 7) Control box



BioKube Saturn cleaning units (here 6 units)

- 1) Inlet from buffer tank
- 2) Aerated cleaning units
- 3) Outlet
- 4) Air pump

Not shown in illustration are flotation units for sludge removal.

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Or you can contact one of BioKubes international distributors.
See map and go to www.biokube.com / where to buy for complete contact info



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