

# Mazingira Technologies





## CONSULTING

Mazingira Technologies Ltd. is a team of professionals in water & sewage water treatment, sustainable water management and water quality. We provide in all needs of water treatment the best technology.

## ANALYSIS

We are provider of laboratory equipment and reagents for physical/chemical analysis and microbiological water quality tests.

## SEWAGE WATER TREATMENT AND SLUDGE MANAGEMENT

With the Mazingira Waste Water Plant a full biological sewage water treatment is available which can meet regional and international requirements without additive chemicals. It also includes the sludge management which means that our system has no need of inconvenient and expensive problems with faecal sludge disposal.

## DRINKING WATER TREATMENT

With so many emerging technologies on the hand we are in a position to advice our customers on the best available technologies. Depending to the needs, affordability in monitory and technological requirements and national regulations.

## DISINFECTION

For **TwinOxide®** we are the exclusive supplier in Tanzania. **TwinOxide®** is an easy to use powder based system to produce chlorine dioxide ( $\text{ClO}_2$ ) a disinfectant and oxidizing agent with an amazing wide application spectrum. We are also providing all kinds of chemicals needed for drinking water and process water treatment.



## CONSULTING AND SERVICES



### WATER MANAGEMENT

In order to be assured of good water quality, one has to validate the water sources by analysing the quality, the availability, and its supply.

With so many emerging technologies we are in a position to advice our costumers on appropriate technologies. Depending to the needs, affordability in monitory and technological requirements and national regulations.

Paying attention to water demand and cycle, we can offer consultation to evaluate options for the best sustainable water treatment and management.

### FURTHER CONSUTING AREAS

- Sustainable use of water
- Water Hygiene
- Water Reuse and Recycling
- Drinking, Waste, Sewage and Process Water Treatment

### ANALYSIS

Mazingira Technologies offers assistance and service to prevent infections caused by water-burned pathogens such as pseudomonas or legionellas in your water systems.

Furthermore we can offer the sampling and testing of your water quality.

Of the broad range of physical, chemical and microbiological water-parameters.

If needed the test can be done in association with reputable laboratories.

In a personal consultation meeting we can find the most relevant parameters for you and their frequency.

We interpretate the test results and advice you accordingly.

In addition we are experts to consult you on your water quality improvement.







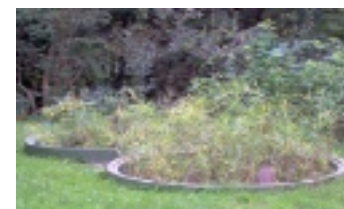
## BIO TOPP SEWAGE TREATMENT PLANT



The BioTopp on-site treatment plant requires less than half of the space of a traditional sewage treatment plant with a primary sedimentation tank. Therefore it is compact and fitable for different tank shapes in plastic or concrete.



The panel is equipped with an integrated blackouts and flooding alarm. It adapts automatically to the sewage load to secure a high purification degree even in cases of low and high fluctuation in the sewage load. In times of little sewage flow it switches to economy level saving energy and money. Upgrading of any septic tanks to a biological treatment plant can be easily achieved with our BioTopp advanced-treatment kit without interfering with its structure.



The BioTopp waste water treatment plant is thoroughly mixed and aerated. This means no foul gases will develop therefore no odour problems or tank corrosion.

The two aeration chambers can be controlled separately so that nutrient are optimal removal. This results in an exceptionally high nutrient removal rate which includes nitrogen and phosphorus without any additive chemicals.



The BioTopp plant produces only stabilized sludge and no faecal sludge. This sludge can be transformed into dried sludge soil with our BioTopp sludge drying process. This dried matter is a high quality fertilizer.

The BioTopp sludge drying makes the disposal of the faecal sludge through a tank vehicle obsolete! A plant for four users produces just 4-5 kg of dried sludge soil in a year. Contrary to that a traditional plant of equal size with primary sedimentation produces about 2000 kg (2 m<sup>3</sup>) of faecal sludge per year which has to be pumped out and transported to the next municipal sewage plant for further treatment.



The optional BioTopp hygiene unit allows a purity of the water that concurs to the european bathing water regulations. Therefore it can be used as process water and for irrigation.



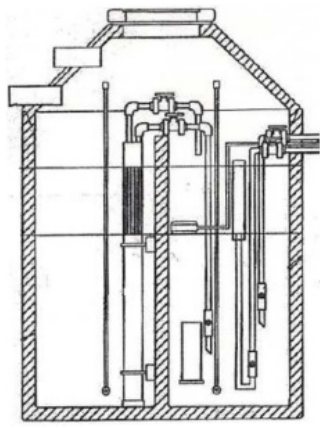


# BIO TOPP SEWAGE TREATMENT PLANT



## THE BIO TOPP PROCESS

With the creation of the BioTopp process we succeeded in developing an economic, waste-free biological sewage treatment system. The biological aeration process strengthens the operational reliability of the plant considerably and reduced it to half installation size. The concept of the two separately running aeration chambers results in an exceptionally high nutrient elimination and purification. In the first chamber the deconstruction of carbon and a denitrification process are optimized and biological phosphor elimination is enhanced. Chamber two is for nitrification and further deconstruction of carbon. At this stage the excess sludge can be directly used as fertilizer in agriculture or alternatively can be further treated in our sludge drying unit. This SBR-process has proven its efficiency and reliability since 1997.



## THE BIO TOPP DRIED SLUDGE SOIL

The BioTopp sludge drying unit consists of a layer of gravel covered by a layer of sand which can be planted with reed if desired for optical reasons. When the sludge level in the plant gets to high the excess sludge will be pumped to one of the sludge drying beds. The sludge gets drained and the drainage flows back into the plant for further treatment.



The sludge dries naturally in the sun. UV-radiation and other natural processes causing decontamination and humification of the dried matter. The sludge dries out to flat cakes with a thickness of about 3 -5 mm. They can easy mixed with other compost or soil to enhance soil fertility.

## MAXIMUM PURIFICATION RESULTS IN GERMANY

Process	COD <sup>1)</sup>	NH <sub>4</sub> -N <sup>2)</sup>	N <sub>TOT</sub> <sup>3)</sup>	P <sub>TOT</sub> <sup>4)</sup>
BioTopp	<60	<5	<10	<3
1) COD: Chemical Oxygen demand [mg/l]      2) NH <sub>4</sub> -N: Ammonium [mg/l] 3) N <sub>TOT</sub> : Nitrogen total [mg/l]                      4) P <sub>TOT</sub> : Phosphor total [mg/l]				

- Other Products**
- Grey-water utilization
  - Water irrigation
  - Soil fertilizer
  - Pumping stations
  - Grease separators





# WATER TREATMENT - FILTRATION



Individual water home systems  
Hotel and tourist resort applications  
Rainwater harvesting  
Remote settlements or village

SolarUF (Ultrafiltration) units purify up to 20.000 litres of water per day using only PV solar energy. The SolarUF unit operates autonomous and safely removes harmful bacteria and viruses from contaminated water. Automatic backflushing and energy management make the system easy to run, low maintenance, and ideal for remote applications.



## APPLICATION

SolarUF – Purification Systems are perfectly suited for applications where drinking water is needed and no or low infrastructure is available. The SolarUF-Purification Systems guarantees a reliable and safe water supply from dirty water sources and provides an economical and ecological alternative to water transportation by boat or truck. SolarUF can be used as a standalone solution for direct drinking water production or modular for example as efficient pretreatment for reverse osmosis (RO) units.

## BENEFITS

- **100% solar powered**  
Installation in remote off-grid locations, Low operation costs, Operation up to 24h/day
- **Automatic self-cleaning system**  
Reliable, consistent water quality regardless of the degree of contamination of the original water  
Removal of germs, bacteria, viruses and all types of suspended solids  
Low fouling, long term operation with water/air back flushing
- **Flexible, stand-alone and reliable**  
Simple and safe to operate, Automatic, PLC-controlled operation
- **Suitable for many feed water sources**
- **Automatic membrane integrity control** (optional feature)
- **Integrated UV disinfection unit**







# WATER TREATMENT - DESALINATION



Remote and rural communities  
Hotels, resorts, and recreational facilities  
Satellite plants or manufacturing facilities

Based on membrane distillation technology, MMD systems are relatively feedwater independent, low-fouling, and low maintenance. Solar thermal or waste heat energy is used to attain optimal operating temperatures of 80-85°. PV powered pumps circulate the water at the pressure of 1 bar in the system. Using SolarSpring MD modules, configurations can be scaled to user needs from 1 m<sup>3</sup> to 10 m<sup>3</sup> per day. Systems can be configured with heat storage tanks for constant water production.



The benefits of membrane distillation make MMD systems the appropriate choice in a wide range of domestic and industrial water applications. MMD systems are ideal in applications where reliable water supply is needed but local infrastructure is poor. MMD systems provide independence from the grid and utility providers, ensuring an adequate supply of water every day. The systems can be installed indoors or delivered inside a customized shipping container for added security.

## BENEFITS

Low fouling, low maintenance and simple operation with low operating costs

- **Little or no pre-treatment needed**

Feedwater independent operation

Same MD-module for many applications

- **Consistent water quality**

Consistent energy efficiency

- **Solar thermal or waste heat source**

- **Scalable, modular systems**

System designed to meet user needs

Easily expandable with future growth





# WATER TREATMENT - DISINFECTION



## CHLORINE DIOXIDE

Chlorine dioxide as disinfectant is the right choice if a reliable and safe disinfection is required. Whether in industry, agriculture or in public areas - chlorine dioxide has proven to be one of the best and safest disinfectants. Chlorine dioxide is mainly used to remove biofilm and to kill legionella. Furthermore it is used for many other applications. These include the cleaning and disinfection of water circuits (eg, cooling water, process water, etc.), the disinfection of drinking and tank water, the disinfection and preservation of any kind of products, preventive disinfection of pipeline networks (eg in hospitals or swimming pools), etc.

TwinOxide is a two - component powder for on-site production of a 0.3% chlorine dioxide solution (CDS). Chlorine dioxide is applied already successfully as a highly effective and resource efficient disinfectant for a sustainable control of pathogenic bacteria, fungi, algae and viruses. In addition to absolutely secure control of for example Legionella, it offers high number of advantages in use and handling . Further more it is applicable in a broad pH range of 6.5-9.5. Due to its good environmental sustainability, chlorine dioxide can be used without hesitation in almost all areas of water treatment. Unlike other chlorine based disinfection methods, no halogenated substances, such as trihalomethanes THM, chlorophenols, AOX compounds and chloramines, are produced at all by utilizing TwinOxide. That means chlorine dioxide is not forming any cancerogenic substances.



## BENEFITS

- Versatile acting disinfectant
- Excellent bactericidal (e.g E.coli), sporicidal and algicidal properties
- Reliable and sustainable disinfection
- „Depot effect“, that means there is no chance for recontamination (biofilm is destroyed)
- No formation of cancerogenic and mutagenic substances as in the usual disinfection with chlorine
- Tasteless and odourless
- Easy to use and to produce
- Short activation time of 4 hours at 20°C
- Storage-stable. 5 years shelf time for the powders.
- High environmental sustainability.







NOTES



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