

CASE STUDY

ONAS_STEP DES NIAYES

2022

Distributor **TX-H20**

Project Installation of a display unit System O)) in the premises of ONAS at the Niayes WWTP

Treatment capacity **2 000 L/day**

Type of wastewater Collection and reuse of treated water

System area **17.01 m²**

Site specifications There is no housing in the area. We put a fictitious septic tank (3000L tank) upstream of the System O)).



Green space above the installation and watered with water from the System O))

CONTEXT

The offices of the Office National de l'Assainissement du Sénégal (ONAS) in Niayes house various technologies used in Senegal for sanitation. There is a sewage sludge treatment plant (STBV), a wastewater treatment plant (STEP), a market gardening area where treated water from the STEP is reused and also the 1st generation of the Bill & Melinda Gates Foundation omni-processor. It is therefore natural that we wanted to install a System O)) unit there so that the technology and its purification performance could be tested and compared to all these technologies under the same conditions.



PRIMARY TREATMENT

This watertight System O)) facility is preceded by a primary treatment unit. A part of the raw wastewater is discharged into the plant by emptying trucks and is conveyed to the tank (acting as a septic tank) by means of an automated pump. The primary treatment in this tank is by decantation: the solids are at the bottom of the tank, the fat at the surface and the wastewater between the two. At the exit of the tank, the wastewater flows into the System O)) by gravity. At the time of installation, the inlet of the System O)) was placed slightly lower than the outlet of the tank, thus creating a slope.



3000L tanks, one serving as a septic tank and the other as a storage tank for treated water

DISTRIBUTION

The system consists of a cell of five rows spread over one level.

The wastewater leaves the tank and lands gravitationally in the distribution box, which distributes it evenly among the rows of pipes.

The optimal operation of a System O)) installation depends on an even distribution of the wastewater through the rows of pipes. This is achieved through equalizers that are installed inside the distribution boxes. They have indentations that are manually adjusted during installation and do not need to be adjusted afterwards. They are the only parts that can move in the entire system.



Pipe rows installation



SECONDARY TREATMENT

The wastewater circulating in the pipes is treated by the presence inside them of a bacterial biomass that assimilates the pollutants before discharging it to the filtrant sand. The latter then acts as a polish during the infiltration of this water.

The System O)) septic installation thus links water distribution, treatment and infiltration in a single activity.

The treated water is collected by a collection system set up during installation and redirected to a second tank from which it will be used for watering the green space above it.



ECONOMIC ADVANTAGES

There is no electrical load as none of the components of the System O)) technology require electricity as the water flows by gravity and the treatment occurs naturally.

By using a sealed System O)) installation, the treated water is collected by a collection system and redirected to a recovery basin from which it will be used for irrigation. This saves on irrigation costs related to access to water.

The System O)) installation requires little or no maintenance because the technology has no mechanical parts to repair or replace, and there is no filtering media to replace. In addition, it does not clog. Therefore, there is no maintenance required once installed and for at least 20 years.



ENVIRONMENTAL ADVANTAGES

The System O)) installation has brought this part of the site back to life by allowing permanent watering of the green space above the installation. Below are the before and after images.

Treatment performance well below the country's standards:

- Less than 40mg/L of BOD5 (5-day biochemical oxygen demand)
- Less than 50mg/L of suspended solids (SS), and
- Less than 2000 CFU/100ml of fecal coliforms



Visual water quality at the entrance and exit of the system



Completed System O)) installation



March 11 2022



April 21 2022