



Reclaimed waste water

The integrated water cycle • Sanitation

Helping the sustainability of the planet

Reclaimed waste water is purified waste water that has undergone a complementary treatment process so it can be reused for purposes that do not involve human consumption.

In Spain, the specific legislation regulating its reuse since 2007, is set out in Royal Decree 1620/2007, which lists the quality criteria for each purpose the water is projected for and the mandatory limits to be observed.

Applying this process to part of the reclaimed water yields social and environmental benefits and solves some of the problems arising from the water deficit in some municipalities, since its most important advantage is the possibility of assigning the water with the best quality to the most demanding uses, such as the production of potable water.

Benefits from water reclaiming

The interest in having tertiary treatments and reclaiming part of the consumed water is mainly due to:

- Contributing to increasing the available water resources by reducing unnecessary waste of potable water for any activity that does not involve human consumption.
- Ensuring supply even at times of drought. Certain uses of potable water are forbidden during droughts, whereas users of reclaimed water do not suffer the same restrictions.
- Reducing nutrients to improve the state of the rivers and avoid the eutrophication of reservoirs.



Tertiary treatment in reclaimed water

Reclaimed water can be obtained by applying an additional procedure, known as tertiary treatment, to the effluents from the facility. This treatment disinfects the water and adapts the physical-chemical quality of the resulting water to the necessary level for the required use. The most common line of treatment in Spain for waste water reclamation involves a physical-chemical treatment followed by lamellar subsidence, a filtering system and a disinfection system.

- Physical-chemical treatment where water undergoes a coagulation-flocculation process to reduce the number of solid particles and inorganic compounds before it enters the decanter
- Filtering or flow of water through a porous medium that reduces the amount of suspended solids. The type of filtering to be applied for the reclamation process is defined by considering the use that will be given to that water.
- Disinfection or elimination of pathogenic germs. This includes two stages: one of irradiation with UV rays, since their wavelengths cause chemical changes in microorganisms and prevent their growth, and a second stage of oxidation by means of sodium hypochlorite to provide a permanent disinfection.

In all cases, maintenance disinfection is guaranteed throughout the whole length of the pipes and in the storage tanks.

Different uses of reclaimed water

Reclaimed water can be used for different purposes:

Urban: as irrigation for parks and gardens, cleaning of streets or of sewers

Industrial: process and cleaning water, cooling towers

Recreational: irrigation in golf courses or ornamental fountains

Environmental: groundwater recharge, maintenance of wetlands and minimum flows

Agricultural: irrigation of crops and pasture land

The management of reclaimed water in the Madrid region

Canal de Isabel II Gestión is aware of the importance of taking care of water, a limited asset that is indispensable for life, and strives to manage its complete cycle as efficiently as possible. It is therefore supporting the use of reclaimed water for any scenario where potable water is not required.

For this purpose, in the late 1990s it implemented several actuaciones that involved fitting some of its waste water treatment plants with the required tertiary treatment to obtain reclaimed water. The first supplies of reclaimed water were made in the year 2000 to some parks and gardens in Alcobendas (Madrid, Spain) and to a golf course.

Canal Gestión currently has reclaimed water production facilities in 32 of its WWTPs, and operates around 500 kilometres of purpose-built networks that are used to distribute the water to more than 200 public parks and gardens for irrigation and cleaning of streets and industrial uses.

Thanks to these actuaciones and the awareness campaigns initiated by the company, potable water consumption has dropped despite the growth in population and in the economic and recreational activities in the region.



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