

# Urban Wastewater Treatment Plant in Toro - Zamora

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The Project includes the construction of Magdalena sewers for the collection of urban waste from the towns of Toro and Tagarabuena, and another sewer on the Industrial Estate and construction of the waste water treatment plant, located on the Pozoantiguo road.

Location	Toro (Zamora)
Customer	Regional government of Castilla León
Starting Construction date	2nd of July 2004
Construction period	28 months
Capacity	4,800 m <sup>3</sup> /day
Population	25,000 e.i.

In the following table it is shown the properties of initial raw water at the inlet of the Waste Water treatment Plant and the effluent water parameters obtained:

	Input	Outlet
BOD <sub>5</sub>	310 mg/l	< 25 mg/l
COD	600 mg/l	< 90 mg/l
SS	232 mg/l	< 25 mg/l
NTK	46 mg/l	15 mg/l

## Water line

Headworks and solids pit: it is equipped with a bivalve clamp shell for removing solids and their subsequent handling.

The raw water pumping consists of five pumps for lifting water towards the fine solid screens. Detritus collected is conveyed by a screw conveyor-compactor which sends them to a container.

Once the solids carried by the water have been removed, it remains to get rid of smaller sized particles, mainly grit and grease in the grit and grease removal tank.

There are two pre-aeration lines, each of them with two lines; a grit removal channel and a de-greasing channel. There is a grit separator and a grease concentrator. The waste extracted is deposited in containers for processing.

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Once the raw water has passed through to pre-treatment, the pre-treated water flow rate is measured.

Since the maximum capacity to be treated in biological treatment is less than the pre-treatment size, it is necessary to send the excess capacity to a storm tank.

Once the raw water has been subjected to initial pre-treatment, it is now subjected to the biological treatment process by using activated sludge, which consists in supplying oxygen to the water and maintaining it in suspension with a high concentration of micro-organisms that develop due to the amount of oxygen introduced and the organic matter feeding them.

After biological treatment a secondary sedimentation is done. Its main aim is to separate decantable materials from the water prior to them being expelled, as well as allowing collection of part of the micro-organisms dragged by the river current to the aeration effluent, and which have to be reintroduced to maintain their high concentration, through recirculation. There are two circular clarifiers with doctor blades for this.



The effluent outlet has a display source.

## Sludge line

Sludge can follow two different paths. Part of it is sent to aeration tanks to thereby maintain a high concentration of micro-organisms here through recirculation, and another part has to be extracted by the system, being sent to the thickener.

Thickening takes place through a stabilised sludge gravity thickener, in order to reduce the amount of sludge by concentration or the partial removal of water.

Dewatering of the stabilised sludge is carried out by dewatering centrifuges which allow a reduction in volume and are easy to use, thereby obtaining sludge dryness equal to or more than 20% and a reduction in volatile solids in the digestion process of more or equal to 45%.

Dewatered sludge is conveyed to a hopper for storage.