

# MUNICIPAL

# BLUMENAU, BRASIL

CMFF® technology

Project Name:	Garcia WWTP
Client:	Foz de Blumenau (Odebrecht Environment)
Location:	Blumenau, Santa Catarina - Brasil
Type of Plant:	Municipal Sewage Treatment Plant
Technology Used:	CMFF® for polishing UASB reactors
Biomedia Used:	Biowater BWT-X®
Operational Since:	November 2013



*Biowater's CMFF Process after UASB reactors.*



*Secondary clarifier effluent.*

## The Challenge

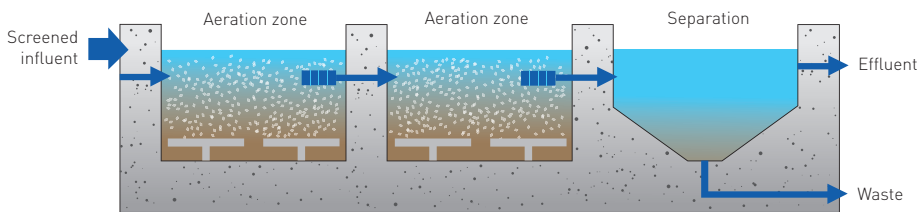
The existing UASB reactor was not able to achieve the required >92% BOD removal, and the small existing footprint together with the proximity of residences, let the client choose the Biowater's CMFF, after technical and economical evaluations of conventional solutions, like activated sludge and RBC. Biowater's CMFF present the lowest net present value of all.

## The Design

Foz de Blumenau decided for the CMFF because of its simplicity, high performance, lower maintenance required and lowest capex/opex. In addition, the process offers available area for future expansions of Garcia WWTP. The primary treatment carried out by



the UASB reactors is responsible for 70% BOD removal, and the Biowater's CMFF will increase this overall performance for > 92%, in terms of BOD. The CMFF is split in two reactors in series. Final settling tank is used for final solids separation, followed by final hypochlorination before discharge to the Garcia River. The excess sludge is dewatered together with the anaerobic sludge from the UASB by centrifuges.



## Achievements

A turn key project was delivered, split in three different contracts for detailing process engineering, mechanical works, and biomedica. The operational results from the first operational month after the start-up, have shown more than 92% BOD and higher than 87% COD removal in average. The final suspended solids is lower than expected ( < 25 mg/l). Client is very satisfied with the plant, and is planning to increase its capacity in the next 2-3 years using the Biowater's CMFF technology.

Parameter	Design load	Effluent requirements	Average operational results
Flow	158.4m <sup>3</sup> /h (3801.6 m <sup>3</sup> day)		
BOD	85 mg/L (323.2 kg/day)	22 mg/l	10 - 15 mg/l
COD	150 mg/L (570.2 kg/day)	54 mg/l	30 - 45 mg/l
Temperature	18°C		
Settleable solids	1-2	<1	< 0.1 ml/l



Close up BWTX with solids.

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*Biowater Technology is an innovative company with over forty years of experience in the Biological treatment field. Our focus is on saving energy and resource recovery, with water as our major resource.*