

Setting	
Country	Chile
Location	X Region, near Puerto Montt
Project start date	2010
Project end date	N/A
Technology keywords	Waste biodigestion, waste-to-energy, humid fermentation
Host sector	Food Processing Industries

Technical summary of the project

Objective of the project	High organic content waste treatment to obtain energy.
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Project description

In the south of Chile, in the past 10 years there has been an important raise in waste generation due to rapid growth in salmon farming industry (650.000 ton final product in 2008), and other associated economic activities. Last year, ISA virus contamination, together with a poor waste management, implicated an 80% drop in production level. Presently, salmon industry and Chilean government are working hard in industry reactivation, which is projected to be fully recovered by 2015. These efforts consider new sanitary designs that allow sustainable growth and development of salmon farming industry.

Before ISA crisis, an average processing plant generated around 20.000 m³/day of wastewater and treatment sludge which mainly were sent to anaerobic lagoons and aerobic wastewater treatment plants. Also, during 2008 around 50.000 ton of mortality were generated, and managed poorly through final disposal in old poor landfills.

Floka W2E facility Project considers reception of wastewater along with sludge and solid wastes and treating them to obtain energy from them. The project also considers reception and treatment of other industrial wastes generated in the area (cow and pork growth and slaughter; dairy; shellfish) that are not managed nor treated in a sustainable manner.

A conservative preliminary evaluation was carried out considering only 10% of total wastes generated.

Wastes considered for preliminary evaluation

WASTES	BOD ₅	COD	DMC
	GR/LT		
DIARY	4,2	4,7	5%
SALMON FOOD PLANT	41,7	510	14%
SALMON FARMING FACILITY (EARLY STAGE)	6,3	6,3	15%
SALMON FARMING FACILITY (ADULT STAGE)	13,4	42,5	2%
SALMON PROCESSING FACILITY	16,6	37,7	5%

"Floka W2E Facility" is designed to receive and treat a waste mix through biodigestion (humid fermentation) technology to produce biogas. A part of this biogas is used to maintain reactor operation temperature and the rest is used to produce electric energy.

For this stage, 3 WAUKESHA APG 1000 gen-sets were considered to achieve an installed generation capacity of 3 MW. This equipment is considered to have heat recovery units to improve their total efficiency thus reducing total biogas used in heating reactors.

Project is located close to electric grid which makes it feasible for energy commercialization, land considered accounts for environmental permits and methane generation potential tests were carried out for wastes considered.

Environmental and social benefits

(Estimate of) Greenhouse Gases abated (in metric tons of CO ₂ -equivalent)	Annual: Up to and including 2012: 51240 tCO ₂ -equivalent Up to a period of 10 years: 606479 tCO ₂ -equivalent Up to a period of 15 years: XX tCO ₂ -equivalent
Number of reduction units (EAU, CER, ERU, AAU)	N/A
Socio-economic aspects	Important improvement in waste management in the southern part of Chile, elimination of illegal waste dumps.
Methodology used	AMS-III.H. Methane Recovery in Wastewater Treatment AMS-III.F: Avoidance of methane emissions through controlled biological treatment of biomass AMS-1.D Grid connected renewable electricity generation

Economic data

Capital costs	USD\$ 9.500.000.-
Financing scheme	Not known
Financing organisation	Not known

Project developer

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