WASTEWATER SUCCESS STORY
La Farfana Wastewater Plant Biogas Upgrade
Santiago, Chile
AGUAS ANDINAS & METROGAS S.A.

OVERVIEW OF WASTEWATER PROJECT:

The La Farfana wastewater treatment plant (WWTP), managed by Aguas Andinas, treats more than 60% (8.8 m^3/sec) of the wastewater in the Santiago Metropolitan Area since October 2003. This project upgraded biogas from the anaerobic digesters to town gas quality. Town gas quality (average 96% methane) is achieved using a treatment train consisting of compression and dehydration to eliminate humidity, a bioreactor and a scrubber that removes 95% of the hydrogen sulfide (H_2S), and a thermal oxidizer that removes carbon dioxide (CO_2) and traces of oxygen and nitrogen in the gas. Afterwards, the treated gas is sent to the Metrogas Town Gas Plant located 8.5 miles west of the La Farfana WWTP.

PROJECT START DATE: The biogas project began operation on May 13, 2009. The project was registered as a Clean Development Mechanism (CDM) project on February 11, 2011.

ACTUAL ANNUAL EMISSION REDUCTIONS: 26,340 $MTCO_2E$

PROJECT SUMMARY

General Wastewater Treatment Plant Facts	
Started Operations	October 2003
WWTP Nominal Capacity (m^3/sec)	8.8
Sludge Anaerobic Digesters (# - m^3)	8 - 15,000
Total Biogas Production (m^3/hr)	3,770
General Biogas Facts	
Project Start Up	May 13, 2009
Average Gas Flow in 2009 (m^3/hr)	2,000
Average Methane Content in Biogas (%)	62.5
H_2S content in Biogas (ppmv)	5-50
General Biogas Treatment Project Facts	
Plant Capacity (m^3/hr)	3500
Pipeline Length (miles)	8.5
Total Investment (USD)	$3,500,000
Compression and Dehydration System	13.8 bar – 29°C, Dew-Point 4%
VOC and Siloxane and H_2S Treatment Treatment	2 carbon media vessels
CO_2 Treatment	2 Stage Membrane System
O_2, N, and H_2O Treatment	Thermal Oxidazer
Average Final CH_4 Content (%)	96
CDM Project Facts	
Average Annual tCO_2 Equivalent	26,340

La Farfana WWTP

Biogas Treatment Facilities

Metrogas Town Gas Plant

PROJECT HIGHLIGHTS

Environmental Benefits

- Projected to reduce approximately 184,355 tons of CO_2e on the crediting period 2011-2018.

Project Barriers Overcome

- Lack of infrastructure: In order to use the biogas as feedstock for the Town Gas Plant, project participants needed to build an 13.7 km pipeline. The 13.7 km 1 bar maximum pressure pipeline was installed from the WWTP to the Town Gas plant. The pipeline installation was 10 months and capital cost of approximately 2.65 million dollars. Permitting for the pipeline project was through the federal agency SERVIU and the right-of-way permitting was through the City. The pipeline design was according to ASNI B31.8 and construction was performed according to regulation DS 254/98. Pipeline operations and maintenance are performed under regulation DS 254/98 and DOT191 and 192.
- In order to use the biogas from the domiciliary wastewater treatment plant, H_2S needed to be removed from the biogas stream. Technology for such removal is not commonly available in the host country and operators for the equipment were not easily accessible.

OTHER BENEFITS

Social Benefits

- Generated work opportunities associated with construction and operation and maintenance of the different project components: biogas treatment plant, and pipeline.
- College and universities students regularly tour the plant as a national project.

FOR MORE INFORMATION

Metrogas S. A.
Sebastian Bernstein Llona, Director of Large Clients
El Regidor 66, Piso 8, Las Condes
Santiago, Chile
Phone: +56 2 337-8703
E-mail: sbernste@metrogas.cl

Additional information on this project can be found on the UFCCC website at: http://cdm.unfccc.int/Projects/DB/DNV-CUK1286878729.2/view, Project No. 4032: “Biogas Use in Town Gas Factory in Santiago.”

La Farfana WWTP