WOG
WATER • OIL • GAS

CASE STUDY

WASTEWATER RECYCLING/REUSE AND WASTE-TO-ENERGY PLANT FOR A CHEMICAL INDUSTRY, THAILAND

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PROJECT OVERVIEW

Overall Plant Details			
Parameter	**Unit**	**Inlet**	**Outlet**
Flow Rate	m3/d	1,000	900
BOD	mg/L	6000	ND
COD	mg/L	15000	<05
TSS	mg/L	350	ND
TDS	mg/L	<3000	<5
TKN	mg/L	500	<1

SBR			
Parameter	**Unit**	**Inlet**	**Outlet**
BOD	mg/L	480	<5
COD	mg/L	4500	<250
TKN	mg/L	200	<10

As the BOD/COD ratio is 9, so carbon source is added to achieve the required removal.

- Location: Thailand
- Industry: Chemicals
- Project Type: WWTP & Recycle/Reuse
- System Capacity: 1000 M^3/Day

Project Description:

A leading producer of Furfural and Furfural alcohol in Thailand required a sustainable solution to treat and recycle its high COD wastewater. The company decided to implement a wastewater treatment and recycling system to address both the rising freshwater crisis and environmental concerns. The project involved designing, engineering, supplying, erecting, and commissioning a wastewater treatment plant (WWTP) capable of recycling 1000 M^3 of wastewater per day. The system is also designed to generate biogas for green power production.

CLIENT OVERVIEW

The client is a leading producer of Furfural and Furfural Alcohol in Thailand. The company is a key player in the chemicals industry, known for producing high-quality industrial chemicals derived from renewable agricultural biomass. As part of its commitment to sustainability and environmental responsibility, the company sought to address challenges related to wastewater management, freshwater consumption, and energy efficiency in its operations.

OBJECTIVE

The objective of the project was to design and implement a wastewater treatment and recycling system that would efficiently treat the high COD wastewater generated by the chemical manufacturing process, ensuring that the treated water could be safely recycled and reused. Additionally, the project aimed to integrate biogas generation for green power production, helping the company meet its energy requirements while reducing its carbon footprint.

CHALLENGES

01

- **High COD Levels:** The effluent had high COD of 15,000 mg/lit, requiring advanced treatment to meet reuse standards.

02

- **Biogas Generation:** Ensuring sufficient biogas production for green power generation while maintaining efficient wastewater treatment.

SOLUTIONS

01

Design & Engineering: A custom-designed WWTP with a multi-stage treatment scheme.

02

Treatment Process:

- Equalisation Tank
- Anaerobic Hybrid Reactor
- Sequential Batch Reactor
- Flash Mixer, Flocculator, Sand Filter
- Ultra Filtration, Micron Cartridge Filter
- Double Pass Reverse Osmosis

03

Biogas Generation: The system generates sufficient biogas, used to produce 6 MW of green power, supporting the plant's sustainability goals.

04

Recycling: The treated water is recycled for use as boiler feed water, reducing freshwater consumption by 90%.

RESULTS

01 Successfully recycled 90% of wastewater for boiler feed water, reducing dependence on freshwater.

02 Generated 6 MW of green power from biogas, contributing to energy sustainability.

03 The treatment plant operates efficiently, meeting the client’s environmental and energy goals.

Capacity: 1000 m³/day

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