

CASE STUDY

**DESIGN, SUPPLY, INSTALLATION AND COMMISSIONING
OF WASTEWATER TREATMENT PLANT FOR PALM OIL
INDUSTRY IN PERAK, MALAYSIA**

WWW.WOGGROUP.COM

PROJECT OVERVIEW

Client Name	Colben Energy, Singapore
End Product	Energy from Palm Oil EFB Waste Water
Location	Perak, Malaysia
Scheme	Plam oil Effluent Treatment System with Anaerobic Facility
System	AHR
Capacity	350 Ton / Day Palm Oil EFB Juice

Parameter	Unit	Inlet	Outlet
Flow Rate	m ³ /d	350	<350
BOD	mg/L	<8000	<40
COD	mg/L	<18000	<200
TSS	mg/L	<100	< 10
TDS	Mg/L	<22000	<22000
Salinity	Mg/L	17500	17500

- Location: Perak, Malaysia
- Industry: Palm Oil
- Project Type: Wastewater Treatment Plant (WWTP)
- System Capacity: 350 m³/day

Project Description:

This project involved the design, supply, installation and commissioning of equipment, systems, and all related works—including civil, structural, mechanical & electrical (M&E), and architectural components—for a 350 m³/day EFB (Empty Fruit Bunch) juice wastewater treatment plant. The system was installed at a 12.5 MW biomass power plant, located in Perak, Malaysia, that utilises EFB as a primary fuel source for energy production.

CLIENT OVERVIEW



The client is a leading player in the palm oil industry with a strong focus on sustainable energy production. Given the scale of their operations, they required an efficient and environmentally responsible solution to treat the wastewater generated from the EFB juice extraction process, ensuring both regulatory compliance and minimal environmental impact.

OBJECTIVE

The objective of the project was to design, supply, install, and commission a 350 m³/day Wastewater Treatment Plant (WWTP) to treat wastewater from the EFB juice extraction process at a biomass power plant in Perak, Malaysia. The aim was to reduce organic pollutants, such as COD and BOD, to meet local discharge standards and ensure environmental compliance, while integrating the WWTP seamlessly with the existing plant infrastructure.



CHALLENGES

01

High Organic Load in Wastewater:

The wastewater generated from the EFB juice extraction process contains a high concentration of organic materials.

02

Space Constraints:

The wastewater treatment plant needed to be integrated within the existing infrastructure of the biomass power plant.

03

Compliance with Environmental Standards:

The system had to ensure treated water met stringent local discharge standards, particularly in terms of COD and BOD.

04

Integration with Biomass Plant Operations:

The wastewater treatment plant had to operate seamlessly with the biomass plant.



SOLUTIONS

01

System Design and Engineering:

- The wastewater treatment system was designed to handle 350 m³/day of effluent, with the capacity to treat wastewater.
- Advanced treatment technologies, including biological processes and chemical treatment, were selected.
- Detailed design and engineering were carried out for civil works, structural foundations, M&E systems, and architectural elements

02

Civil, Structural, and Architectural Works:

- Construction of necessary infrastructure, such as treatment tanks, buildings, and access roads, to support the plant's operations.
- Design and installation of structural elements, such as foundations, platforms, and enclosures for key equipment, along with architectural elements.

03

Mechanical and Electrical Systems:

- Installation of essential mechanical systems, including pumps, aeration units, and chemical dosing systems for effective treatment.
- Electrical components, including control panels, PLCs, SCADA systems, and power supply units, were installed to monitor and control the treatment process.

SOLUTIONS

04

Technology Selection:

A combination of biological treatment technologies (e.g., activated sludge or Moving Bed Biofilm Reactor) along with advanced filtration and chemical treatment systems was chosen to ensure that the wastewater could be treated to meet local discharge standards for COD and BOD.

05

Commissioning and Testing:

- Comprehensive testing of the system was conducted to verify its functionality and ensure it met the required performance criteria.
- Adjustments to chemical dosing and other operational parameters were made to optimise system efficiency.

06

Training and Handover:

- Plant operators received full training on system operation, maintenance, and troubleshooting.
- A thorough handover was completed with all necessary documentation, including operation manuals, maintenance schedules, and troubleshooting guides.

RESULTS

Capacity: 350 m³/day

01

- **Effective Wastewater Treatment:**

The WWTP was successfully designed and implemented to handle 350 m³/day of wastewater from the EFB juice process, achieving significant reductions in COD and BOD.

02

- **Environmental Sustainability:**

The project aligned with the client's commitment to sustainability, reducing the environmental impact of wastewater discharge.

03

- **Operational Integration:**

The WWTP was seamlessly integrated into the existing biomass power plant, with minimal disruption to the ongoing energy production activities.

04

- **Cost Savings and Reliability:**


The advanced treatment technologies used in the system provided reliable performance and required minimal maintenance.





Get in Touch – We're Here for You

 INFO@WOGGROUP.COM

 WWW.WOGGROUP.COM

OUR PRESENCE

Singapore, USA, India, Thailand, Malaysia, Indonesia,
Dubai, Kuwait, Trinidad and Tobago, Saudi Arabia, South
Africa, UK