gradiant

Success Story

AN INTEGRATED WASTEWATER TREATMENT APPROACH FOR TREATING REFINERY WASTE

Gradiant delivered an integrated wastewater treatment approach for Effluent Management at Source (EMAS) for a leading energy company. The solutions were targeted to address the client's refinery wastes to bring sustainability and efficiency into their operations.

Refining & Chemicals

Malaysia

The Challenge

Water is key to operations continuity for our clients in refining & chemicals. Complex industrial wastewaters are created from production, requiring innovative and cost-optimized solutions before discharge.

Wastewater management is a critical success factor in the operations of a refinery. These facilities have demanding environmental management challenges and are facing increasingly greater pressure to adopt sustainable operational practices. A refinery's waste streams are difficult to treat as it oftentimes contains suspended solids, oil & grease, metals, and organic materials which create the need for complex treatment processes, while maintaining system reliability and cost efficiency. The client needed to identify an effective wastewater treatment solution to treat its refinery wastes in a sustainable and efficient manner. Gradiant was able to deliver the right solution for the client's needs.

The Solution

Gradiant designed and built an end-to-end industrial wastewater treatment system to progressively treat down the complex refinery wastes – first targeting oils (for separation and removal), and then the remaining organics and suspended solids. The pre-treatment system consists of an API oil separator and CPI (corrugated plate interceptor) to remove the oil & grease from the effluent water, followed by Dissolved Air Flotation (DAF) system for the removal of total suspended solids (TSS) by creating tiny bubbles that adhere to the solids and float to the surface.

Fast Facts

Location:	Melaka, Malaysia
End-User:	Major Energy Company
Solution:	Industrial Wastewater & Recycling
Industry:	Refining & Chemicals
Feedwater Source:	Refinery Waste
Technology:	Oil Separation, Dissolved Air Floatation, CASS, Submerged MBR
System Capacity:	5,000 m^3/day
Online Date:	June 2023
Delivery Model:	Design-Build (DB)

90%
Oil Removal

25%
Sludge Cake
Dry Solids

MBR Design
Flux of
12 LMH

At least
98%
Removal of
Sulfur Particles

A Cyclic Activated Sludge System (CASS) is then employed for the first-stage of biological treatment, followed by a second-stage process featuring submerged membrane bioreactor (MBR). Remaining wastes are ultimately sent to the sludge management system, resulting in **90% oil removal** and **25% sludge cake dry solids.**

The Benefits

When the client was challenged to find the right solution for its effluent treatment system to maintain production, Gradiant's integrated wastewater treatment solution proved to be technically and economically superior to competitors.

Gradiant delivered a custom-engineered approach for a staged wastewater treatment process scheme to progressively remove oil, suspended solids, and organics. The effective treatment of the facility's effluent enabled operations continuity to the client's refining operations in a sustainable and cost-effective approach. Our broad range of solutions allow Gradiant to select the best approach for solving our clients' unique challenges in the refining & chemicals industry.

Learn More at gradiant.com/solutions/industrial-wastewater-recycling

Contact Gradiant today at: communications@gradiant.com

Document No. 100-004-01-EN
April 2023

gradiant