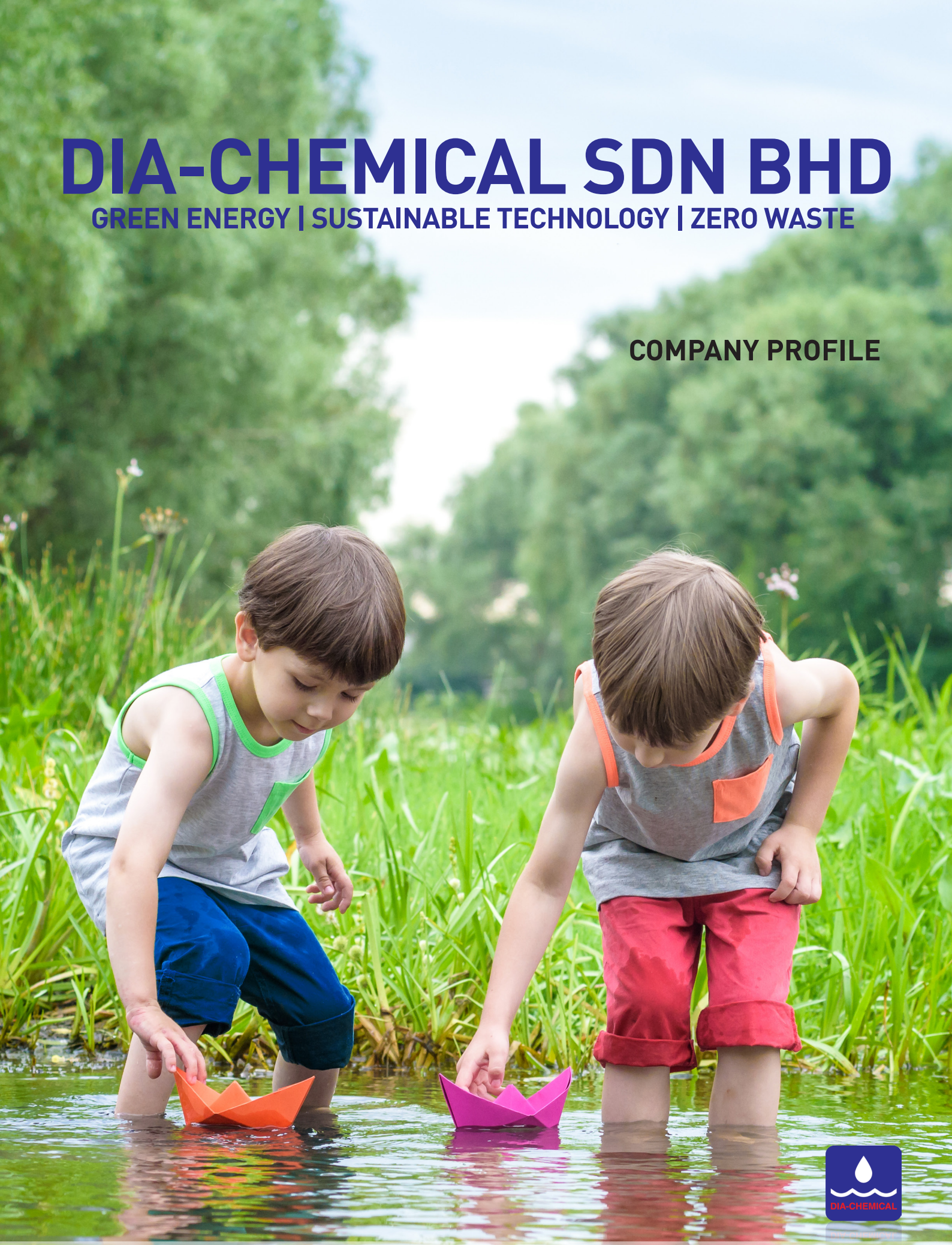
DIA-CHEMICAL SDN BHD

GREEN ENERGY | SUSTAINABLE TECHNOLOGY | ZERO WASTE

COMPANY PROFILE



"ONE-STOP SOLUTION FOR SUSTAINABLE WATER AND WASTEWATER TREATMENT"

CONTENT

Photo taken by DIA-Chemical

ABOUT US

WHO WE ARE

Established in 2006, DIA-Chemical specialises in providing innovative solutions for water and wastewater treatment. Driven by an unwavering vision for sustainability, our continuous research and development has spurred the development of numerous cutting-edge and economically viable water and wastewater treatment chemicals and technologies for commercial and industrial use.

WHAT WE DO

We pride ourselves as a one-stop solution provider for all water and wastewater treatment systems. Our expertise ranges from professional services to chemical & system supplies and complete treatment plants installation. Anytime a client engages DIA-Chemical, we promise to go extra miles in finding, understanding and ultimately solving their problems.

Photo taken by DIA-Chemical

VISION & MISSION

OUR VISION

We aspire to be the **leader** and **innovator** in providing sustainable solutions in water and wastewater problems.

OUR MISSION

- **INNOVATE** groundbreaking solutions for water and wastewater treatment needs of today and tomorrow.
- **INVEST** in continuous research and development for creation and commercialisation of new technologies and solutions.
- **IMPROVE** quality of our services at all times by serving customers with sincerity and honesty supported with in-depth technical knowledge.
- **INSPIRE** a better world for future generations by championing the cause of sustainability and environmental consciousness.

Photo taken by DIA-Chemical

CORE VALUES

BUILD TRUST

We want to be the trusted partner to our customers through the display of professionalism, integrity, commitment and passion in delivering tasks entrusted to us.

PEOPLE FIRST

Our people are our most important asset. We promote teamwork and continuous growth for all team members.

ADD VALUE

In every area, we strive to make things better than before – to give clients better solutions, to make the Earth a better place.

LOOK AHEAD

We are spurred on by a vision of sustainability – to enhance standards of sustainable waste management for the entire industry.

Photo taken by DIA-Chemical

CHEMICAL DIVISION

With more than 10 years of experience in servicing water and wastewater treatment industries, our chemical division consists of a team of experts in creating effective coagulants and flocculants that work in treatment plants. We specialize in not just the chemicals, but technical know-how supported with research and development studies to deliver sustainable solutions.

Other Laboratory Services

- Jar test analysis
- Biomethane potential measurement
- Water and wastewater analysis

Our Coagulants Plant

Our signature DIACHLOR™ Series Coagulants are wholly manufactured in-house. Through years of our very own research and development, we designed and built our own coagulant manufacturing plant employing the unique **zero waste** process. It produces no waste with 100% conversion of raw materials into products.

Our coagulant plant was proudly funded by Malaysian Technology Development Corporation (MTDC) in 2017.

Photo taken by DIA-Chemical

SIGNATURE PRODUCTS

DIACHLOR™ SERIES COAGULANTS

Our DIACHLOR™ coagulants are one of the industry's most trusted brands, reputed for being stable and consistent quality in the liquid clarification process. While they are commonly used in water and wastewater treatment system, they can be used in any process which requires clarification. In addition, they are safe and effective for us in various industries, including food and beverage industries and even in high and low temperature environments.

Range of products:

DIACHLOR™ PAC1
Polyaluminium Chloride Type 1 (PAC Type 1)

DIACHLOR™ PAC2
Polyaluminium Chloride Type 2 (PAC Type 2)

DIACHLOR™ PAC3
Polyaluminium Chloride Type 3 (PAC Type 3); also known as Aluminium Chlorohydrate (ACH)

DIACHLOR™ Aluminium Chlorohydrate

Advantages
- Cost savings: No pH adjustor needed.
- Better quality: Water treated with DIACHLOR™ PAC leaves minimal trace of aluminium residue, which has been linked to adverse health effects.
- Lower energy consumption: Produced using teflon lined sequential batch reactor (SBR) technology, which requires less energy in the production process.

Product Certifications

MS SIRIM

MALAYSIA حلال HALAL

NSF®

SIGNATURE PRODUCTS

POLYFLOC SERIES FLOCCULANTS

Flocculants, also commonly known as coagulant aids, are commonly used alongside with coagulants to enhance settling, assist in dewatering, promote adhesion and more. Supported with competent technical sales team, we source, supply and provide technical support on a wide range of flocculants to suit every industrial need.

Range of products:

POLYFLOC CATIONIC SERIES

Powder Type

Polyfloc KP9250	Polyfloc KP9255	Polyfloc KP9850	Polyfloc KP9855	Polyfloc KP9330
Polyfloc KP9335	Polyfloc KP9000	Polyfloc KP9005	Polyfloc KP9970	Polyfloc KP9975
Polyfloc KP9010	Polyfloc KP9015	Polyfloc KP9550		

Liquid Type

Polyfloc K740	Polyfloc K705	Polyfloc K730	Polyfloc K500	Polyfloc K530

Oil/Water Emulsion and Dispersion Type

Polyfloc KM660	Polyfloc KM640	Polyfloc KM620	Polyfloc KM600

POLYFLOC ANIONIC SERIES

Powder Type

Polyfloc AP8017

Photo taken by DIA-Chemical

SIGNATURE PRODUCTS

Photo taken by DIA-Chemical

OTHER SPECIALTY CHEMICALS

Emulsion Breaker EL-1000
Used to break oil and water emulsion to enhance oil and water separation. Highly effective when applied under high temperature.

Ammonia Removal AMRemove-1000
Used to remove ammoniacal nitrogen in wastewater treatment especially in sewage, leachate or any treatment plants with ammonia problems.

Biogas Boost 1000
Used to enhance anaerobic sludge settling properties, encourage granulation and reduce hydrogen sulphate concentration in the biogas. Such improvement will increase solids retention time (SRT) of the reactor giving higher biogas production efficiency with improved chemical oxygen demand (COD) removal.

Plant Trial 1

Drinking Water Plant Trial

Coagulant dosing system

DAF system using DIACHLOR coagulant

Optimization study during plant trial

Dosing rate adjustment

Dosing system

DIA-Chemical is committed to providing technical sales service of all our chemicals to our respected customers. We conduct laboratory jar tests to find the best dosage, run actual plant trials and setup optimum dosing rates to achieve the most effective treatment results. Our high-quality products not only help our customers to save their chemical usage but also to reduce their cost.

DRINKING WATER TREATMENT PLANT WATER SOURCE	ALUMINIUM SULPHATE DOSAGE	DIACHLOR™ PAC3 DOSAGE
River Water	30ppm – 50ppm	5ppm – 10ppm
Dam Water	40ppm – 60ppm	8ppm – 12ppm
Lake Water	45ppm – 60ppm	15ppm – 25ppm
Peat Soil Water	200ppm – 300ppm	80ppm – 90ppm
Underground Water	30ppm – 40ppm	12ppm – 15ppm

ENGINEERING DIVISION

Our engineering division provides ONE-STOP engineering solutions built under strong award- winning scientific investigation relevant to industrial's practical needs. Our solutions are targeted, specific and unique to each wastewater treatment plant because we know each of them is special.

Range of services:

a) Professional Consultation Services

- Authority submissions
- Engineering design and drawings
- Tender documents

b) Engineering, Procurement, Construction and Commission (EPCC)

Our professional engineering experience in wastewater treatment technologies allows us to undertake, design, procure, build and commission many turnkey projects ranging from upgrading of existing plants to construction of new treatment plants.

Project and System References

Over the years, DIA-Chemical has worked closely with numerous notable corporations to serve their wastewater treatment needs in various capacities. Our results speak for themselves.

Photo taken by DIA-Chemical

Project Reference 1

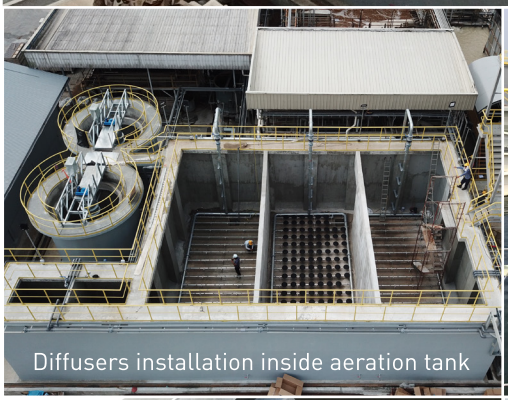
BIODIESEL WASTEWATER TREATMENT PLANT

Capacity: 180 m^3/day

Project completion

Cooling tower system to reduce the temperature for influent water

Flaring system to burn methane gas produced from anaerobic system



Diffusers installation inside aeration tank

Install stainless steel wire ropes to lay geomembrane

Central drive scrapper inside the clarifier

Completion of anaerobic system with geomembrane

Key Results:

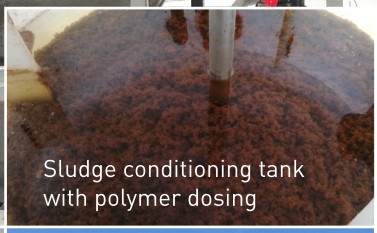
1. Able to reduce the chemical oxygen demand (COD) from 50000mg/L to less than 200mg/L meeting the Department of Environment's discharge limit.
2. Anaerobic tank with geomembrane system to trap biogas and release for flaring.
3. Aeration tank with diffuser system to produce dissolved oxygen for efficient COD removal.
4. Chemical treatment with coagulation and flocculation system and dissolved air flotation (DAF) system to reduce total suspended solid (TSS) from 800mg/l to less than 100mg/l.

Project Reference 2

RETURN ACTIVATED SLUDGE (RAS) SYSTEM FOR LEACHATE TREATMENT PLANT

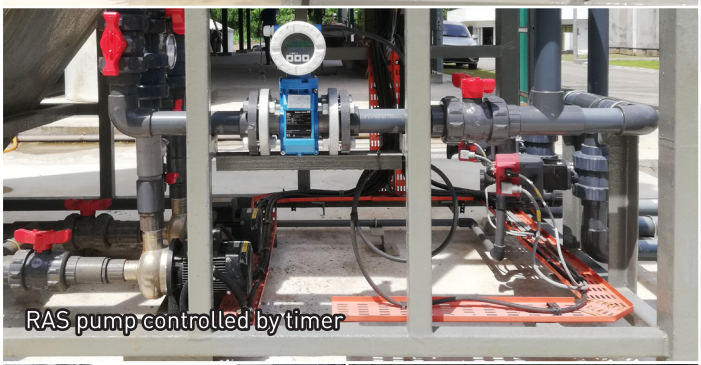
Capacity: 120 m^3/day

Lamella clarifier with return activated sludge (RAS) system



Sludge conditioning tank with polymer dosing

Separation of water and sludge after sludge conditioning



RAS pump controlled by timer

Aeration system

Bacteria unloading to seed aeration tank

Top of clarifier with buffer and V-notch system to avoid sludge carry over

Polymer preparation tank with dosing pump to clarifier and conditioning tank

Class session of overall system before handover

Key Results:

1. Able to reduce the ammoniacal nitrogen from 200mg/L to less than 5mg/L meeting the Department of Environment's discharge limit.
2. Maintained total suspended solid (TSS) and chemical oxygen demand (COD) below 50mg/l and 400mg/L respectively.
3. Clarifier tank with return activated sludge (RAS) system to avoid sludge carry over to final discharge.

Project Reference 3

PASTEURIZED MILK WASTEWATER TREATMENT PLANT

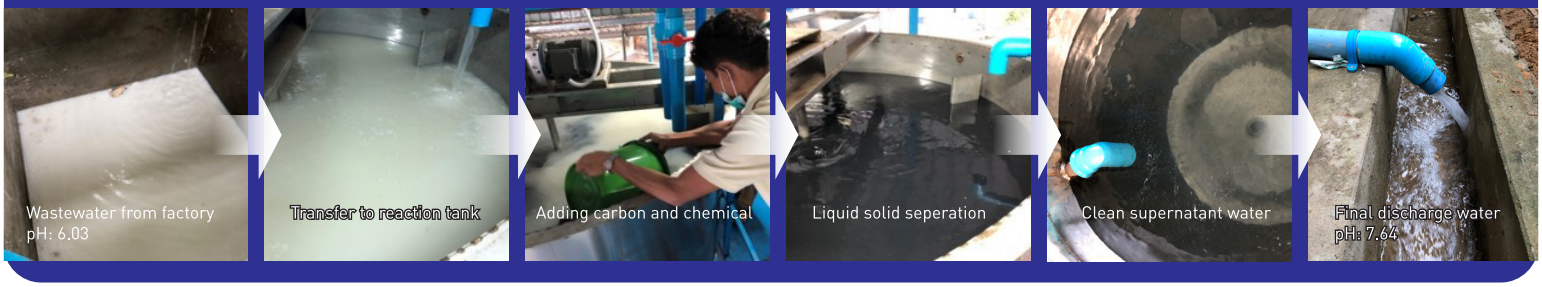
Capacity: 10 m^3/day

Modern treatment plant using innovative coagulation-adsorption process in sequential batch reactor (SBR)

Photo taken by DIA-Chemical

Plant visit and familiarisation

OVERALL TREATMENT PROCESS



Arial view of the treatment plant and sludge drying house for sludge to be used as fertilizer

Plants cultivated using dried sludge as fertilizer

Dried sludge as fertilizer

Testing and commissioning

Key Results:

1. Able to reduce the chemical oxygen demand (COD) and total suspended solids (TSS) from 800 mg/L to less than 250mg/L and from 300 mg/L to less than 50 mg/L respectively, meeting National Discharge Limit 2015 of Myanmar.
2. Use innovative technology of coagulation-adsorption mechanism in sequential batch reactor (SBR).

Key highlight:

1. Technology transfer and introduction on modern wastewater treatment process to Myanmar.
2. An international collaboration project with Win Agro-Livestock Co. Ltd., World Wildlife Fund (WWF) Myanmar and Denmark Government Responsible Business Fund.

Key features:

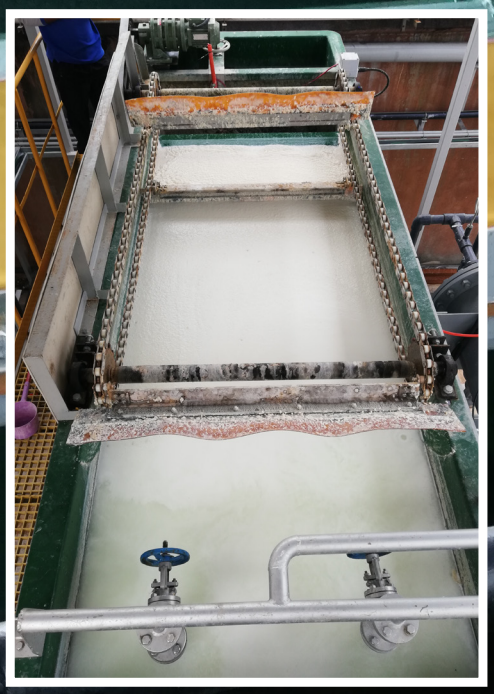
1. Flexible operation especially when plants does not have a continuous operation.
2. Clean and does not have odor at all.
3. Small footprint and compact
4. Easy to maintain.

System Reference 1

ANAEROBIC/BIOGAS SYSTEM

Anaerobic wastewater treatment is a biological process where microorganisms break down and remove organic contaminants from wastewater in the absent of oxygen. Thus, resulting in an effluent with lower biological oxygen demand (BOD), chemical oxygen demand (COD), and/or total suspended solids (TSS), as well as biogas by-product. The anaerobic digestion process forms the core of **sustainable technology** in most of the wastewater treatment plants due to its advantages of energy saving, reduced sludge yield, production of biogas as biofuel, reduced carbon footprint and the digestate can be used as fertilizer. The biogas generated is the major source of **green energy** which will be the main driver of green economy in Malaysia.

Our engineering team employs in-house award-winning design techniques based on up flow anaerobic sludge blanket (UASB) technology to ensure optimum results for every type of organic based wastewater that we encounter.



System Reference 2

CHEMICAL PHYSICAL TREATMENT

Chemical physical treatment consists of coagulation and flocculation. It is a process to neutralize particle surface charges and form a mass large enough to settle as sludge. Clarification process can then be achieved when those particles are trapped in the sludge. The sludge can be separated by means of settling tank or dissolved air floatation (DAF) system. DAF system produces micron-sized bubbles used to allow sludge attachment forming a floating bed that is removed by a surface skimmer.

Our expert team will design this process and optimize its performance to achieve the best clarification results at the lowest chemical cost.

System Reference 3

AERATION SYSTEM

Aeration is the process of aerobic bio-degradation of pollutant components in the present of air. It is an integral part of most biological wastewater treatment systems. Membrane bioreactors for wastewater treatment is a combination of a suspended growth biological treatment method, usually activated sludge, with membrane filtration equipment, typically low-pressure microfiltration (MF) or ultrafiltration (UF) membranes. The sequential batch reactor (SBR) system is a set of tanks that operate on a fill-and-draw basis.

With the vast experience that we have in aeration system, we select, design, build and commission the most suitable type of system to meet the treatment requirement for different targeted contaminants ranging from COD, BOD to ammoniacal nitrogen.

System Reference 4

SLUDGE DEWATERING SYSTEM AND TERTIARY TREATMENT

Sludge dewatering system consists of sludge holding tank, sludge conditioning tank, filter press and/or other dewatering system. Sludge holding tank provides storage and blending for the thickened waste activated sludge, primary sludge, imported sludge, and scum before further processing. Sludge conditioning is a process whereby sludge solids are treated with chemicals to prepare the sludge for dewatering processes, in other words, to improve dewatering characteristics of the sludge. Filter press operates on feed pressure and can be used for high volume separation of solids from slurries, utilizing recessed or membrane plates.

Tertiary treatment is the final cleaning process that improves wastewater quality before it is reused, recycled or discharged to the environment. The treatment removes remaining inorganic compounds and substances.

DIA-CHEMICAL

40, Jalan Apollo U5/193, Bandar Pinggiran Subang, 40150 Shah Alam, Selangor D.E., Malaysia
T: +603-7845 7895 E: info@dia-chemical.com W: www.dia-chemical.com

7, Jalan Perindustrian SIS, Taman Perindustrian SIS 228, 43700, Beranang, Selangor D.E., Malaysia
T: +603-8920 7713

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