



# HELPING A MALAYSIAN PALM OIL INDUSTRY REDUCE EXPANSION INVESTMENTS

*Case study*

*Treating Wastewater from Palm Oil Industry using  
Hydranautics HYDRAsub<sup>®</sup>MAX Membrane Bio  
Reactor (MBR) Technology*

The

## PROBLEM

A Malaysian company manufactured finished products from palm oil. They operated a conventional biological aeration wastewater treatment plant.

The Company sought to expand its plant capacity to meet increased demands but were short of space. Expansion would have required additional investment too.



<i>Location</i>	Malaysia
<i>Feed water source</i>	Palm oil industry wastewater
<i>Application</i>	MBR treatment to improve quality
<i>Capacity</i>	24 m <sup>3</sup> /h
<i>Start-up date</i>	Early 2016
<i>UF Design</i>	2 x HSMM1200-ES modules

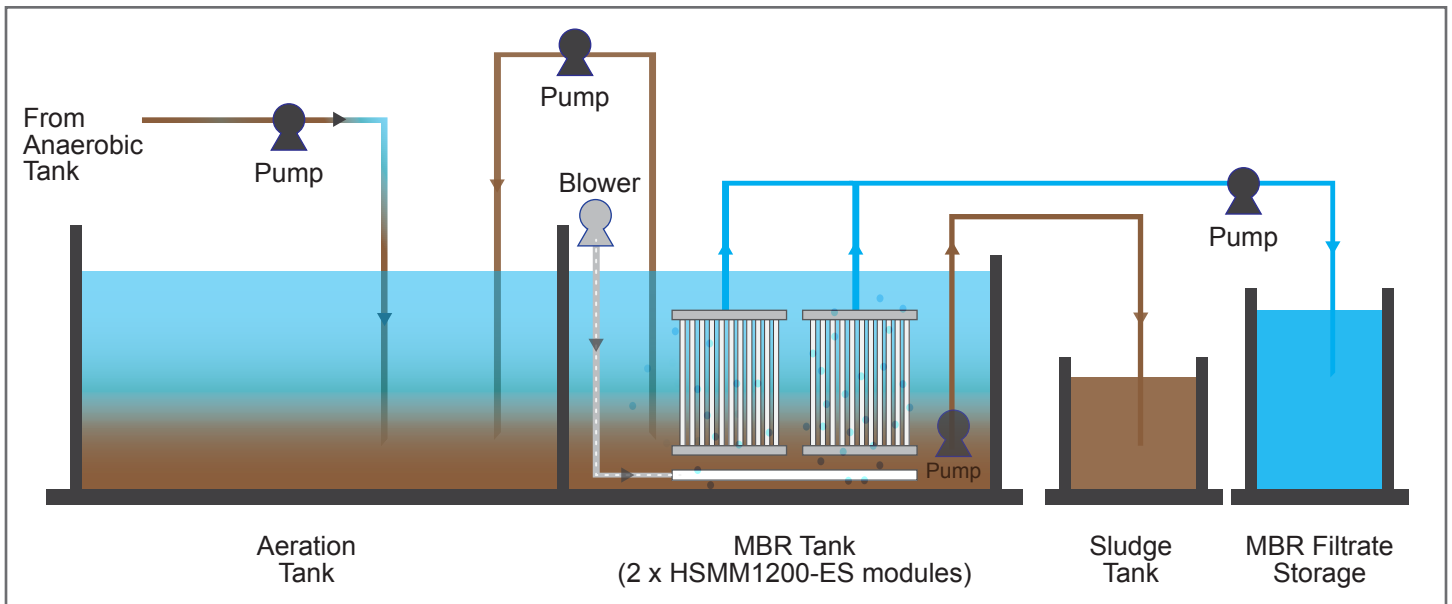
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## SOLUTION

The Company opted for space saving MBR technology using Hydranautics submerged ultrafiltration hollow fibers modules HYDRASub®MAX.

membrane area. Strong double layered fibers ensured superior membrane integrity, even with aggressive feed waters. The treatment scheme is shown on the next page.

Two HSMM1200-ES modules were installed in existing aeration tank that saved space. Each of these modules used 0.05 micron pore size fibers of PVDF material and had 1200 m<sup>2</sup>



*Ever since commissioning the plant in early 2016, filtrate of turbidity < 0.3 NTU and COD < 50 ppm was obtained with inlet sludge concentrations up to 7000 ppm. Modules are treated weekly with 300 ppm Sodium Hypochlorite and 0.5% citric acid. Against recommended frequency of three months, no recovery cleaning was required in the past 18 months, thus reducing treatment costs.*

The MBR system operating data is given in the table.

Parameter	Value
Raw wastewater COD	2000 – 2500 ppm
HYDRAsub®MAX filtrate COD	< 50 ppm
MBR tank MLSS	7000 – 8000 ppm
Turbidity of MBR filtrate	< 0.3 NTU
HYDRAsub®MAX TMP	< 0.01 bar
Design flux	17 lmh

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## IMPACT

The MBR system retrofitted well in existing treatment plant, without requiring additional tanks, saving space and additional investment. Reduced treated water COD enabled recycling it and helped meet regulations in peak loads.



*About the author*

## **MR. MADHUSUDAN JOSHI**

*Madhusudan Joshi, is working as Manager – Technical Support for Hydranautics – A Nitto Group Company. He is a chemical engineer having more than 20 years' experience in water treatment industry. He is responsible for providing technical support for Hydranautics' membrane products in Indian subcontinent.*

For more information about Hydranautics case studies, contact us at [hy-info@nitto.com](mailto:hy-info@nitto.com) or visit our website at [membranes.com](http://membranes.com)

### **About Hydranautics**

Since our founding in 1963, Hydranautics has been committed to the highest standards of technology research, product excellence and customer fulfillment. Hydranautics entered the Reverse Osmosis (RO) water treatment field in 1970 and is one of the most respected and experienced firms in the membrane separations industry. We joined the Osaka, Japan based Nitto Denko corporation in 1987 which was founded in 1918 and now has 117 companies in more than 20 countries, with over 30,000 employees worldwide. Our alliance with this global film industry giant boosts Hydranautics to a superior level of technological sophistication, product performance and customer response.

We are not simply product manufacturers; we are your membrane technology partners. As leaders of high quality membrane solutions, we believe our obligations extend beyond manufacturing and selling our products. Our skilled staff of technicians, engineers and service professionals assist in designing, operating and maintaining a robust, reliable and efficient membrane system to meet your requirements and exceed your expectations. Our support is offered from early stage conceptual design and engineering to start-up and maintenance, no matter the location globally whether it is on land or off-shore.

**Nitto**

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