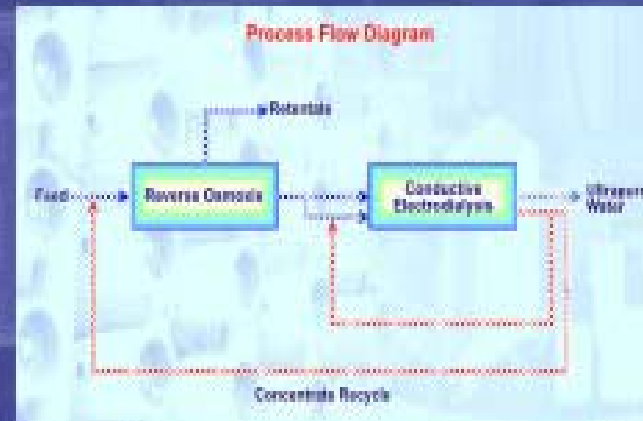
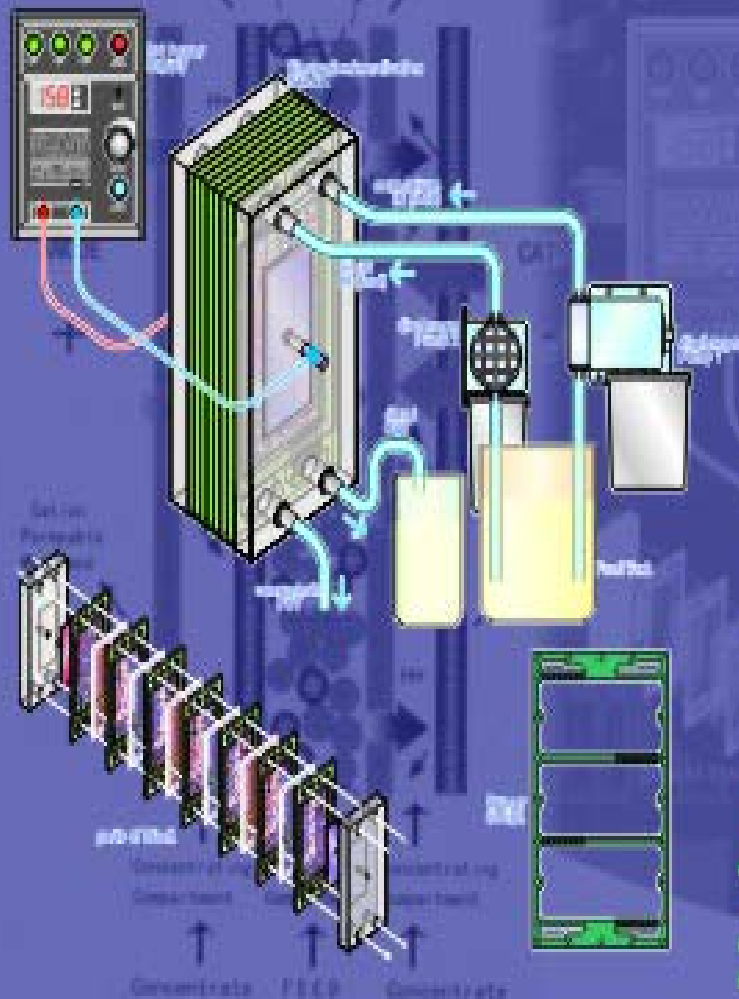


CONDUCTIVE ELECTRODIALYSIS

CED TECHNOLOGY : NO MORE CHEMICAL REGENERATION FOR ION EXCHANGE

NEW 90



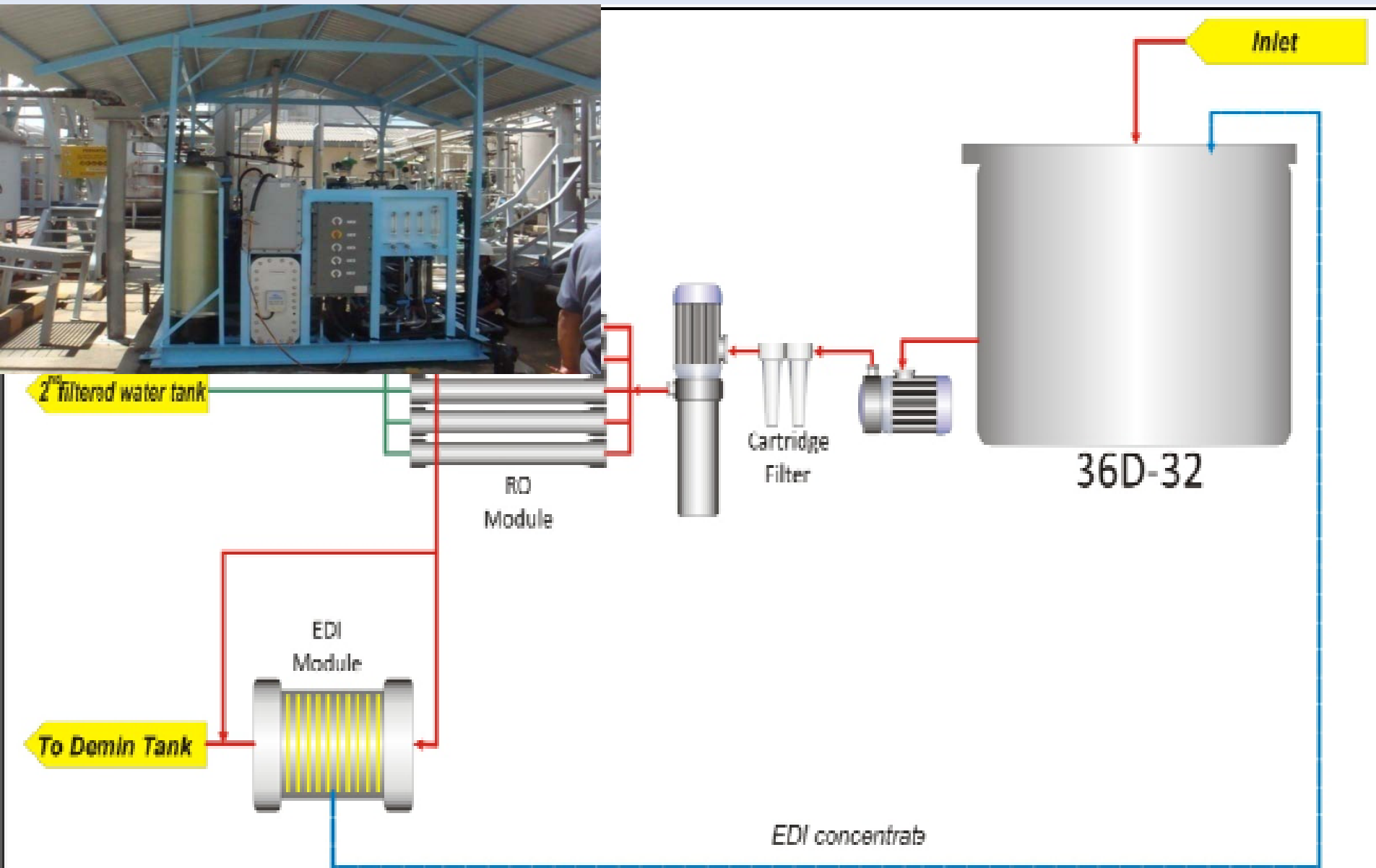
The most common method for producing ultrapure water which has resistivity higher than 18 MΩ-cm is chemically regenerated ion exchange. In addition to requires a large amount of chemicals, the method is high cost for labour and produces a large volume of wastewater. Environmental awareness in recent years has led to include environmental consideration in production routes to ensure minimum waste generation.

conductive electrolysis (CED), well known as electrodialysis (ED) or continuous demineralization (CDI), is a novel technology of an electrically driven membrane process combining ion exchange and electrodialysis. A CED stack consists of diluted compartments, concentrated compartment, and electrode compartments. Earlier configuration, the mixed ion exchange resins are only filled in the diluted compartments, which enhance the ions transport from diluted compartments toward concentrated compartments under the force of direct current. The later configuration, both diluted and concentrated compartments are filled with mixed ion exchange resins. For ultrapure water production, CED should be combined with reverse osmosis (RO) to prevent membrane scaling and to reduce production cost. The feed water is pretreated by RO to produce water having conductivity less than 45 $\mu\text{S}/\text{cm}$ prior to be treated by CED.

The advantages of the CED technology compared to the conventional ion exchange :

- The mixed ion exchange resins are continuously regenerated by an electrical current so that virtually eliminate the chemical cost and hazardous wastewater.
- Offer continuous and simple operation with predictable product quality and dramatically reduce operation interference.
- Smaller unit for similar capacity

RO-CED PILOT PROJECT IMPLEMENTATION AT PTB



GDP FILTER

As leading membrane manufacturer in the region,
GDP Filter produces high quality membranes for
various applications.



Founder

Dr. I G. Wenten



As a South Asian's leading membrane manufacturer, GDP Filter produces high quality membranes for various applications.

Our principle of never ending improvement to aim perfection is devoted to brighter future of human being, as we said, "Innovative Solutions for A Better Life".





Innovative Solutions for A Better Life



After a decade dealing with membrane-based water treatment system, GDP Filter initiated production of its own **RO Pressure Vessel** since 2010. GDP Filter manufactures the pressure vessel based on its first hand experience in RO plants in order to achieve higher efficiency.





GDP Filter

As leading membrane manufacturer in the region, GDP Filter produces high quality membranes for various applications.



BOARD OF EXPERTS

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Department of Chemical Engineering,
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Department of Environmental Engineering,
Institut Teknologi Bandung (ITB)

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Department of Mechanical Engineering,
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Dr. I.N. Widlana, ST, MT
Department of Chemical Engineering,
Diponegoro University (UNDIP)

OUR MOTTO

Our principle of never ending improvement to aim perfection is devoted to brighter future of human being, as we said, "Innovative Solutions for A Better Life".

NEVER ENDING INNOVATION >



SCOPE OF SERVICE

Holding on the spirit to serve, GDP Filter offers the concept of **Total Solution** to customers. Our experiences range from production of high purity water, industrial process water, drinking water, to even **Unique Cases** such as vegetable oil filtration, pervaporation, and waste lube oil recycling.

2001

2002

2003

2004

2005

2006

2007

2008

2009

2010

2011

Lab Scale Device
Residential Unit

Small-scale Ultrafiltration

Large-scale
Membrane Plant

Vegetable Oil Filtration

IGW Emergency UF

Single-Bore Capillary Membrane

Mobile SWRO

- Multi-Bore Capillary Membrane
- Non-Modular Membrane System

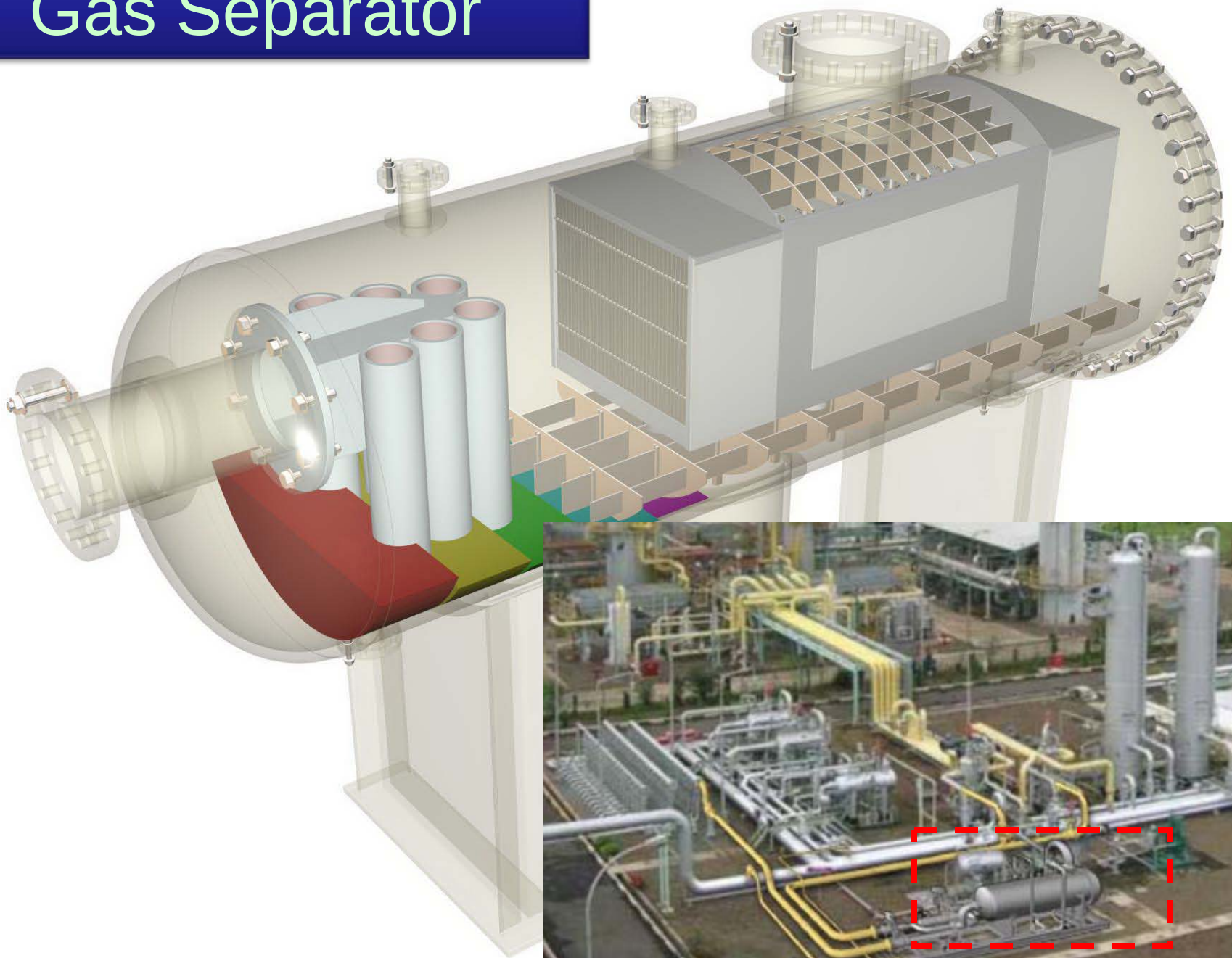
- RO Module
- FRP RO Housing

First & Only in the World

With years of research, we developed an unique non-modular membrane system.

"Innovative Solutions for A Better Life"

Gas Separator



IMPLANTED ENDS-FREE MBR

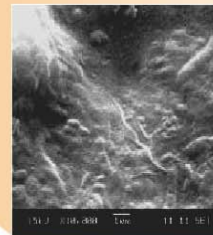


National Standard of Aquaculture Recirculation Technology

Submerged MBR



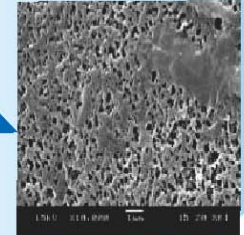
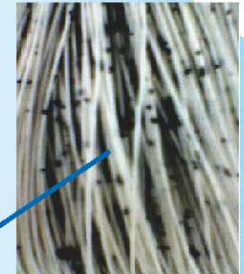
Severely fouled,
indicated by
brownish color
on the membrane
surface



Low fouling

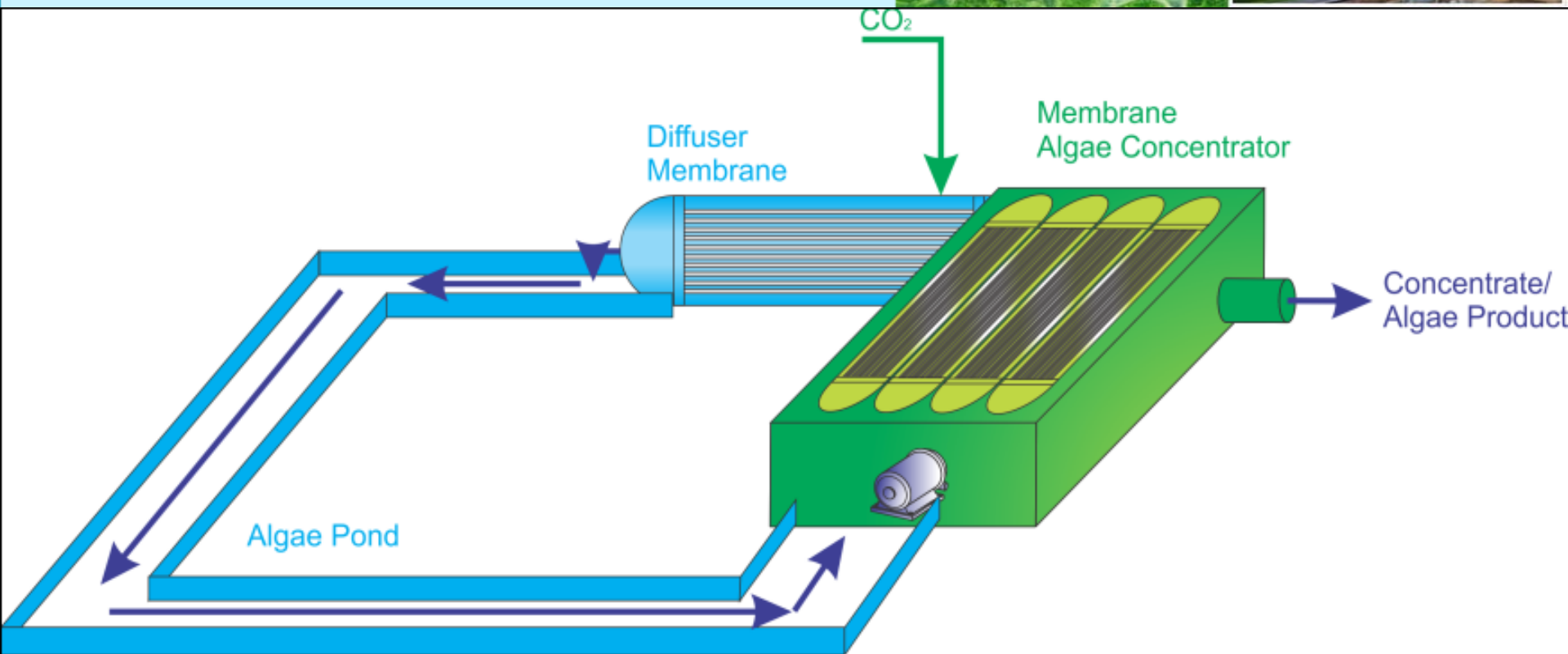
SEM

Implanted MBR



High Density Algae Membrane Reactor dengan Fiksasi CO₂ Melalui Membran Difuser

- Penumbuhan dan pemanenan dalam satu alat terintegrasi
- Tidak membutuhkan tempat yang luas
- Mampu meningkatkan densitas mikroalga dalam reaktor
- Tidak membutuhkan energi yang besar



Membrane Based Recirculation System for Sustainable Aquaculture

UF 30,000 Da

- Hatchery
- Grow-out

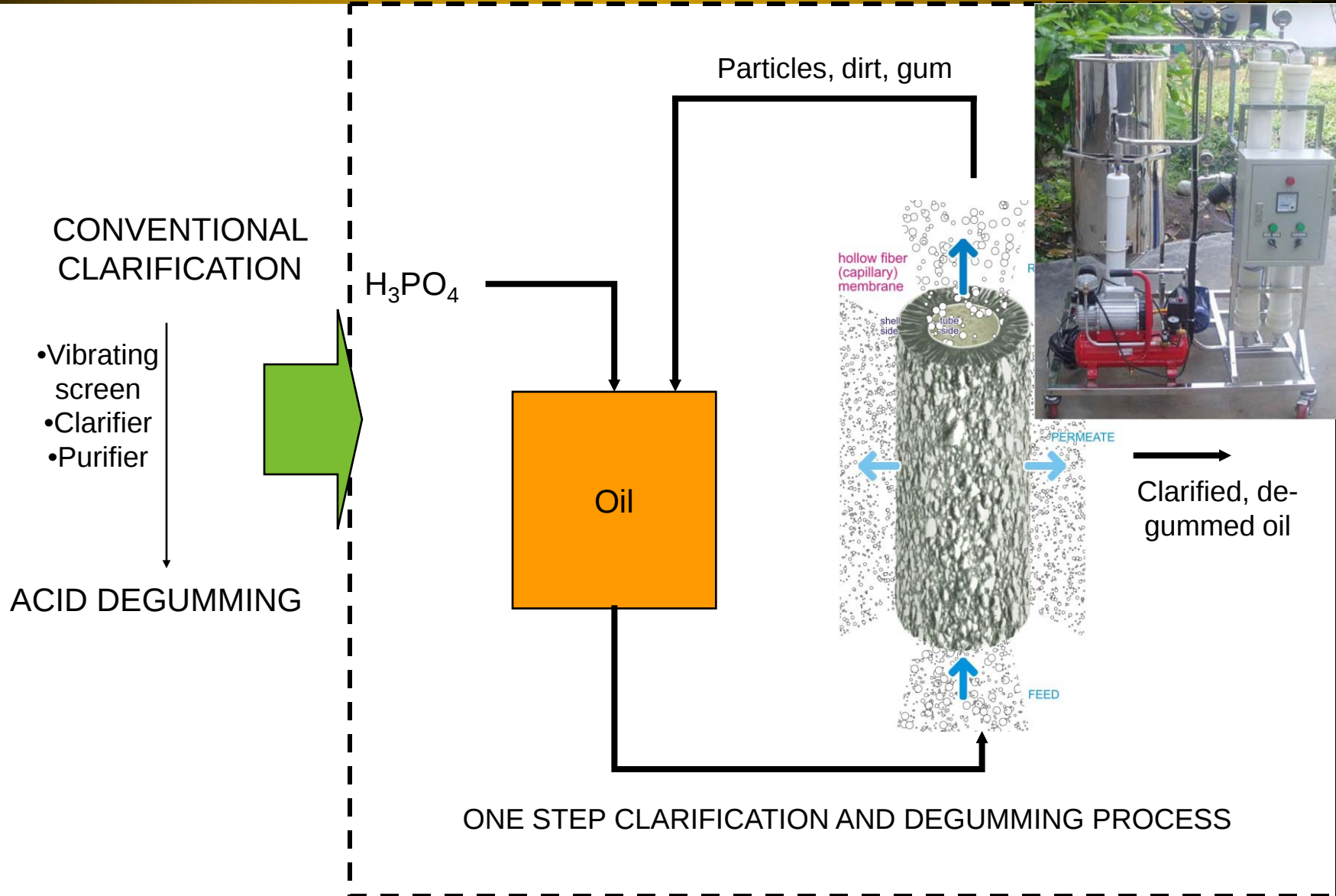


VEGETABLE OIL FILTRATION

Virgin Coconut Oil Clarification



SIMULTANEOUS CLARIFICATION AND DEGUMMING OF VEGETABLE OIL



Natural Palm Kernel Frying Oil



- 1 Step clarification process
- No chemical consumption
- Environmentally friendly process

Clarified PKO



**Feed
(Crude PKO)**

Retentate

**Permeate
(Clarified PKO)**

Waste Lube Oil Refining with Ceramic Membrane



ULTRAFILTRATION OF COCONUT WATER



JUICE CLARIFICATION



- Most fresh and crystallly clear juice
- No chemical consumption
- Low operation cost

EMPOWERING PALM SUGAR BUSNISES



Fig. 8



Membrane Concentrator



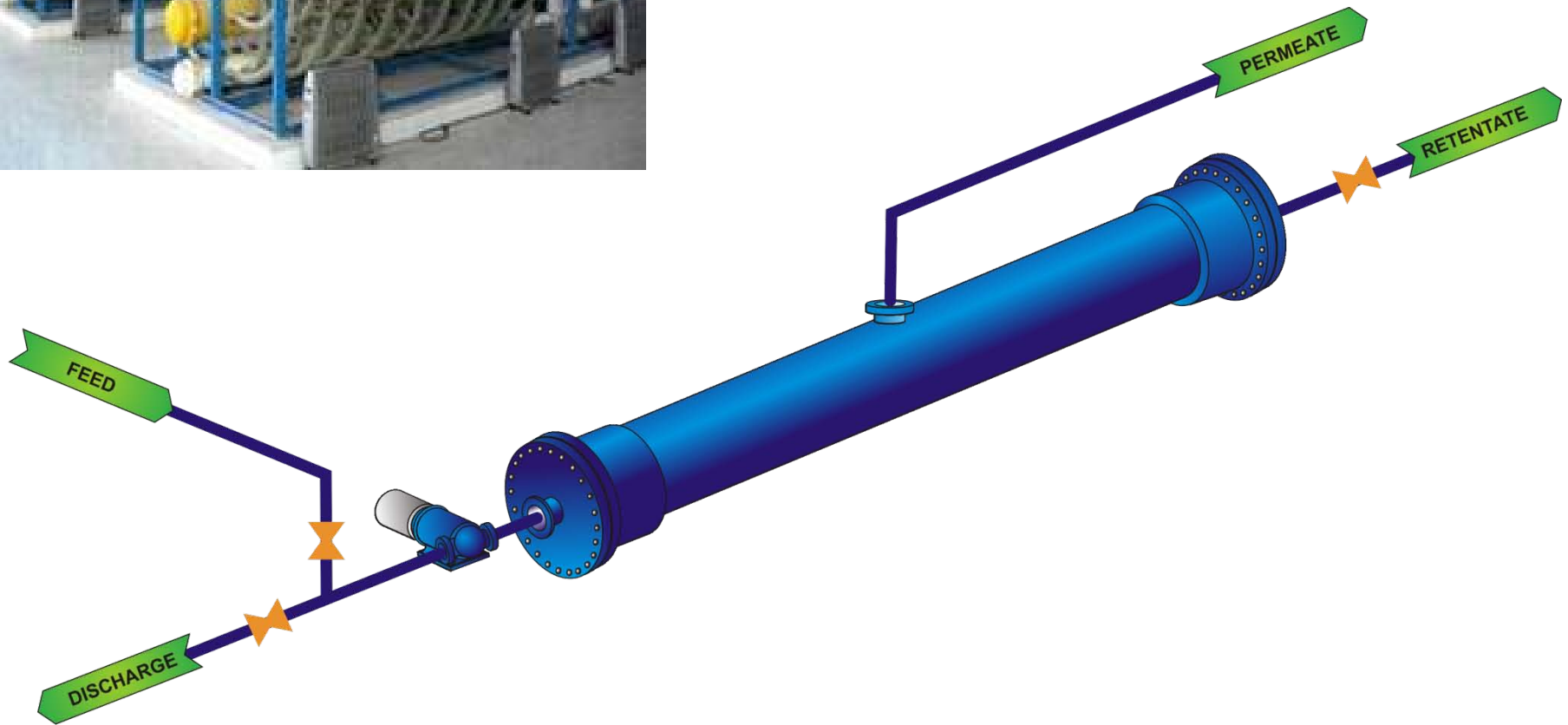
High Quality
DRINKING WATER

ULTRAFILTRATION: Non-Modular System





MODULAR VS NON-MODULAR

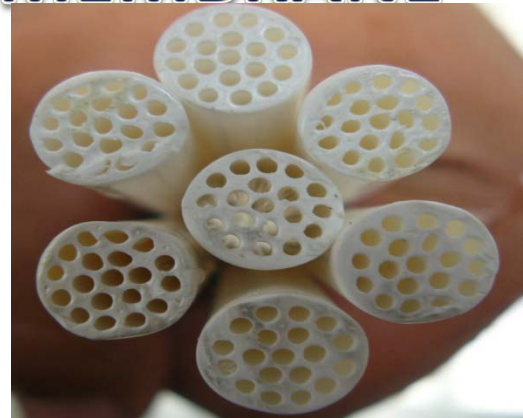




DEVELOPMENT OF MULTIBORE MEMBRANE DEVELOPMENT OF HIGH STRENGTH MEMBRANE

I G. Wenten

Department of Chemical Engineering
Institut Teknologi Bandung, Indonesia

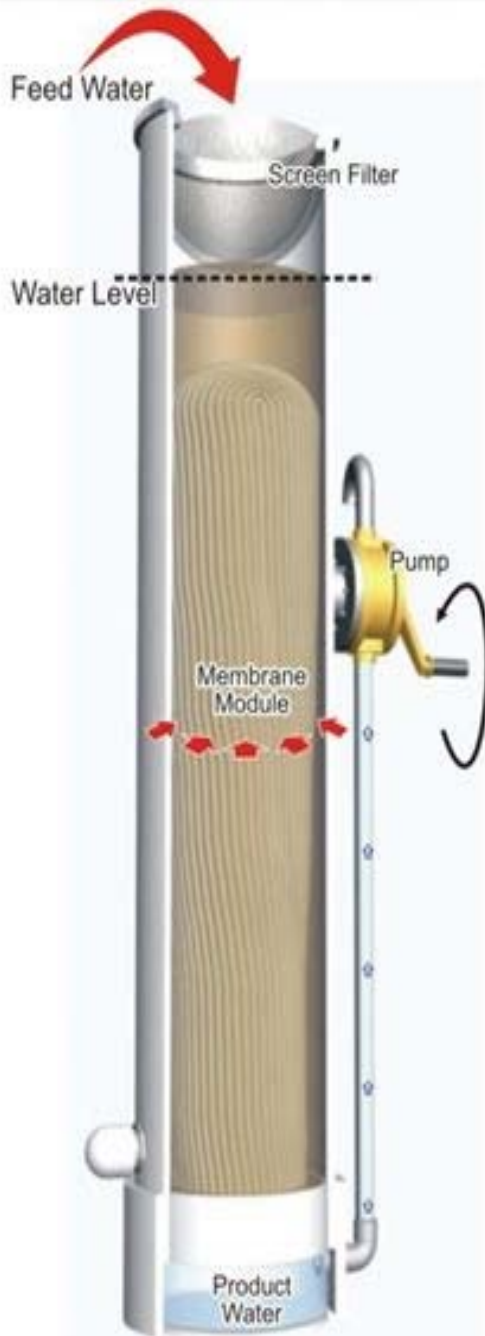




-
- **Japan Patent, JP155559A2**
 - **Canada Patent, CA2132682AA**
 - **United States Patent, US5560828**
 - **Indonesia Patent No. P00200400522 / 046.1440 A**
 - **Indonesia Patent No. P00200400553**
 - **Indonesia Patent No. P00200400554 / 046.1515 A**
 - **Indonesia Patent No. P00200400619 / 046.2016 A**
 - **Indonesia Patent No. 037.551 A**
 - **Indonesia Patent No. P0020100085 / 033.065 A**
 - **Indonesia Patent No. 033.321 A**
 - **Indonesia Patent No. P00200800435 / 050.0814 A**
 - **Indonesia Patent No. P00200900263 / 050.4253 A**
 - **Indonesia Patent No. P00201000055 / 051.3565 A**
 - **Indonesia Patent No. P00201000408 / 2012/00027 A**
 - **Indonesia Patent No. P00201000624**
-



-
- Filtration Society, London, SUTTLE AWARD 1994
 - Indonesia Engineer Association, ADHICIPTA REKAYASA AWARD, (1995)
 - Toray Science Foundation, SCIENCE AND TECHNOLOGY AWARD, (1996)
 - Indonesia Science Institution, YOUNG RESEARCHER AWARD, (1996)
 - HABIBIE AWARD, (2000)
 - WIPO-UNDP, WIPO AWARD (BEST INVENTOR), (2002)
 - Ministry of research and technology, Indonesia, RUT AWARD, (2004)
 - Badan Nasional Sertifikasi Profesi, Indonesia, BNSP AWARD, (2009)
 - Indonesia Engineer Association, ADHICIPTA REKAYASA EMAS, (2009)
 - ASEAN OUTSTANDING ENGINEERING AWARD, AFEO, 2010
 - SOEGENG SARJADI AWARD on GOOD GOVERNANCE, SSSG, 2012
 - GOLD MEDAL-GANESHA INNOVATION AWARD, 2013
-



SUSTAINABLE SUPPLY OF LOW COST CLEAN WATER

FUTURE COMMUNITY WATER SOLUTION

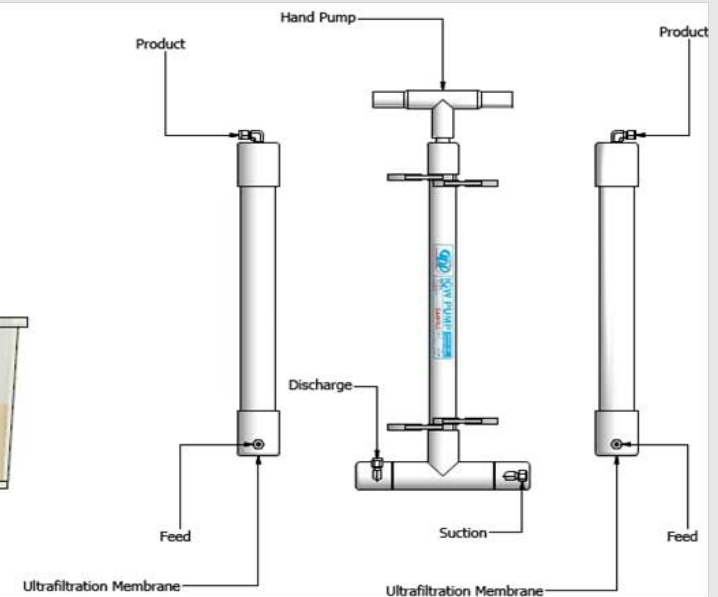
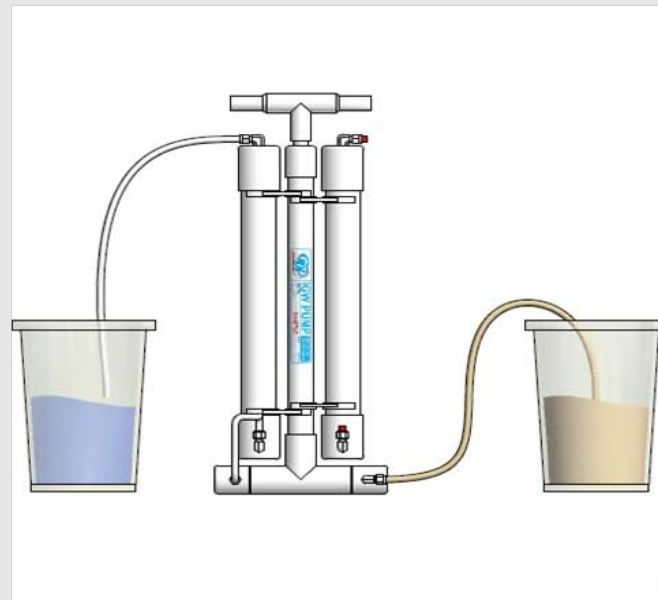


I G. Wenten
Dept. Chemical Engineering, ITB
Email: igwenten@gmail.com

Aceh Tsunami Relief

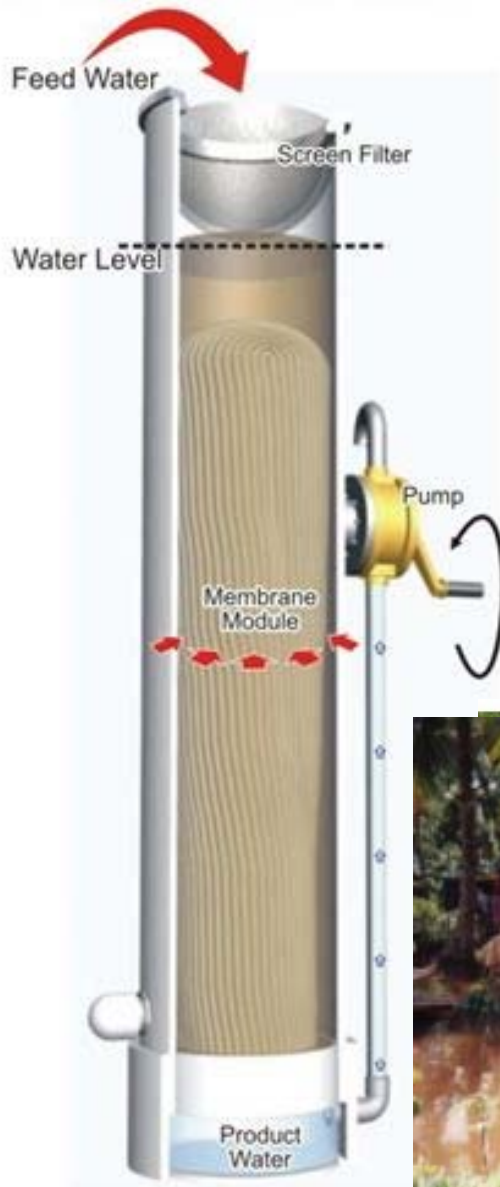


COMMUNITY WATER RE-USE



FUTURE COMMUNITY WATER SOLUTION

IGW GREEN ULTRAFILTER
No Electricity Required



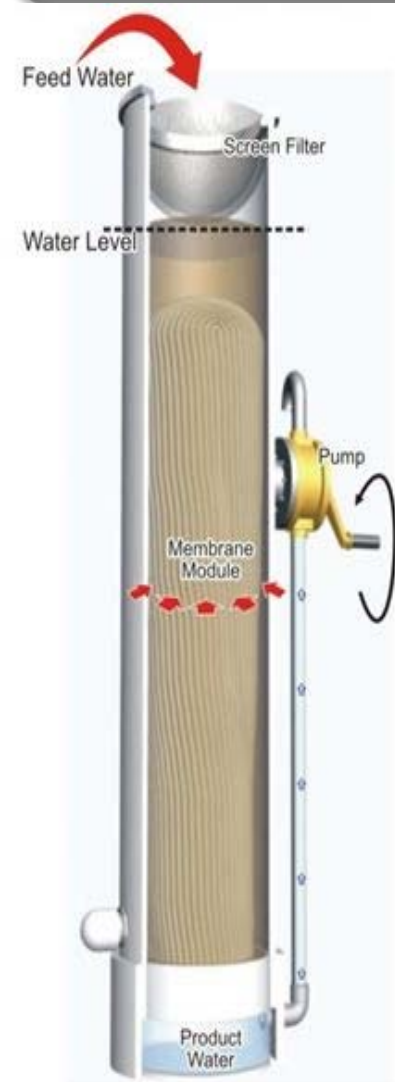
Capacity : 500 LPH, Weight : 30 kg



IGW GREEN ULTRAFILTER

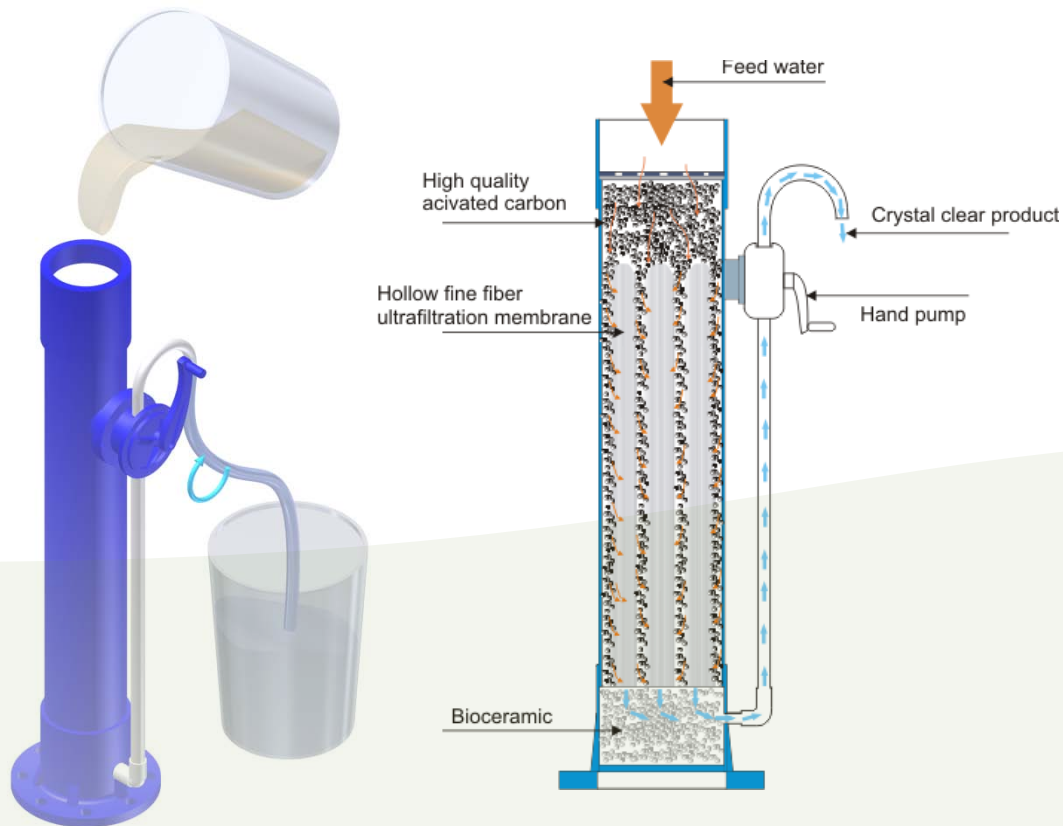
No Electricity Required and Chemical Free

A NOVEL WATER RECLAMATION SYSTEM
FOR
FUTURE COMMUNITY WATER SOLUTION



GOLD MEDAL
GANESHA INNOVATION AWARD

RAIN WATER TO DRINKING WATER



Single module that integrate three stages of filtration

Activated carbon

Reduce unpleasant odors, organic matter and residual chlorine

Hollow fine fiber Membrane

The core competence of this unit. Ultrafiltration membrane can remove almost 100% of colloids, bacteria, viruses and all of particulate matters responsible for turbidity .

Bioceramic

Alkalinity agent and enhancing anti oxidant quality of drinking water. It also enhances freshness of drinking water