



Acceptance Remarks
By
Prof Dato' Ir Dr
A-Bakar Jaafar,
*The 6th Recipient
of Uehara Prize
@the 10th IOS,
Rio de Janeiro
Brazil
4-5 Dec 2024*

THIS ACKNOWLEDGES THAT

A Bakar Jaafar

HAS BEEN AWARDED

The 2024 Uehara Prize

FOR CONTRIBUTION TO THE DEVELOPMENT OF
OCEAN THERMAL ENERGY CONVERSION

WHEREAS THE INTERNATIONAL OTEC COMMUNITY RECOGNIZES THE AWARDEE'S
LONG-TERM CONTRIBUTIONS TO THE DEVELOPMENT OF OTEC THROUGH
TECHNOLOGY DEVELOPMENT, RESEARCH, OR PROMOTION OF PUBLIC AWARENESS, AND
WHEREAS THE INTERNATIONAL COMMUNITY FEELS THE AFOREMENTIONED HAS CONTRIBUTED IN A WAY THAT
POSITIVELY CALLS TO MIND THE MEMORY OF PROFESSOR UEHARA

PRESENTED

4 DECEMBER 2024

ON BEHALF OF
THE OCEAN THERMAL ENERGY ASSOCIATION



A handwritten signature in black ink, appearing to read '池上康之' (Ikegami Yasuyuki).

YASUYUKI IKEGAMI
CHAIR
OTEA EXECUTIVE COMMITTEE

Prof Dato' Ir Dr A. Bakar Jaafar, PEng, FIEM, FASc,

a Malaysian, is Research Fellow and Co-Founding Director of UTM Ocean Thermal Energy Centre, and Professor @UTM Faculty of Artificial Intelligence [Formerly RFTI] since 2013. Currently, he is a leading proponent in Malaysia in the promotion and development of renewable energy projects, including that of ocean thermal energy, as well as in the generation and production of green hydrogen.

During the period 1975-76, he was a Staff Engineer at the US Environmental Protection Agency, Office of Research & Development, Industrial Environmental Research Laboratory, Cincinnati, Ohio, where he completed a Research Internship Report relating to the conversion of solar energy into hydrogen, as a partial fulfilment of the requirements for the degree of Master of Environmental Science, Miami University, Oxford, Ohio, USA. He has served the Government of Malaysia in various capacity since 1973, and his career included stints as Factories and Machinery Inspector (1973-74), Staff Engineer of the US EPA Industrial Environmental Research Laboratory (1975-76), Principal Assistant Director (Water Quality), Environment Division, Ministry of Science, Technology and Environment (1976-84) and Economic Planning Unit in the Prime Minister's Department (1984-85), DOE Director of Operations (1985-86), DOE Deputy Director-General (Planning) (1987-1989), and as the Director-General of the Department of Environment Malaysia (DOE) (1990-1995). After his optional retirement, he continued to serve the Government of Malaysia as the Elected-Member of UNCLOS Commission on the Limits of the Continental Shelf (1997-2002) (2002- 2007) (207-2012), UN Headquarters, New York. He was the former Chairman of Malaysian Green Technology & Climate Change Corporation (MGTC) over the period 4 October 2019-31 May 2022.

He holds a bachelor's degree (Hons) in Mechanical Engineering from the University of Newcastle, NSW, Australia, 1973, a master's degree in environmental science from Miami University, Ohio, USA, 1976; and PhD in (Marine) Geography from the University of Hawaii, @Manoa, 1984. He was conferred with Honorary Doctorate in Science by University of Malaysia Terengganu in 2017, and by the University of Newcastle, New South Wales, Australia in 2022, and received numerous Awards including KMN (1985), JSM (1992) by the Yang di-Pertuan Agong (King of Malaysia); DPMP (1993) by YAM Raja Perlis; University of Newcastle, NSW, Australia Convocation Medallist (2011), "Tokoh" Alumni Sekolah M Alam Shah (2018), World Renewable Energy Network (WREN) Pioneer Award (2023), and Uehara Prize (2024).

Conversion of Solar Energy into Hydrogen: 1975-76

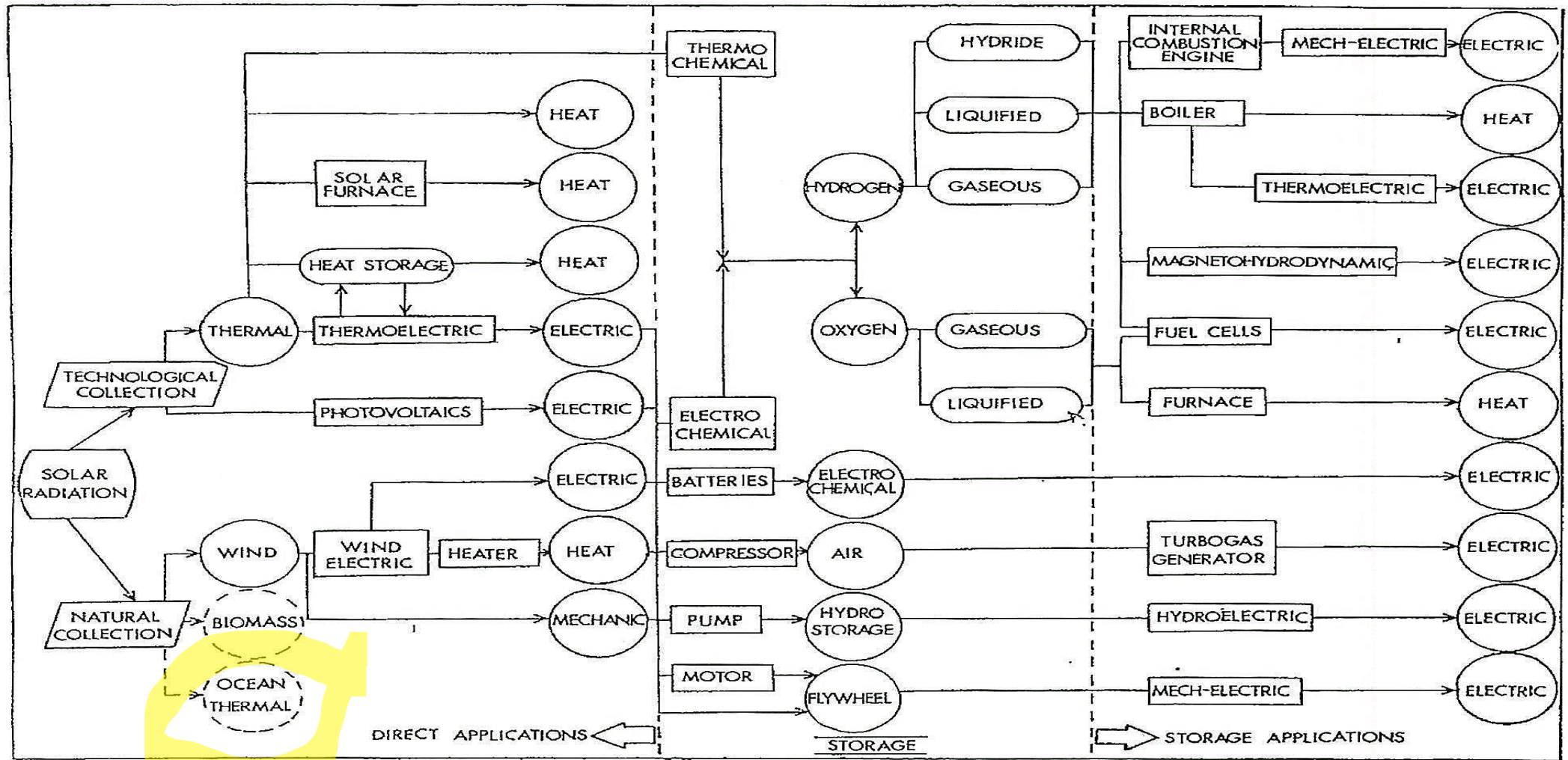


Figure 8 Solar and Wind Energy Technological Options

[Ref: Abu Bakar Jaafar (1976). "Applicability of Solar Energy Technology for Industrial Pollution Control and Production: The Case of the Primary Copper Smelting Industry". An Internship Report. Submitted to the Faculty of Miami University in partial fulfillment of the requirements for the degree of Master of Environmental Science Institute of Environmental Sciences. Oxford, Ohio. P.82]

Ref: Internship Report to US EPA Industrial Environmental Research Laboratory, Cincinnati, Ohio, USA, May 1976

East-West Center (EWC) Research Grantee (1980-84) & OTEC Student of the late Dr John P. Craven



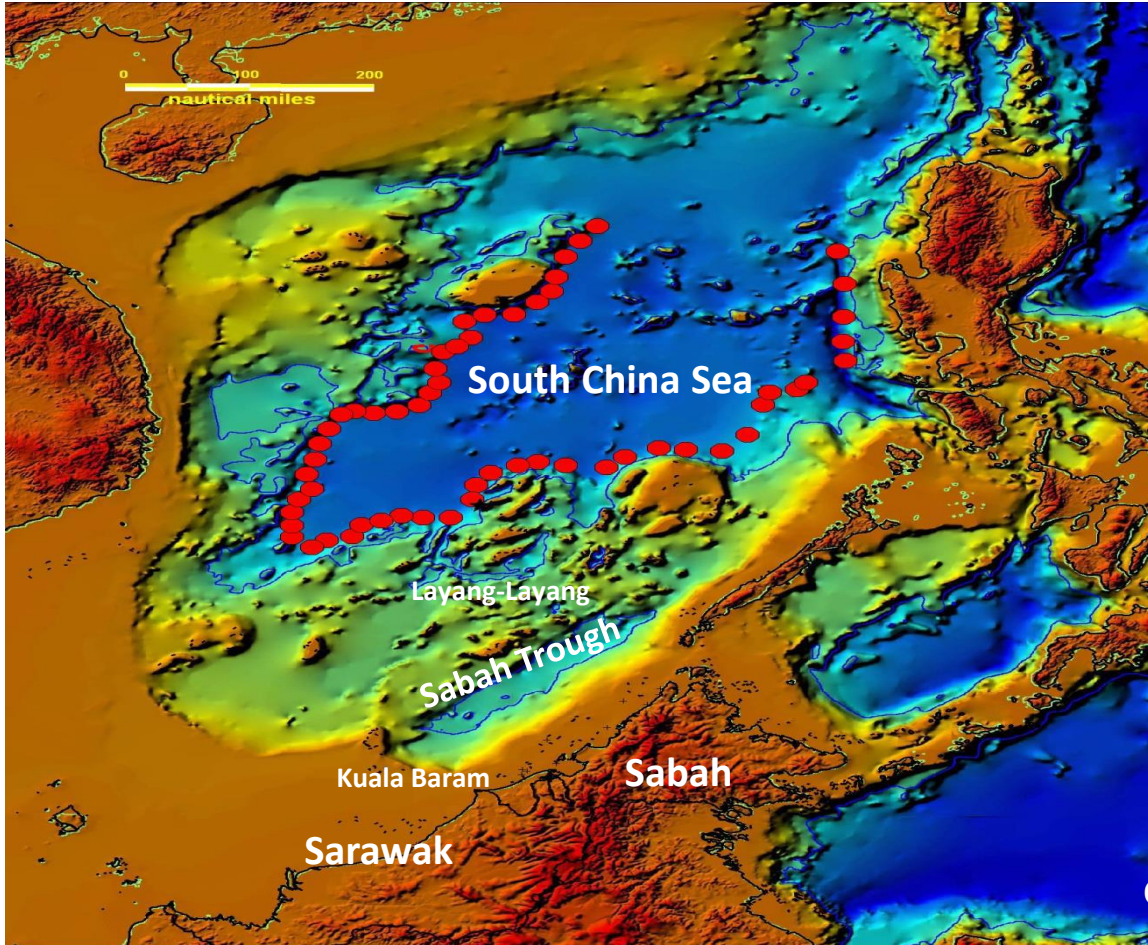
Box 6.2: John “MAC” Craven



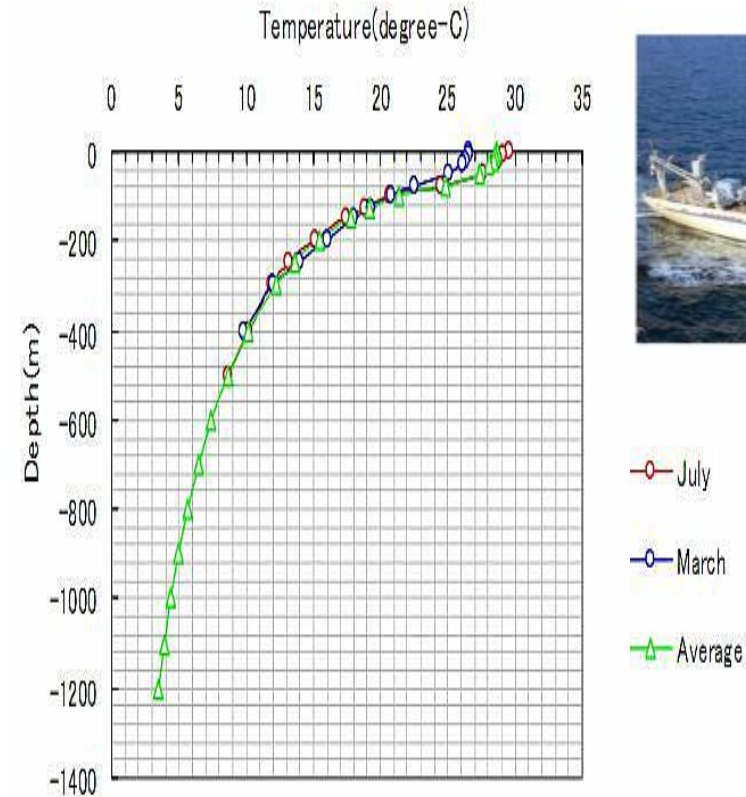
In September 1970, John Craven arrived in Honolulu to begin his new dual assignments as state of Hawaii marine affairs coordinator (MAC) and UH at Manoa dean of marine programs. Hawaii’s governor, John Burns, approved the former appointment. Craven was initially appropriated the sum of \$470 K to act on several of the recommendations set form in the document, *Hawaii and the Sea: A Plan for State Action*.

The position of MAC had been established by act 137 of the Hawaii State Legislature in January 1970 in response to a recommendation from the 1969 report *Hawaii and the Sea*. HRS chapter 218 requires the state of Hawaii MAC to “Develop plans, conduct systematic analyses, assist those departments having interests in marine affairs, coordinate those activities which involved the responsibilities of multiple state agencies, coordinate the state’s involvement in national and international efforts to investigate, develop and utilize the marine resources of the Pacific Basin” – in short, to be the go to ocean person in the state!

OTEC POTENTIAL IN MALAYSIA: OFF THE STATES OF SABAH AND SARAWAK



Temperature-Depth



TL Geospatial



Temperature Profile of Sabah Trough

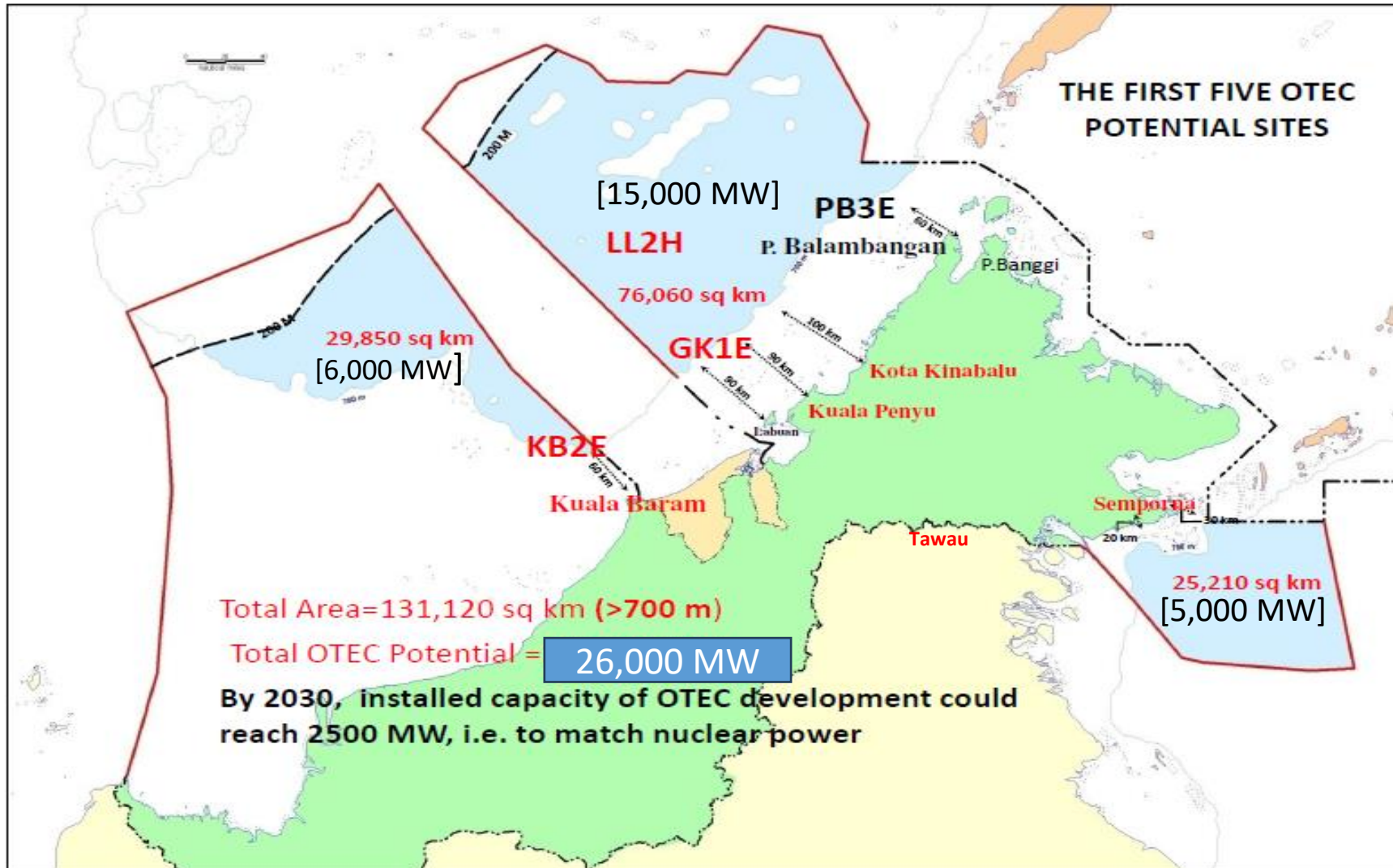
Malaysian Marine Survey of South China Sea (MyMRS)

2006-2008

4 Dec 2024 @10th IOS, Rio de Janeiro

Acceptance Remarks by A-Bakar Jaafar_6th Recipient of Uehara Prize

OTEC Potential Sites, off Sabah and Sarawak, Malaysia



IOC-WESTPAC Workshop on Marine Renewable Energy Technology and Development in the Western Pacific. **16-18 February 2012.** Renaissance Hotel, Melaka, Malaysia

- “Ocean Thermal Energy Development in Malaysia.” Paper presented by A. Bakar Jaafar
- *Met @the Workshop, for the first time, Prof Dr Yasuyuki Ikegami, IOES Director, and also my long time associate since 1997, Vice-Admiral Shin Tani of Hydrography Japan.*

DEFINING MOMENT IN KUMEJIMA-OKINAWA 4 JULY 2012 WITH MAYOR CHOKO TAIRA AND STAFF



VC-UTM @NY Hilton & UTM Ocean Thermal Energy Centre Establishment

- **17 May 2012.** A Breakfast Meeting between Prof Dato' Seri Ir Dr Zaini Ujang, Vice-Chancellor, University of Technology Malaysia (UTM), and Dato' Ir Dr A Bakar Jaafar at New York Hilton, on the need for UTM to embark on R&D and Commercialisation of ocean thermal energy conversion technology and its spin-offs.
- **1 June 2012.** Dato' Ir Dr A Bakar Jaafar joined the University of Technology Malaysia (UTM) as Visiting (later, Full) Professor.
- **3 January 2013.** Helped establish the UTM Ocean Thermal Energy Centre

Establishment of UTM Ocean Thermal Energy Centre 3 January 2013



UTM & Saga University entered into Collaboration Agreement & Visit to Kumejima 17-22 Feb 2014



AGREEMENT FOR COOPERATION ON EDUCATION AND RESEARCH
BETWEEN
OCEAN THERMAL ENERGY CENTRE,
UNIVERSITY OF TECHNOLOGY MALAYSIA (UTM-OTEC)
AND
INSTITUTE OF OCEAN ENERGY,
SAGA UNIVERSITY (IOES)

Date : 2014.2.20

Prof. Dr. Md Nor Musa
Director
OCEAN THERMAL ENERGY CENTRE,
UNIVERSITY OF TECHNOLOGY
MALAYSIA

In Witness whereof, the parties hereto hereby execute this Agreement.

Prof. Ir. Dr. Mohd Azraai bin Kassim
Deputy Vice Chancellor
UNIVERSITY OF TECHNOLOGY
MALAYSIA

Date : 2014.2.20

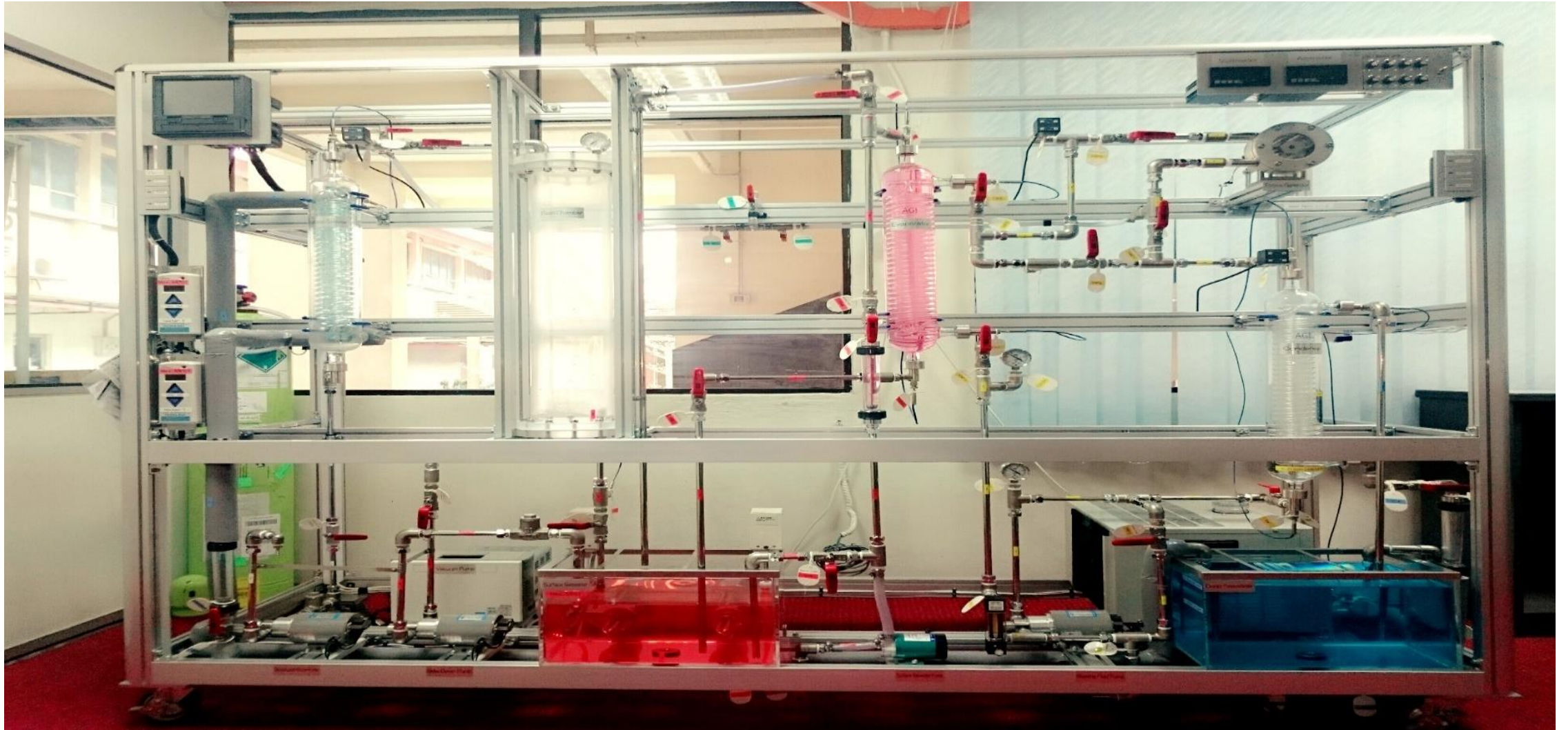
Prof. Dr. Shuichi Nagata
Director
INSTITUTE OF OCEAN ENERGY,
SAGA UNIVERSITY
JAPAN

Prof. Dr. Nakajima Akira
Vice President
SAGA UNIVERSITY
JAPAN



Officials of Saga University and University of Technology Malaysia @Saga, Kyushu, Japan, 20 Feb 2014

3W Micro-OTEC @UTM OTEC Block Q Commissioned on 22 May 2015



UTM Convened the 3rd International OTEC Symposium 1 September 2015

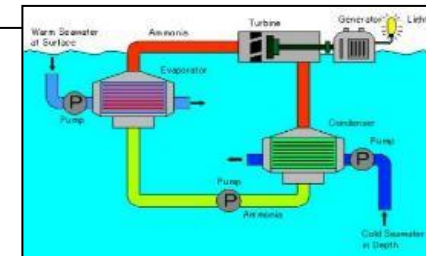
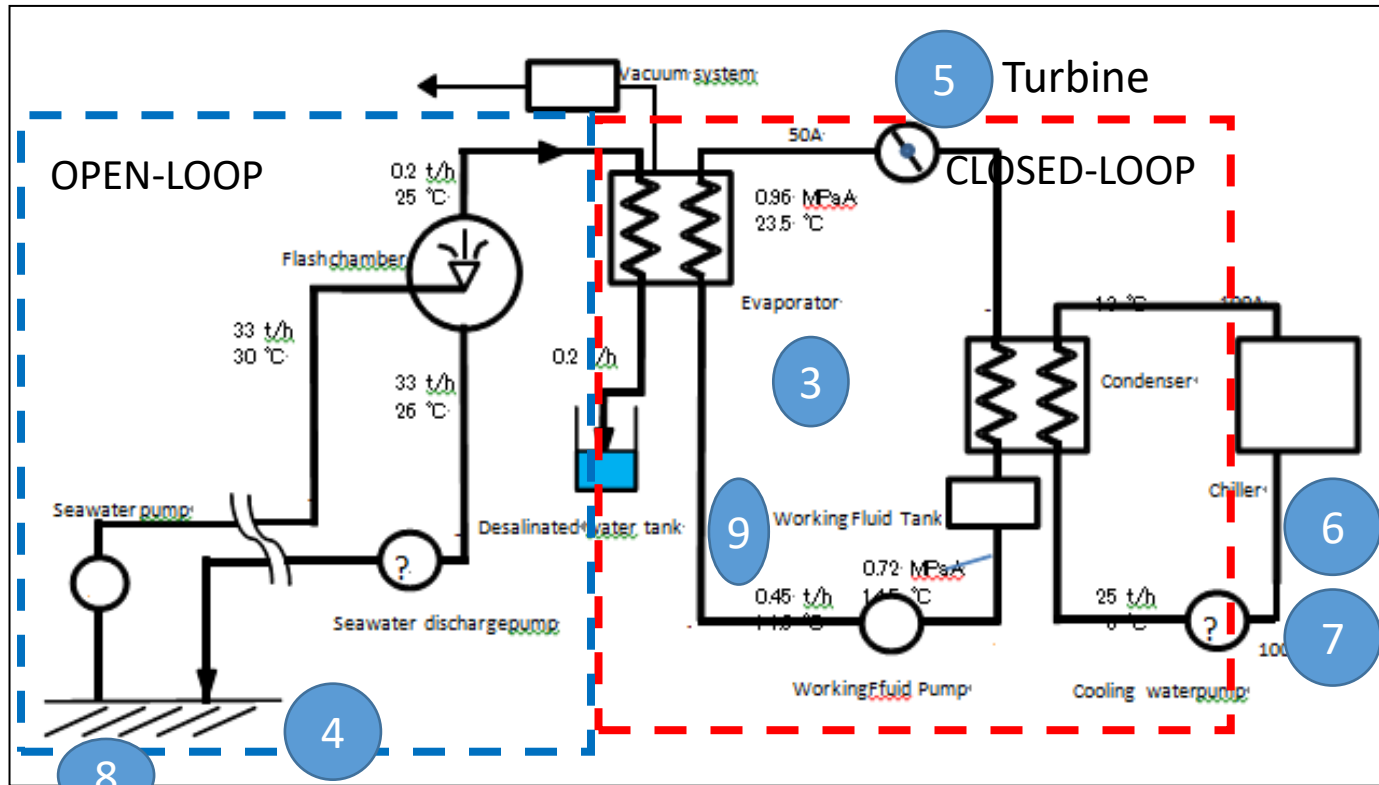


@19 October 2018, UTM and Saga University secured R&D Funding under the JST “Science and Technology Research Partnership for Sustainable Development” (SATREPS) and Malaysian Higher Education Ministry (MoHE) 2019-2024,25

https://www.jica.go.jp/english/our_work/science/satreps.html



SATREPS-OTEC Programme 2019-25: Open & Closed Cycles of Hybrid-OTEC System- Malaysian Model funded by JST & the 10 R&D Projects & MoHE



Conventional OTEC Design and Closed-System

Seaweed
Fish-
Abalone

- 10
- The Economics of Hybrid-OTEC
- 1
- Facility
- 2
- Operation



KEMENTERIAN PENGAJIAN TINGGI

SATREPS

**Science and Technology Research Partnership
for Sustainable Development Program**

SCIENCE AND TECHNOLOGY RESEARCH PARTNERSHIP FOR SUSTAINABLE DEVELOPMENT (SATREPS) PROJECT

Programme Title :

**Development of Advanced Hybrid Ocean Thermal Energy Conversion (OTEC) Technology
for Low Carbon Society and Sustainable Energy System : First Experimental
OTEC Plant of Malaysia 2019 – 2024**

Duration :

1 July 2019 – 30 June 2025 (5+1 years)

What is Hybrid OTEC (H-OTEC)?

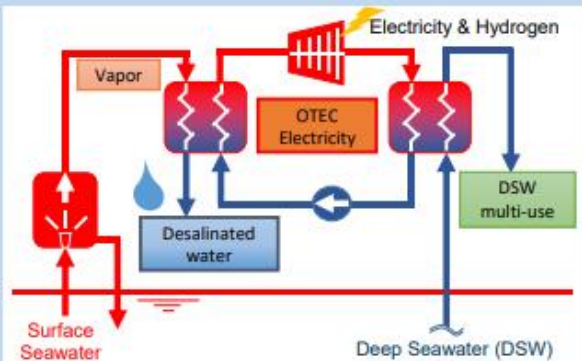
A new research test facility of OTEC with desalination to promote its commercialization. The facility is the first operational plant in the world.



What are the benefits of this project?

Promotes international and interdisciplinary research for the commercialization of H-OTEC:

- Stable renewable power generation by heat exchange between deep and surface seawater.
- Low cost production of 2 million litres of potable water per day per MW of electricity generated.
- Multi-use of deep seawater for cooling data centres, aquaculture, agriculture and cosmetics.



Hybrid OTEC (H-OTEC) system

SATREPS

Science and Technology Research Partnership
for Sustainable Development Program

For the Earth, For the Next Generation

SATREPS is a JST and JICA program for research projects targeting global issues and involving partnerships between researchers in Japan and developing countries

https://www.jst.go.jp/global/english/kadai/h3003_malaysia.html



Project Office: UTM OTEC
Block Q, Jalan Sultan Yahya Petra,
54100 Kuala Lumpur, Malaysia

Email: utmotec@utm.my

<https://www.utm.my/satreps/>

<http://www.facebook.com/utmotec/>



Development of Advanced Hybrid Ocean Thermal Energy Conversion (OTEC) Technology

for low carbon society and sustainable energy system:
First experimental OTEC plant of Malaysia



SATREPS PROJECT Ocean Thermal Energy Conversion

Research Organizations



Supported by





Visit of
JST-MoHE & JICA
Panels
@UPM-UTM OTEC Centre
5 Nov 2024

Successful Commercialisation of OTEC Projects in Sabah, Malaysia

- *Through our promotion and series of briefings at MIDA, MITI, and the Sabah Energy Commission (ECoS), The Sabah State Assembly approved on **25 April 2024** the amendment to the Sabah Energy Enactment of 2023: “Renewable Energy” includes “Ocean Thermal Energy”;*
- *On **22 August 2024**, Sabah Energy Council approved the applications of 3 companies, to which SATREPS-OTEC team had given series of presentations and support, to explore and develop 100 MW OTEC Projects each in the eastern part of Sabah. These three OTEC Projects would attract capital investment up to **USD 2.25 billion**; and*
- *Those the 1st Three Companies awarded with “Conditional Letter of Approval (CLOA)” each on **15 Oct 2024** by ECoS are: Satu Teguh International Berhad, Ocean Thermal Energy Services Sdn Bhd, Sinar Harapan Consultancy & Training Sdn Bhd.*

THE WAY FORWARD TOWARD SUSTAINABILITY

@ 1MW of OTEC Plant Supports All the 17 SDGs



Income up to RM15,000 per capita for 1000 people



Enough Clean Water for 1000 people



"Kumejima" & Kona, HI



"... as an important contribution to the maintenance of peace, justice and progress for all peoples of the world."



Aquaculture: Seaweed, Seafood etc.



5000 barrels of oil equivalent



"Highly Sustainable"



Greater Public-Private & Community Partnership



Health Drinks reduce Obesity, BP, Cholesterol.



High Quality Growth in Untapped Sectors



8,000 tons CO₂ offset



"The Ocean of Discovery"



New, Impactful



"Takuma" Capture Fishery



Improved Balance



Improved Income Distribution



OTEC Industrial Parks

Thank you



Fellow Research Leaders under the SATREPS-OTEC Programme 2019-2024,25

PROJECT 1

Facility



Prof. Dato' Ir. Dr. A. Bakar Jaafar, FASc

Universiti Teknologi Malaysia

PROJECT 2

Operational



Ts. Dr. Sathibama T. Thirugnana

Universiti Teknologi Malaysia

PROJECT 3

Heat Exchanger



Dr. Chiong Meng Soon

Universiti Teknologi Malaysia

PROJECT 4

e-DNA



Dr. Suriyanti Su Nyun Pau

Universiti Kebangsaan Malaysia

PROJECT 5

Turbine



Dr. Nik Ahmad Ridhwan Nik Mohd

Universiti Teknologi Malaysia

PROJECT 6

Seaweed



Prof. Dr. Phang Siew Moi

Universiti Malaya

PROJECT 7

Abalone



Prof. Dr. Aziz Arshad

Universiti Putra Malaysia

PROJECT 8

Sea Water Quality



DR. FERDAUS MOHAMAT YUSOFF

Universiti Putra Malaysia

PROJECT 9

Nanofluids

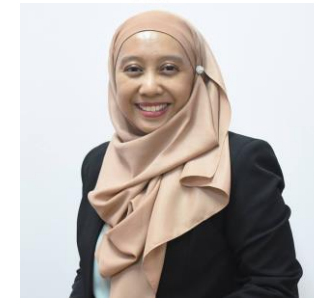


Dr Natrah Kamaruzaman

Universiti Teknologi Malaysia

PROJECT 10

Business Development



Dr. Rahayu Tasnim

Universiti Teknologi Malaysia

Figure 1: Photos of project leader

Acceptance Remarks by A-Bakar Jaafar_6th Recipient of Uehara Prize

TERIMA KASIH

to Fellow Researchers, Students, UTM OTEC Staff, and OTEC Alumni

- **UCSI:** Khairul Zahreen Mohd Aroff, Ong Kuan Hung, Phang Siew Moi, Teoh Swee Sen,
- **UiTM:** Mohd Zaki Zainal Abidin, **UKM:** Ahmad Aleef Amirul Anuwa, Fatin Qurratu'aini Zaini, Gires Usup, Herryawan Ryadi Eziwar Dyari, Nur Khayyirah Zamri, Suriyanti Su Nyun Pau **UM:** Kishneth Palaniveloo, Nurfatin Solehah Husin, Yeong Hui Yin
- **UMT:** Mohd Fadzil Md Akhir, Ernest Kok Poh Heng, Siti Tafzilmeriam Sheikh Abdul Kadir
- **UMS:** Abentin Estim, Mohd Fikri Akmal Mohd Khodzori,
- **UPM:** Ahmad Fikri Abdullah, Ahmad Zaharin Aris, Azim Haziq Zainuddin, Aziz Arshad, Fatimah Md Yusoff, Ferdaus Mohamat Yusuff, Fatin Emilya Wahida Pauji, Mohd Fadhil Syukri Ismail, Mohd Salleh Kamaruddin, Mohd Shazwan Jamhari, Moveyndiran Gopal, Natrah Fatin Mohd Ikhsan, Nora Aznieta Abd Aziz, Nur Amiera Kamarudin, Nur Leena Wong, Nurul Nadiah Masrialah
- **UTM:** Abdul Shukur Mohamad, Ahman Aiman Azmi, Ahmad Tajuddin Ahmad, Aidil Danish Nor Azam, Ainullotfi Abdul Latif, Azrin Ariffin, Akihiko Hariyama, Chan Wai Loon, Chiong Meng Soon, Fatimah Salim, Hafizuddin Mohamad Noor, Jasmine Michael, Kamil Hafizudin Kamal Azam, Kimiko Masuda, Mahadir Mohammad, [Mas Bambang Baroto], Mastura Ab Wahid, Mohammad Shafiq Rahmat, Mohd Fitri Mohd Yakub, Mohd Khairi Abu Husain, Mohd Rais Ramli, Mohd Shamsuri Khalid, Muhammad Farhan Azwan, Muhammad Fikri Mohd Rawi, Muhammad Ridhwan Mohd Ruslan, Muhammad Syahir Mansor, Natrah Kamaruzaman, Norazila Othman, Norazreen Samsuri, Nik Ahmad Ridhwan Nik Mohd, Noor Irza Mohd Zaki, Nur Fathirah Mohd Rahimi, Nurul IHuda Ahmad, Nur Syahira Natasha Azmi, Nurul Izzah Ahmad Shakri, Paramees Rao Ramachandran, Phua Hui Chi, Rahayu Tasnim, Riocahyadi Fitra Ahmad Nizam, Saidah Aziz, Saiyidatul Saadiah Ahmad Nizam, Sathia T Thirugana, Shabudin Mat, Shamsul Sarip, Shuhaimi Mansor, Siti Norasyiqin Latif, Srithar Rajoo, Subhashish Banerjee, Syakirah Suhaimi, Tan Ming Hui, Wan Zaidi Wan Omar

Professor, UTM Faculty of Artificial Intelligence

Research Fellow & Founding Director, UTM Ocean Thermal Energy Centre [1 June 2013-31 May 2021, 30 May 2025];

Chairman, Malaysian Green Technology Corporation (MGTC) [4 October 2019-31 May 2022]

2012-13 Visiting Professor of UTM Perdana Centre of RFTI

1997-2012 Nominated & Elected-Member of UN CLOS-CLCS, New York

1995-1996 Senior Processing Controller, Kumpulan Guthrie Berhad

1990-95 Director-General, Department of Environment (DOE), Malaysia

1988-89 DOE Deputy Director-General (Development), 1986-87 DOE Director (Operations)

1985 EPU-Industry Section Principal Assistant Director (Environment S&T)

1980-84 East-West Center Grantee @Environment & Policy Institute, Honolulu, HI, USA

1976-1980 DOE Principal Assistant Director (Water Quality)

1975-76 Staff Engineer, US EPA Office of R&D, Industrial-Environmental Research Laboratory, Cincinnati, Ohio USA

1973-74 Factories & Machinery Inspector, Department of Factories & Machinery (now, DOSH)

1969-72 The University of Newcastle, NSW, Australia

1965-68 Sekolah Menengah Alam Shah, Kuala Lumpur

1962-64 Sekolah Menengah Laki-Laki Bandar Melaka @Gajah Berang Secondary English School. Melaka

1956-61 Sekolah Rendah Kebangsaan Kandang, Melaka

Award Recipient of:

2024 Uehara Prize Award of Ocean Thermal Energy Association (OTEA)

2023 World Renewable Energy Network (WREN) Pioneer Award

2022 Honorary Doctorate in Science (The University of Newcastle NSW Australia)

2018 Tokoh Alumni Sekolah Alam Shah

2017 Honorary Doctorate in Science (Universiti Malaysia Terengganu)

2016, 2019 *Anugerah Perkhidmatan Cemerlang*, Universiti Teknologi Malaysia

2012 *Anugerah Bukit Katil Cemerlang* sempena MELAKA 750 Tahun, Anugerah Tokoh Profesional

2011 Convocation Medal of The University of Newcastle NSW Australia

1993 DPMP by Raja Perlis, 1992 JSM Yang DiPertuanAgung, 1985 KMN by Yang DiPertuan Agung



OCEAN THERMAL ENERGY CENTRE

[www.otec.utm.my]



Mobile: +60 123207201

E-mail: bakar.jaafar@gmail.com