

**ANALYSIS ON THE WAVE ENERGY OF
TERENGGANU COASTAL AREA AND
PULAU LANGKAWI, MALAYSIA**

HAFIZAL MUSTAFFA

**FACULTY OF MARITIME STUDIES AND MARINE SCIENCE
UNIVERSITI MALAYSIA TERENGGANU**

2012

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Analysis on the wave energy of Terengganu coastal area and
Pulau Langkawi, Malaysia / Hafizal Mustaffa.

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UNIVERSITI MALAYSIA TERENGGANU (UMT)
21000 KUALA TERENGGANU

1100087331		

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**ANALYSIS ON THE WAVE ENERGY OF TERENGGANU
COASTAL AREA AND PULAU LANGKAWI, MALAYSIA**

By

HAFIZAL BIN MUSTAFFA

(UK18109)

**Research report submitted in partial fulfillment of
requirements for award of the degree of
Bachelor of Applied Science (Maritime Technology)**

**DEPARTMENT OF MARITIME TECHNOLOGY
FACULTY OF MARITIME STUDY AND MARINE SCIENCE
UNIVERSITY MALAYSIA TERENGGANU**

2012



DEPARTMENT OF MARITIME TECHNOLOGY

FACULTY OF MARITIME STUDIES AND MARINE SCIENCE
UNIVERSITI MALAYSIA TERENGGANU

**DECLARATION AND VERIFICATION REPORT
FINAL YEAR RESEARCH PROJECT**

It is hereby declared and verified that this research report entitled: Analysis On The Wave Energy Of Terengganu Coastal Area and Pulau Langkawi, Malaysia by Hafizal Bin Mustaffa, Matric No. UK 18109, have been examined and all errors identified have been corrected. This report is submitted to the Department of Maritime Technology as partial fulfillment towards obtaining the degree of Bachelor of Applied Science (Maritime Technology), Faculty of Maritime Studies and Marine Science, Universiti Malaysia Terengganu.

Verified by:

.....
Principal Supervisor

Name: **Prof.Madya Dr. Fadhli Bin Ahmad**

Official stamp:

ASSOC.PROF. DR. MOHAMMAD FADHLI AHMAD
HEAD
DEPARTMENT OF MARITIME TECHNOLOGY
FACULTY OF MARITIME STUDIES AND MARINE SCIENCE
UNIVERSITI MALAYSIA TERENGGANU (UMT)
21030 KUALA TERENGGANU

Date:15/7/12.....

.....
Second Supervisor

Name: **Prof Dr. Mohd Lokman Bin Husain**

Official stamp:

PROF. DR. MOHD LOKMAN BIN HUSAIN
Pengarah
Institut Oseanografi
Universiti Malaysia Terengganu
21030 Kuala Terengganu, Terengganu

18 JUL 2012
Date:

.....
Head of Department of Maritime Technology

Name: **Prof.Madya Dr. Fadhli Bin Ahmad**


Official stamp:

ASSOC.PROF. DR. MOHAMMAD FADHLI AHMAD
HEAD
DEPARTMENT OF MARITIME TECHNOLOGY
FACULTY OF MARITIME STUDIES AND MARINE SCIENCE
UNIVERSITI MALAYSIA TERENGGANU (UMT)
21030 KUALA TERENGGANU

Date:15/7/12.....

DECLARATION

I hereby declare that this thesis entitled “Analysis On The Wave Energy Of Terengganu Coastal Area and Pulau Langkawi, Malaysia” is the title of my own research except as cited in the references.

Signature : 

Name : Hafizal Mustaffa

Matric Number : UK 18109

Date : 4th July 2012

ACKNOWLEDGEMENTS

Alhamdulillah, all praise to Allah for strengths and His blessing in completing this thesis. I am heartily thankful to my supervisor, Prof Madya Dr. Mohammad Fadhli bin Ahmad, whose give me encouragement, guidance and support from initial to the final level, enabled me to develop an understanding of the study. His wide knowledge and logical way of thinking have dedicated me to perform the best in this research. Without him this thesis would not be completed successfully in time.

I also would like to thank Prof Dr. Mohd Lokman bin Husain as my co-supervisor, this thesis is unable to produce without his guidance. In addition, I would like to thank Institute of Oceanography (INOS) UMT staffs, Mr. Roslan bin Fatih, Mr. Shukri bin Arshad, Mr. Fathy Kamil bin Mohd Fadzil, Mr. Subarjo Merehojono and Mr. Azizi bin Ali for their cooperation when helping me during sampling section. Without them of course this sampling cannot be made for my data collection.

Besides that, I would like to express my personal thank to Dr. Mohammad Faisal as my lecture for this subject that had help me a lot when dealing with the thesis especially in my writing and presentation. I am grateful to my friend for their encouragement and help that support me when dealing with this research.

Last but not least, I would like to take this opportunity to express my deepest gratitude for a constant support, emotional understanding and love that I received from my family especially to my mother, Rohani bt Mohd and my father, Mustaffa bin Jusoh that not only support me in financially but also spiritually.

Lastly, I offer my regards and blessing to all of those who supported me in any respect during the completion of the project.

ANALISIS TENAGA OMBAK DARI KAWASAN PANTAI TERENGGANU DAN PULAU LANGKAWI, MALAYSIA

ABSTRAK

Kebelakangan ini 93% daripada penggunaan tenaga dunia bergantung kepada tenaga yang tidak boleh diperbaharui seperti bahan api, gas asli dan arang batu. Bahan api fosil yang dibakar mencemari atmosfera disebabkan oleh kombinasi gas yang berlaku secara berterusan dan akan menyebabkan kesan negatif kepada alam sekitar dan manusia. Penyakit seperti kanser dan penyakit kulit adalah antara kesan daripada gas tercemar ini. Untuk mengatasi keadaan ini, pembangunan tenaga boleh diperbaharui seperti solar, angin dan ombak dipergiatkan di banyak negara dan juga di Malaysia. Malaysia, negara yang dikelilingi air mempunyai keupayaan untuk membangunkan penukar tenaga menggunakan ombak dari lautan. Keistimewaan ombak di Malaysia adalah ia menjana ombak tinggi, angin kencang dan ombak dengan julat yang besar disebabkan oleh musim tengkujuh. Ini menjadikan Malaysia mempunyai keupayaan dalam menghasilkan tenaga ombak sebagai tenaga alternatif. Tujuan kajian ini adalah untuk menganalisis tenaga ombak kawasan pesisir pantai Terengganu serta Pulau Langkawi dan menentukan potensi kawasan dalam membangunkan penukar tenaga ombak. Kaedah-kaedah yang akan digunakan untuk mengumpul data dalam kajian ini adalah dengan pensampelan dan analisis data ketinggian ombak dan masa puncak di lokasi yang disasarkan dengan menggunakan instrumen yang dipanggil AWAC (Ombak Akustik dan Perakam Semasa). Persamaan fluks tenaga bukan sinus akan digunakan untuk menentukan pengeluaran fluks tenaga melalui ketinggian ombak dan masa puncak. Hasil yang dijangka untuk kajian ini adalah kawasan pesisir pantai Terengganu dan Pulau Langkawi akan mampu dalam membangunkan penukar tenaga ombak.

ANALYSIS ON THE WAVE ENERGY OF TERENGGANU COASTAL AREA AND PULAU LANGKAWI, MALAYSIA

ABSTRACT

Nowadays 93% of world energy consumption relies on non renewable energy such as fuel, natural gas and coal. Fossil fuel that be burned is polluted to the atmosphere due to the combination of the gases that occurred continuously and it will cause negative effect to the environment and human itself. Diseases such as cancer and skin disease are the most well known as the effects from the polluted gases. To overcome this situation, development of renewable energy such as solar, wind and wave are intensified in many countries and also in Malaysia. Malaysia, which is country surrounded by water has a capability to develop energy converter using wave from ocean. Specialties of wave in Malaysia are it generates high current, strong wind and large scale of wave due to the monsoon season. This makes Malaysia has capability in producing wave energy as it alternative energy. The purpose of this study is to analyse on the wave energy of Terengganu coastal area and Pulau Langkawi and to determine the potentiality of the areas in developing wave energy converter. Methods that will be used for data collection in this study are by sampling and data analysis of wave height and time peak at targeted locations using an instrument called AWAC (Acoustic Wave and Current Recorder). Non-sinusoidal energy flux equation will be used to determine the production of energy flux due to wave height and time peak. Expected result for this study is Terengganu coastal area and Pulau Langkawi will capable in developing wave energy converter.