

ISSN 1978 - 5933

PROCEEDING

FIRST ANNUAL
INTERNATIONAL
SEMINAR 2007

ON
**GREEN TECHNOLOGY
AND ENGINEERING**



UNIVERSITAS MALAHAYATI
BANDAR LAMPUNG
INDONESIA

VOLUME I



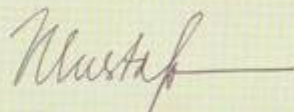
FIRST ANNUAL UNIVERSITAS MALAHAYATI
INTERNATIONAL SEMINAR
ON GREEN TECHNOLOGY AND ENGINEERING (ISGTE) 2007

CERTIFICATE OF PARTICIPATION

This is to certify that

DR. IR. NUKMAN, M.T

PARTICIPATED AND PRESENTED in the 1 st ISGTE 2007 International Seminar
on Green Technology and Engineering (ISGTE) Universitas Malahayati
held from July 25 – 26, 2007 in Bandar Lampung, Indonesia



MUSTOFA USMAN, M.A. Ph.D
Rector Universitas Malahayati



R. AGUNG EFRIYO HADI, M.Sc.
Seminar Chairman

PROCEEDING

FIRST ANNUAL UNIVERSITAS MALAHAYATI ON GREEN TECHNOLOGY AND ENGINEERING

On July 25 – 26th, 2007

Editor :

1. Drs. P. Nasoetion, M.Si
2. Dewi Sartika, S.TP, M.Pd, M.Si
3. Ir. Yan Juansyah, DEA
4. Emy Khikmawati, S.T
5. Eka Purnama Sari, S.Si, M.Si
6. Rina Febrina, S.T
7. Eleny Andarna, S.T
8. Gustya Nofriady N.
9. Nelna Atiza
10. Sugianto



UNIVERSITAS MALAHAYATI
BANDAR LAMPUNG

2007

FOREWORD

The International Seminar on Green Technology and Engineering 2007 (ISGTE 2007) Faculty of Engineering, Universitas Malahayati was conducted on 25–26 July 2007. The Seminar was organized by Faculty of Engineering and collaborated with International Islamic University Malaysia (IIUM) and University Putra Malaysia (UPM).

The participants of the seminar are about 200 participants come from more than 20 higher institutions, among others: Unhas, ITS, UI, Tri Sakti, ITB, Unila, Unsri, Unibraw, UPM (University Putra Malaysia), IIUM (International Islamic University Malaysia), UTM University Technology Malaysia, and others, which reflect the importance of Green Technology and Engineering. The concept of sustainable development based on the environmental firmament nowadays has become central issues in many development as well as developed countries. These issues are very important and the topic of this issue can create awareness of the societies to involve in the development of their country toward the sustainable development.

The seminar provide platform for researchers, engineers and academicians to meet and share ideas, achievement as well as experiences through the presentation of papers and discussion. These events are important to promote and encourage the application of new techniques to practitioners as well as enhancing the knowledge of engineers with the current requirements of analysis, design and construction of any engineering concept. Seminar also functions as platform to recommend any appropriate remedial action for the implementation and enforcement of policies related to environmental engineering fields. Furthermore, this seminar provides opportunities to market faculties' expertise in the field environmental engineering, civil engineering, structural engineering, mechanical engineering and so on.

On behalf of Steering Committee, we would like to express our deepest gratitude to the Foundation Alih Technology, Rector Universitas Malahayati, International Advisory Board members, and also to all participants. We are also grateful to all organizing committee and all the reviewers, without whose efforts such a high standard for the seminar could not have been attained. We would like to express our deepest gratitude to the Faculty of Engineering Universitas Malahayati for conducted such seminar. This is the first International Seminar for the Faculty and we expect that this is will become annual activity for the Faculty of Engineering.

Bandar Lampung, 25 July 2007

Agung Efriyo Hadi
The Organizing Chairman

**FIRST ANNUAL
UNIVERSITAS MALAHAYATI
INTERNATIONAL SEMINAR
ON GREEN TECHNOLOGY AND ENGINEERING**

On July 25 – 26th, 2007

(Steering Committee)

Dr. Agus Geter Sucipto
Assoc. Prof. Dr. Riza Muhida
Assoc. Prof. Dr. Wahyudi
Drs. P. Nasoetion, M.Si
Dr. Hardoyo, M.Eng

Dr. Asnawi Lubis
Dr. Eng. Admi Syarief
Assoc. Prof. Dr. Robiah Yunus
Agung E. Hadi, M.Sc
Prof. Dr. Ismail bin Mohd.
Assoc. Prof. Dr. Ir. Mohd. Sapuan B. Sahit

(Organizing Committee)

Chair person	:	Ir. Drs. Agung Efriyo Hadi, M.Sc
Vice Chairperson	:	Drs. P. Nasoetion, M.Si
Secretary	:	Rina Febrina, S.T
Treasurer	:	Eka Purnama Sari, S.Si, M.Si
Special Events	:	Dewi Sartika, S.TP, M.Pd, M.Si Fither Romilado, S.T
Facility and Accomodation	:	Ir. Yan Juansyah, DEA
Consumption	:	Emy Khikmawati, S.T
Documentation and Publication	:	Tumpal Ojahan R, S.T

CONTENT

HALAMAN JUDUL

FOREWORD i

CONTENT ii

KEYNOT SPEAKER

Genetic Algorithm And Engineering Optimizations In Logistic 1

Green Nanotechnology Using SEM And AFM 11

Green Energy From Biomass Waste (Energi Hijau Dari Limbah Biomasa) 18

Evaluasi Green Productivity Pada Proses Frosting Pada Perusahaan Gelas Lampu Di Surabaya 25

Thin Film Solar Cells: Prospect And Challenges 38

Alternative Diesel Fuel And Synthetic Lubricant From Palm Oil 47

PAPER

TEKNIK MESIN

The Influence Of Intermediate Tangent On Flexibility And Stress Intensification Factors Of Shaped Steel Piping Elbows 58

Waste To Energy In Poms Biomass Power Plans In Kota Pinang Cluster North Sumatra – Indonesia 66

Application Of Taguchi Method In The Optimization Of Turning Parameters For Surface Roughness 73

Integrated Gasification Combined Cycle (Igcc) A Clean Coal-Fueled Power Plant Technology 81

Simulation Of Thermal Efficiency Of Steam Power Plant Bukit Asam By Using Newton Raphson Method 90

Study Of Two High Starch Cassava Lines And Two Low Starch Cassava Lines As Raw Materials For Bioethanol In The Laboratory Scale 101

Study Of Waste Of New Energy Bioethanol Use Cassava And Molasses As Raw Materials 109

Effect Of Mist Coolant (Mql) On Tool Life And Cutting Force When Milling Of Ti6al4v Using Coated Tungsten Carbide	112
Ketahanan Energi Nasional Melalui Pemanfaatan Energi Surya Dalam Mendukung Energi Yang Bersih Dan Ramah Lingkungan	123
Clean Coal Technology: Pengurangan Kadar Abu Dan Sulfur Dari Batubara Dengan Metoda Aglomerasi Air-Minyak Sawit	130
Optimation Biomass Gasification With Improvement Of Gas Cleaning System	141
TEKNIK LINGKUNGAN	
Solid Waste Compactor	146
The Effect Of Fortification Technique On Rice Noodle Processing On Iron Retention <i>In-Vivo</i> . ²	151
Penggunaan Geolistrik 2-D Untuk Pemetaan Zona Air Tanah Tekontamaninasi (Studi Kasus Daerah Palembang Utara Dan Sekitarnya, Kotamadya Palembang, Sumatera-Selatan).	159
Kualitas Air Tanah Bebas Di Pesisir Teluk Lampung Propinsi Lampung	170
Analisa Tingkat Kehilangan Air Dengan Penerapan Metode DMA (District Meter Area) Studi Kasus Pdam Kota Solok	177
Pengolahan Limbah Cair Tekstil Menggunakan Elektrokoagulasi	186
Konsep Teknologi Bersih Pengolahan Limbah Industri Tepung Tapioka Rakyat	197
Perkembangan Teknologi Lingkungan Dan Kondisi Pengelolaan Lingkungan Di Indonesia	201
Peranan Bioteknologi Pada Pengolahan Limbah Biomasa	210
The Effect Of Supplementation Technique On Rice Noodle Processing To Biological Value In-Vivo	215
Kajian Penerapan Alat Pencacah Sampah Pada Proses Pengolahan Sampah Organik	224
TEKNIK SIPIL	
Accident Cost Analysis In Bandar Lampung	230

Innovations In Flood Control Project For Tanjung Karang Pusat Area – Lampung Province	242
The Performance Of Asphalt Mixes Containing Granular Buton Natural Asphalt	247
Research On Influence of The Grain Form To The Mechanical Characterization Value	257
The Design and Modeling Large Direct Shear Box Test Apparatus	264
Research On Industrial Waste As Part Of Construction Material In Lampung University	270
Alternative For Supporting Environmentally Drainage System	279
Observations Storage For Reduce Floods In Tulang Bawang River	282
The Effects Of Environmental Aspects In Choosing The Location Of Housing (Case Study Of Middle-Lower Housing)	293
Study Of Physical Characteristics Of Vases Of Mont-Saint-Michel And Calais In France	298
Green Infrastructure Di Indonesia, Konsep Dan Implementasi	307
Green Port, Keharusan Bagi Pelabuhan Internasional Menuju Hub Port	312
Analisis Emisi Gas Buang Kendaraan Bermotor Sebagai Akibat Perkembangan Teknologi Transportasi Di Wilayah Perkotaan	320
Pengendalian Air Permukaan Untuk Mereduksi Debit Limpasan Dengan Menggunakan Sistem Resapan	328
Analysis Bamboo Woven Wall Effect Of Cyclic Loading Analisis Dinding Anyaman Bambu Akibat Beban Siklik	335
Perhitungan Daya Tampung Beban Limbah Cair Di Daerah Aliran Sungai (Das) Sekampung	349

TEKNIK INDUSTRI

A Fuzzy Multiobjective Programming Approach- Goal Programming Model For Optimizing Industrial Waste Management Strategy	361
Solving Traveling Salesman Problem By Hybridized Genetic Algorithm	373

Pengembangan Algae Sebagai Bahan Bakar Nabati (Bbn): Prospek Dan Kendala Pengembangannya	382
Suatu Model Konseptual Dss (<i>Decision Support System</i>) Pada Scm (<i>Supply Chain Management</i>) Untuk Pengadaan (<i>Procurement</i>) Dan Pengendalian Persediaan (<i>Inventory Control</i>) Benih Padi	391
Prospek Pengembangan Penanaman Jarak Pagar Sebagai Sumber Energi Alternatif Baru Di Provinsi Lampung	398
Identifikasi Bahaya Dan Penetapan Titik Kendali Kritis Pada Sistem Keamanan Pangan	403
Andil Industri Dalam Upaya Menciptakan Lingkungan Bersih Melalui Produksi Bersih (Kajian Produksi Bersih Di Berbagai Industri)	411
TEKNIK KIMIA	
Konversi Limbah Padat Pabrik Gula (Bagas) Menjadi Furfural Dan Gula Fermentasi	416
Proses Isolasi Selulosa Dari Residu Rumput Laut <i>Eucheuma Spinossium</i> Dengan Pelarut Sodium Hidroksida (Naoh)	424
Metanolisis Cpo Secara Kontinyu Menggunakan Novel Stirred Fixed Bed Reactor	430
Methanolisis Cpo Dengan Menggunakan Reaktor Alir Tangki Berpengaduk (Ratb/Cstr) Pada Pembuatan Biodiesel Secara Kontinyu (Pengaruh Temperatur Dan Jumlah Katalis Terhadap Konversi)	436
TEKNIK ARSITEKTUR	
Green Building : Integrated Environmental Design Consciousness	440
TEKNIK PERTAMBANGAN	
Identifikasi Posisi Air Tanah Menggunakan Metoda Geolistrik Tahanan Jenis	448