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Outline

- Introduction to industry 4.0
- The role of science and technology
- Research on develop new processes and systems, to ensure more sustainable manufacture

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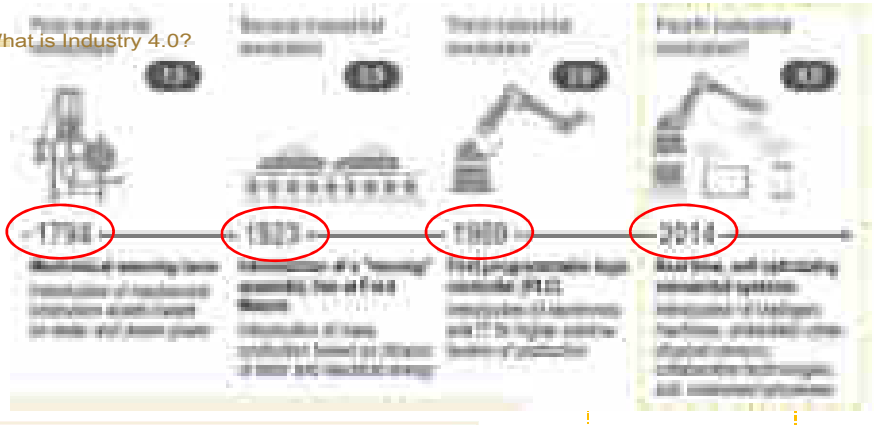
Technology advancement pushes the new revolution of the industry, which is focused in “Connectivity”

What is Industry 4.0?



Higher Education Institutions Interpretations

More focused on the uncertainties created by the new technologies

- MOOC (Massive Online Open Course)
- New Study Program Focuses on Industry 4.0 Components
- Block-Chains Technology for Educations

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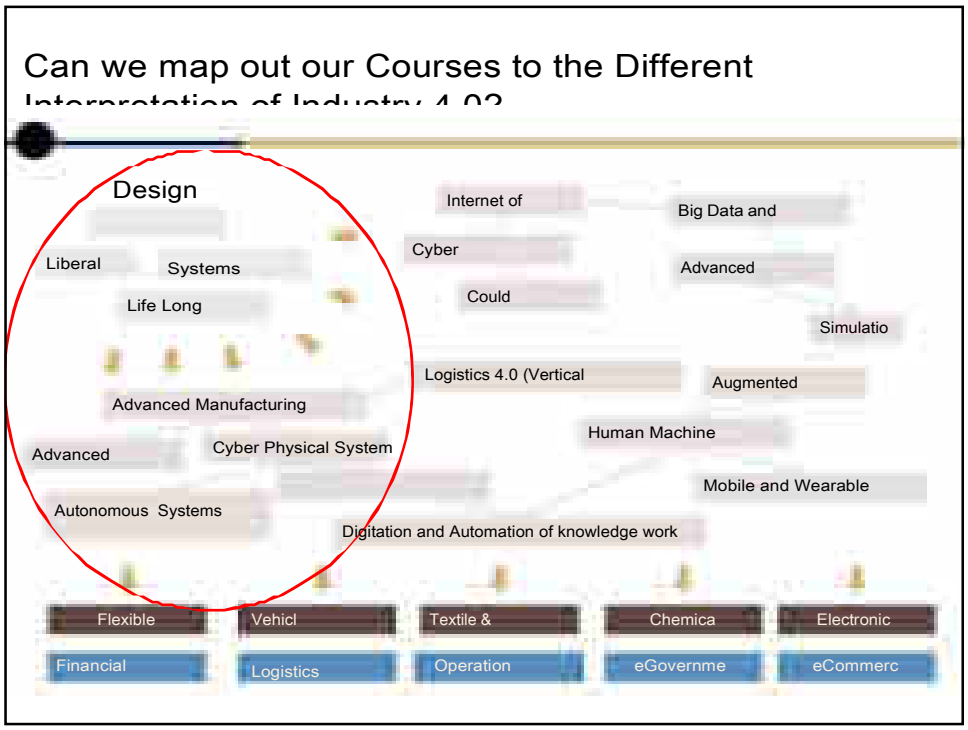

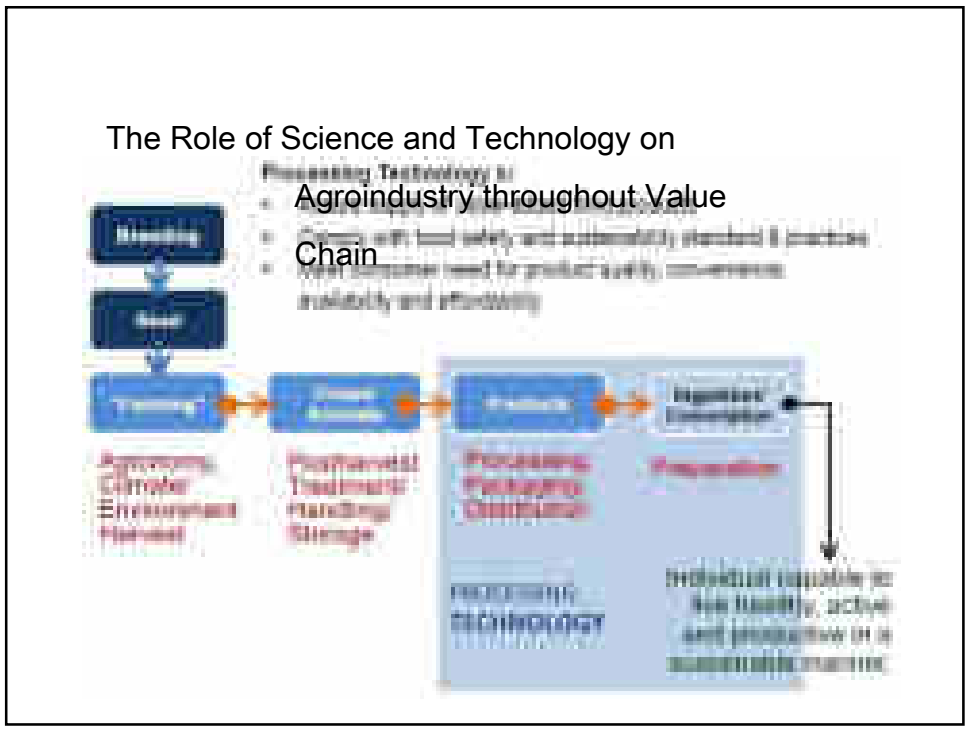

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To develop new processes and systems, to ensure more sustainable manufacture

- To further develop precision engineering to reduce and recycle water and heat across all the unit operations of conversion, cleaning and preservation. (This may include novel unit operations, such as high pressure, PEF, ultrasound etc, where their extra efficiencies can be utilized.)
- To develop conversion processes which cause minimal damage to reactive micronutrients
- To develop low temperature conversion via enzymic and fermentative processes
- To explore the relative merits of centralized versus distributed manufacture for sustainability for example, by scaling down existing processes for local applications

Precission Engineering

DEVELOPMENT OF MARINE MICROALGAE CULTIVATION SYSTEMS FOR BIOFUEL

Dana : USD 40.000

Peneliti : Mujizat Kawaroe, Tri Prartono, Adriani Sunuddin,

4th Year Project IPB

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Low Temperature Conversion

To eliminate material waste in

- To improve storage stability of primary produce, to cope with inefficient transport and downstream use; by developing low energy drying, chill and frozen distribution using solar energy and other forms of sustainable power
- To develop rapid sensors of : primary product condition and safety; eating quality and nutrient status of finished products.

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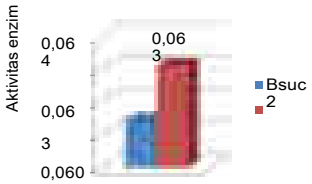
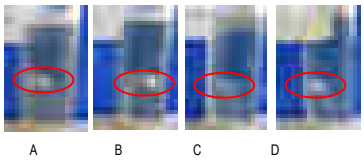
Sustainable Energy Production

PRODUKSI ENZIM HIDROLITIK MIKROBA LAUT DAN KEGIATAN SELEKSI,

(dari kiri ke kanan) isolat bakteri selulolitik PMPy dan



Aktivitas agarolitik crude enzim BSUC2 dan BSUC4



Aktivitas fermentasi sel khamir hasl mutasi

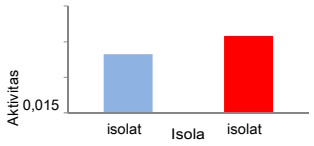
diadaptasi (kiri atas), dan setelah 264 kali adaptasi cerevisia sebelu diadaptasi (kiri bawah) dan setelah 264 kali

Peneliti : Mulyorini Rahayuningsih, Dwi Setyaningsih

Sustainable Energy Production

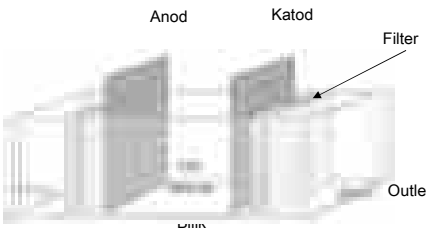
PENINGKATAN PRODUKSI BIOETANOL DARI HIDROLISAT Eucheuma cottonii MELALUI TEKNIK HIDROLISIS ENZIMATIS, MUTASI KHAMIR DAN DESALINASI HIDROLISAT

Isolasi dan Produksi Enzim



Aktivitas Crude Enzim

Perubahan morfologi sel setelah proses



Desain Elektrodialisator untuk

Peneliti :, Dwi Setyaningsih, Uju, Dinamella

info.sbrc@gmail.co

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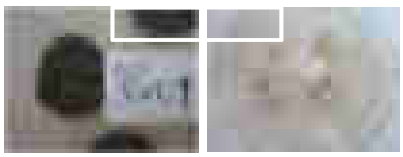
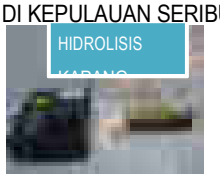
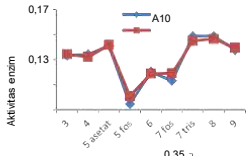
Sustainable Energy Production

DOMESTIKASI DAN SELEKSI MAKROALGA MERAH (RED ALGAE) SEBAGAI PENGHASIL BIOETHANOL DI KEPULAUAN SERIBU, DKI JAKARTA

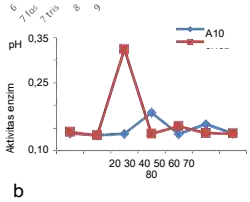






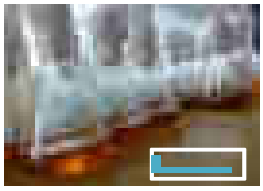
a

Karakteristik enzim terhadap



b

SDS Page enzim



Peneliti:

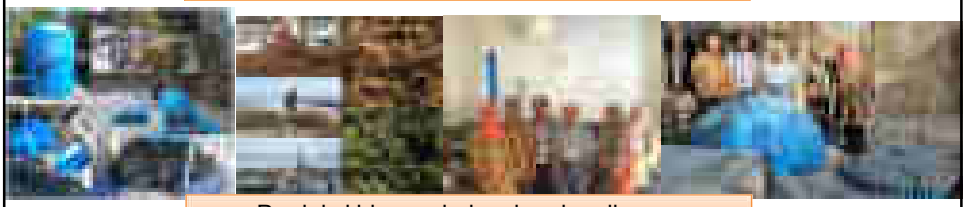
Dana : Rp

info.sbrc@gmail.co

Sustainable Energy Production

TEKNOLOGI BIODEGRADASI ANAEROB MAKROALGA LAUT UNTUK

Produksi biogas dari makroalga di



Produksi biogas dari makroalga di Makassar

Dana : Rp

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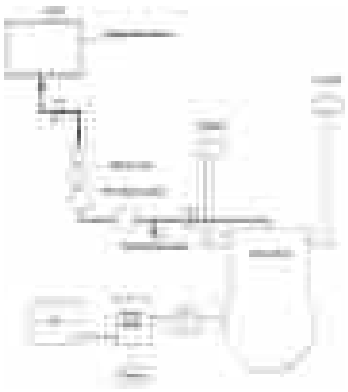
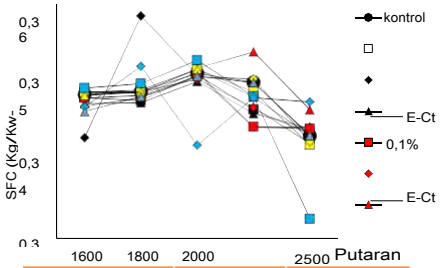
Sustainable Energy Conservation

PEMANFAATAN MINYAK ATSIRI SEBAGAI



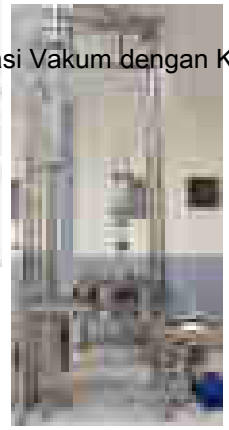


Campuran biodisel	SFC (Kg/Kwh)	Persentase perubahan
B10	0,32647	
B10 + E-Ct 0,1 %	0,31146	4,60 %
B10 + E-Ct 0,5 %	0,3016	7,62%
B10 + E-Ct 1 %	0,30923	5,28%
B10 + E-Sw 0,1 %	0,30183	7,55%hemat
B10 + E-Sw 0,5%	0,31254	4,27 %
B10 + E-Sw 1 %	0,3433	-5,15
B10 + Ct-C 0,1 %	0,32121	1,61%
Bi10 + Ct-C 0,5 %	0,3285	-0,62%
B10 + Ct-C 1 %	0,31826	2,51%

Persentasi perubahan nilai SFC pada putaran optimal

Rapid Sensors

Desain dan Pembuatan Alat Fraksinasi Vakum dengan Kontrol Otomatik



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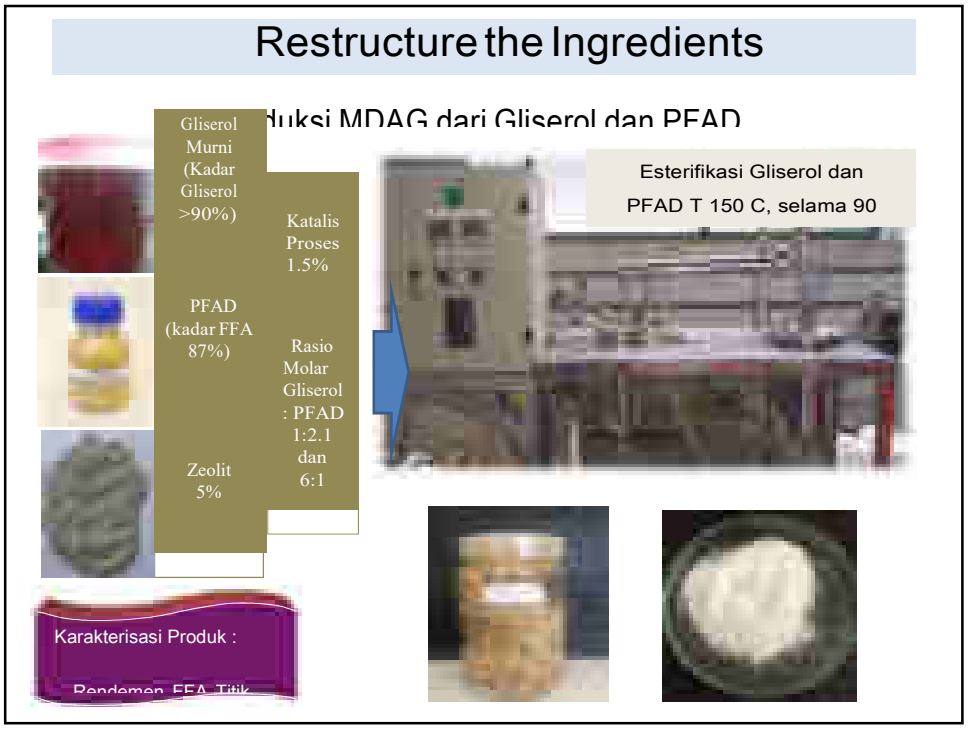

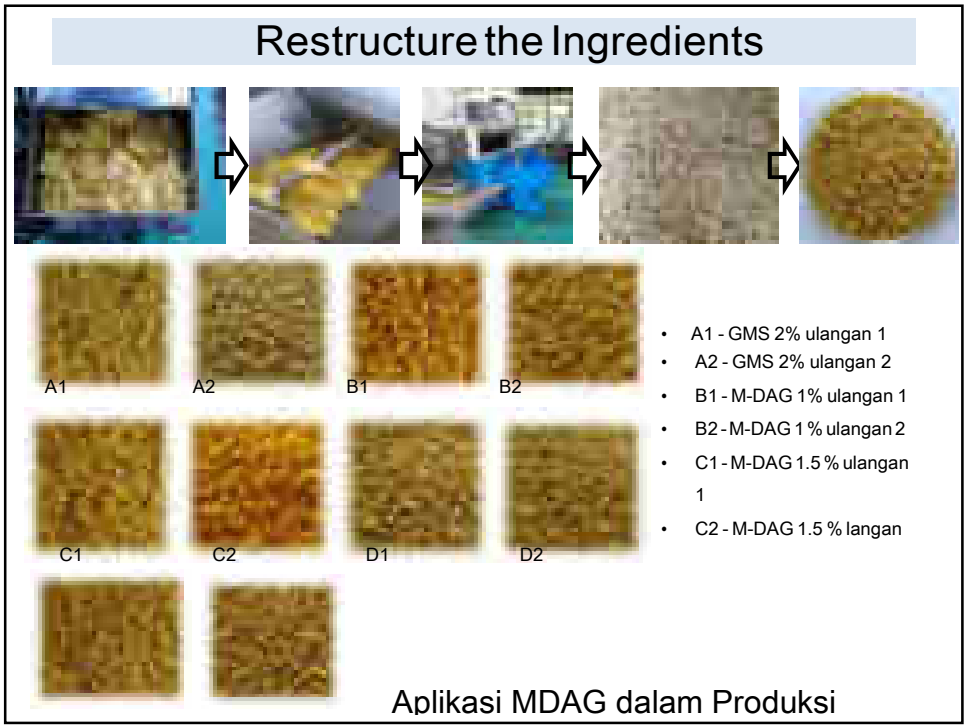

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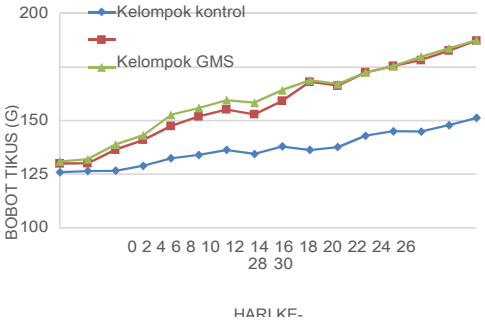
Pengujian Keamanan Pangan dan Logam

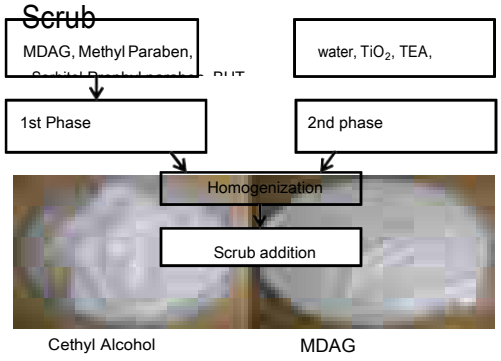


Berat organ hati,ginjal,dan

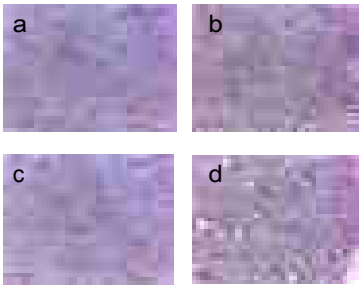
Organ	Kelompok kontrol	Kelompok GMS	Kelompok M-DAG
Hati	3.22 ± 0.47 [a]	3.19 ± 0.30 [a]	3.08 ± 0.22 [a]
Ginjal	0.65 ± 0.11 [a]	0.61 ± 0.04 [a]	0,60 ± 0.06 [a]
Jantung	0.41 ± 0.08 [a]	0.37 ± 0.06 [a]	0.39 ± 0.07 [a]

Restructure the Ingredients

Aplikasi MDAG dalam Body Scrub



Cethyl Alcohol MDAG



Ukuran globula pada perbesaran 40 kali (a) M-DAG 4% (b) M-DAG 4.5% (c) M-DAG 5% (d)

The Bayes method analysis for modified body scrub formulas										
Parameter	4% PE20	4.5% PE20	5% PE20	4% rice	4.5% rice	5% rice	4% Oat	4.5% Oat	5% Oat	Weight value
Texture	5	3	8	1	2	9	6	4	7	0.26
Viscosity	2	3	9	1	5	7	6	4	8	0.32
Abillty to remove dead skin cell	9	7	8	3	5	4	2	1	6	0.43
Total value	5.81	4.75	8.4	1.87	2.12	6.3	4.34	2.75	6.96	
Rank	4	5	1	9	8	3	6	7	2	

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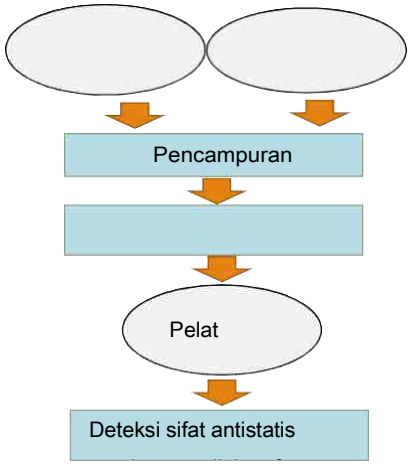
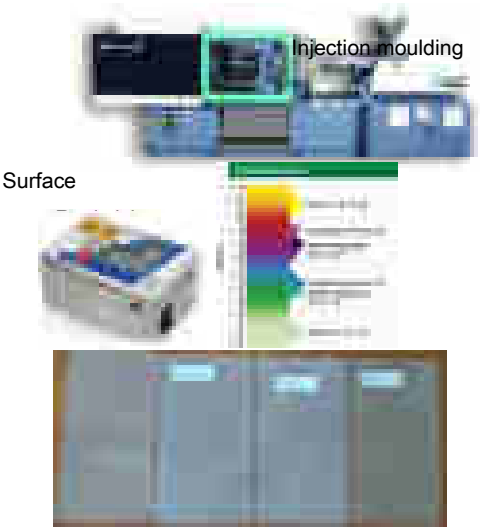
Engage with Packaging Producer

Formulasi MDAG dalam Plastik PP dan PE





Vision

Become internationally recognized center of excellence on surfactant and bioenergy based on sustainable agricultural resources and contribute to the energy security, economic development and enhancement of the quality of life in Indonesia.

Mision

To develop and disseminate science-based information about surfactant and bioenergy from tropical resource through basic and applied research, education, and community services to sustain and enhance the quality of human life and natural environment

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