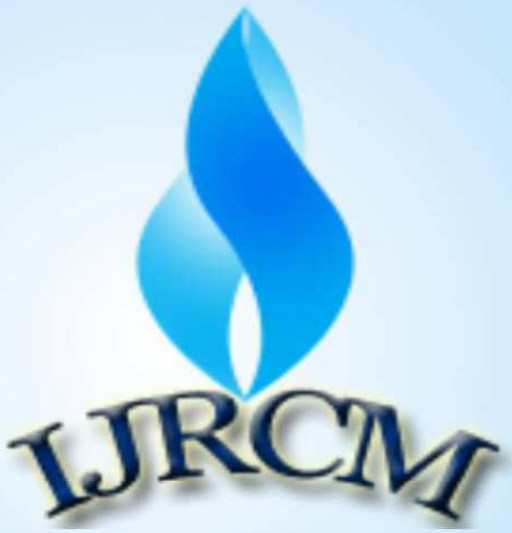
INTERNATIONAL JOURNAL OF RESEARCH IN COMPUTER APPLICATION & MANAGEMENT

IJRCM



A Monthly Double-Blind Peer Reviewed (Refereed/Juried) Open Access International e-Journal - Included in the International Serial Directories

Indexed & Listed at:

Ulrich's Periodicals Directory ©, ProQuest, U.S.A., EBSCO Publishing, U.S.A., Cabell's Directories of Publishing Opportunities, U.S.A.,

Open J-Gage, India [link of the same is duly available at Inflibnet of University Grants Commission (U.G.C.)],

Index Copernicus Publishers Panel, Poland with IC Value of 5.09 & number of libraries all around the world.

Circulated all over the world & Google has verified that scholars of more than 4255 Cities in 176 countries/territories are visiting our journal on regular basis.

Ground Floor, Building No. 1041-C-1, Devi Bhawan Bazar, JAGADHRI – 135 003, Yamunanagar, Haryana, INDIA

http://ijrcm.org.in/

CONTENTS

CALL FOR MANUSCRIPTS

We invite unpublished novel, original, empirical and high quality research work pertaining to recent developments & practices in the areas of Computer Science & Applications; Commerce; Business; Finance; Marketing; Human Resource Management; General Management; Banking; Economics; Tourism Administration & Management; Education; Law; Library & Information Science; Defence & Strategic Studies; Electronic Science; Corporate Governance; Industrial Relations; and emerging paradigms in allied subjects like Accounting; Accounting Information Systems; Accounting Theory & Practice; Auditing; Behavioral Accounting; Behavioral Economics; Corporate Finance; Cost Accounting; Econometrics; Economic Development; Economic History; Financial Institutions & Markets; Financial Services; Fiscal Policy; Government & Non Profit Accounting; Industrial Organization; International Economics & Trade; International Finance; Macro Economics; Micro Economics; Rural Economics; Co-operation; Demography: Development Planning; Development Studies; Applied Economics; Development Economics; Business Economics; Monetary Policy; Public Policy Economics; Real Estate; Regional Economics; Political Science; Continuing Education; Labour Welfare; Philosophy; Psychology; Sociology; Tax Accounting; Advertising & Promotion Management; Management Information Systems (MIS); Business Law; Public Responsibility & Ethics; Communication; Direct Marketing; E-Commerce; Global Business; Health Care Administration; Labour Relations & Human Resource Management; Marketing Research; Marketing Theory & Applications; Non-Profit Organizations; Office Administration/Management; Operations Research/Statistics; Organizational Behavior & Theory; Organizational Development; Production/Operations; International Relations; Human Rights & Duties; Public Administration; Population Studies; Purchasing/Materials Management; Retailing; Sales/Selling; Services; Small Business Entrepreneurship; Strategic Management Policy; Technology/Innovation; Tourism & Hospitality; Transportation Distribution; Algorithms; Artificial Intelligence; Compilers & Translation; Computer Aided Design (CAD); Computer Aided Manufacturing; Computer Graphics; Computer Organization & Architecture; Database Structures & Systems; Discrete Structures; Internet; Management Information Systems; Modeling & Simulation; Neural Systems/Neural Networks; Numerical Analysis/Scientific Computing; Object Oriented Programming; Operating Systems; Programming Languages; Robotics; Symbolic & Formal Logic; Web Design and emerging paradigms in allied subjects.

Anybody can submit the **soft copy** of unpublished novel; original; empirical and high quality **research work/manuscript** ***anytime*** in ***M.S. Word format*** after preparing the same as per our **GUIDELINES FOR SUBMISSION**; at our email address i.e. infoijrcm@gmail.com or online by clicking the link **online submission** as given on our website (***FOR ONLINE SUBMISSION, CLICK HERE***).

GUIDELINES FOR SUBMISSION OF MANUSCRIPT

1. **COVERING LETTER FOR SUBMISSION:**

DATED: _____

THE EDITOR

IJRCM

Subject: **SUBMISSION OF MANUSCRIPT IN THE AREA OF _____.**

(e.g. Finance/Mkt./HRM/General Mgt./Engineering/Economics/Computer/IT/ Education/Psychology/Law/Math/other, please specify)

DEAR SIR/MADAM

Please find my submission of manuscript entitled '_____' for possible publication in one of your journals.

I hereby affirm that the contents of this manuscript are original. Furthermore, it has neither been published elsewhere in any language fully or partly, nor is it under review for publication elsewhere.

I affirm that all the co-authors of this manuscript have seen the submitted version of the manuscript and have agreed to their inclusion of names as co-authors.

Also, if my/our manuscript is accepted, I agree to comply with the formalities as given on the website of the journal. The Journal has discretion to publish our contribution in any of its journals.

NAME OF CORRESPONDING AUTHOR	:
Designation	:
Institution/College/University with full address & Pin Code	:
Residential address with Pin Code	:
Mobile Number (s) with country ISD code	:
Is WhatsApp or Viber active on your above noted Mobile Number (Yes/No)	:
Landline Number (s) with country ISD code	:
E-mail Address	:
Alternate E-mail Address	:
Nationality	:

NOTES:

a) The whole manuscript has to be in ***ONE MS WORD FILE*** only, which will start from the covering letter, inside the manuscript. ***pdf. version is liable to be rejected without any consideration***.

b) The sender is required to mention the following in the **SUBJECT COLUMN of the mail**:

New Manuscript for Review in the area of (e.g. Finance/Marketing/HRM/General Mgt./Engineering/Economics/Computer/IT/ Education/Psychology/Law/Math/other, please specify)

c) There is no need to give any text in the body of mail, except the cases where the author wishes to give any **specific message** w.r.t. to the manuscript.

d) The total size of the file containing the manuscript is expected to be below **1000 KB**.

e) **Abstract alone will not be considered for review** and the author is required to submit the **complete manuscript** in the first instance.

f) ***The journal gives acknowledgement w.r.t. the receipt of every email within twenty four hours*** and in case of non-receipt of acknowledgment from the journal, w.r.t. the submission of manuscript, within two days of submission, the corresponding author is required to demand for the same by sending a separate mail to the journal.

g) The author (s) name or details should not appear anywhere on the body of the manuscript, except the covering letter and the cover page of the manuscript, in the manner as mentioned in the guidelines.

2. **MANUSCRIPT TITLE: The title of the paper should be **bold typed**, **centered** and **fully capitalised**.

3. **AUTHOR NAME (S) & AFFILIATIONS: Author (s) **name**, **designation**, **affiliation** (s), **address**, **mobile/landline number** (s), and **email/alternate email address** should be given underneath the title.

4. **ACKNOWLEDGMENTS: Acknowledgements can be given to reviewers, guides, funding institutions, etc., if any.

5. **ABSTRACT: Abstract should be in **fully italicized text**, ranging between **150** to **300 words**. The abstract must be informative and explain the background, aims, methods, results & conclusion in a **SINGLE PARA**. ***Abbreviations must be mentioned in full***.

6. **KEYWORDS: Abstract must be followed by a list of keywords, subject to the maximum of **five**. These should be arranged in alphabetic order separated by commas and full stop at the end. All words of the keywords, including the first one should be in small letters, except special words e.g. name of the Countries, abbreviations.

7. **JEL CODE: Provide the appropriate Journal of Economic Literature Classification System code (s). JEL codes are available at www.aeaweb.org/econlit/jelCodes.php, however, mentioning JEL Code is not mandatory.

8. **MANUSCRIPT: Manuscript must be in ***BRITISH ENGLISH*** prepared on a standard A4 size ***PORTRAIT SETTING PAPER***. *It should be free from any errors i.e. **grammatical, spelling** or **punctuation.** It must be thoroughly edited at your end*.

9. **HEADINGS: All the headings must be bold-faced, aligned left and fully capitalised. Leave a blank line before each heading.

10. **SUB-HEADINGS: All the sub-headings must be bold-faced, aligned left and fully capitalised.

11. **MAIN TEXT**:

THE MAIN TEXT SHOULD FOLLOW THE FOLLOWING SEQUENCE:

INTRODUCTION
REVIEW OF LITERATURE
NEED/IMPORTANCE OF THE STUDY
STATEMENT OF THE PROBLEM
OBJECTIVES
HYPOTHESIS (ES)
RESEARCH METHODOLOGY
RESULTS & DISCUSSION
FINDINGS
RECOMMENDATIONS/SUGGESTIONS
CONCLUSIONS
LIMITATIONS
SCOPE FOR FURTHER RESEARCH
REFERENCES
APPENDIX/ANNEXURE

The manuscript should preferably range from ***2000 to 5000 WORDS***.

12. **FIGURES & TABLES:** These should be simple, crystal **CLEAR**, **centered**, **separately numbered** & self explained, and **titles must be above the table/figure**. **Sources of data should be mentioned below the table/figure**. *It should be ensured that the tables/figures are referred to from the main text*.

13. **EQUATIONS/FORMULAE:** These should be consecutively numbered in parenthesis, horizontally centered with equation/formulae number placed at the right. The equation editor provided with standard versions of Microsoft Word should be utilised. If any other equation editor is utilised, author must confirm that these equations may be viewed and edited in versions of Microsoft Office that does not have the editor.

14. **ACRONYMS:** These should not be used in the abstract. The use of acronyms is elsewhere is acceptable. Acronyms should be defined on its first use in each section: Reserve Bank of India (RBI). Acronyms should be redefined on first use in subsequent sections.

15. **REFERENCES:** The list of all references should be alphabetically arranged. ***The author (s) should mention only the actually utilised references in the preparation of manuscript*** and they are supposed to follow Harvard Style of Referencing. **Also check to make sure that everything that you are including in the reference section is duly cited in the paper**. The author (s) are supposed to follow the references as per the following:

- All works cited in the text (including sources for tables and figures) should be listed alphabetically.
- Use (**ed.**) for one editor, and (**ed.s)** for multiple editors.
- When listing two or more works by one author, use --- (20xx), such as after Kohl (1997), use --- (2001), etc, in chronologically ascending order.
- Indicate (opening and closing) page numbers for articles in journals and for chapters in books.
- The title of books and journals should be in italics. Double quotation marks are used for titles of journal articles, book chapters, dissertations, reports, working papers, unpublished material, etc.
- For titles in a language other than English, provide an English translation in parenthesis.
- ***Headers, footers, endnotes*** *and* ***footnotes*** *should* ***not be used*** *in the document.* However, **you can mention short notes to elucidate some specific point**, which may be placed in number orders after the references.

PLEASE USE THE FOLLOWING FOR STYLE AND PUNCTUATION IN REFERENCES:

BOOKS

- Bowersox, Donald J., Closs, David J., (1996), "Logistical Management." Tata McGraw, Hill, New Delhi.
- Hunker, H.L. and A.J. Wright (1963), "Factors of Industrial Location in Ohio" Ohio State University, Nigeria.

CONTRIBUTIONS TO BOOKS

- Sharma T., Kwatra, G. (2008) Effectiveness of Social Advertising: A Study of Selected Campaigns, Corporate Social Responsibility, Edited by David Crowther & Nicholas Capaldi, Ashgate Research Companion to Corporate Social Responsibility, Chapter 15, pp 287-303.

JOURNAL AND OTHER ARTICLES

- Schemenner, R.W., Huber, J.C. and Cook, R.L. (1987), "Geographic Differences and the Location of New Manufacturing Facilities," Journal of Urban Economics, Vol. 21, No. 1, pp. 83-104.

CONFERENCE PAPERS

- Garg, Sambhav (2011): "Business Ethics" Paper presented at the Annual International Conference for the All India Management Association, New Delhi, India, 19–23

UNPUBLISHED DISSERTATIONS

- Kumar S. (2011): "Customer Value: A Comparative Study of Rural and Urban Customers," Thesis, Kurukshetra University, Kurukshetra.

ONLINE RESOURCES

- Always indicate the date that the source was accessed, as online resources are frequently updated or removed.

WEBSITES

- Garg, Bhavet (2011): Towards a New Gas Policy, Political Weekly, Viewed on January 01, 2012 http://epw.in/user/viewabstract.jsp

PRODUCER GAS AS A VIABLE ENERGY SOURCE

RAHUL BASU
PROFESSOR
SAMBHRAM INSTITUTE OF TECHNOLOGY
MS PALYA

ABSTRACT

The Offsetting of Carbon emissions is a major concern worldwide. The generation of power from Fossil fuels remains a major source for underdeveloped and developing countries. Use of waste material to produce Biogas by bacterial action results in a sludge, which has a high Nitrogen and Carbon content after Methane production. The sludge can be used as fertilizer, and also further processed to give Producer gas. Other waste materials like coconut husk, agricultural and cellulosic wastes could be used directly. The disadvantage of slow reaction times from biogas (methane) production by bacterial action is avoided. The Producer gas can be stored or used directly in place of LPG as a substitute for Methane which has hazardous qualities. In earlier times it was piped directly to homes for cooking and used as a petrol substitute in vehicles when petrol was scarce.

KEYWORDS

Energy sources, gas production.

INTRODUCTION

Since the Energy crisis of the 1970's when the Middle Eastern Oil producers held the world economies to ransom, there have been increasing efforts and attention to research and usage of renewable energies like hydropower, solar, biogas and wind power. It has not widely been realized that water, wind and more recently producer gas have been used in previous decades and centuries as power and motive sources. In a sense, efforts have been made to reinvent the (water) wheel, and Private and government funds have been spent on non productive academic research to improve (for example) solar cell efficiency to impractical levels, perpetual motion machines, and various Free Energy projects.

For a country like India which has a sizeable rural population subsisting on agriculture and depending on livestock, Biogas has provided a viable source of energy and has been subsidized by various Governmental incentives and schemes. The problem underlying such efforts is the extreme poverty in which the majority of the rural populace lives. In fact, traditional village lifestyles dictate the use of cow dung for cooking with fire, smearing the compounds and ground, placing cow dung cakes on the walls and so on. Till recently it was difficult to get people to use cow dung as a crop fertilizer, and the major fertilizer companies have made hay of this fact.

Biogas has certain desirable qualities with regard to the environment:

1. It is low cost and low tech
2. It requires low investment and capital
3. It uses waste products and does not require chemical additives
4. It produces a sludge which can be used further as a fertilizer
5. It can contribute to treatment of domestic and municipal wastes.

Most of the subsidies given by State and NGO's so far have been on Biogas, whereas Producer gas has been neglected in the resurgence of Renewable energy sources.

Apart from the payoffs in secondary energy generation (i.e., after Methane has been recovered from biomass by bacterial action), the remaining bio matter/biomass residue which consists of C and N with H20 is capable of further reduction into the so called "Producer Gas". A further advantage is in reducing the biologically active component which may consist of any harmful bacteria, mosquito larvae and viruses and other vectors into inert form. The resultant solid matter is highly concentrated with Nitrogeneous matter and thus suitable as fertilizer for agricultural usage. Although the initial biomatter which may be dung, composted material and waste food matter can be used and is frequently applied directly on the fields, the result of Producer gas reduction is more inert and as useful if not more suitable as a fertilizer. Besides, the decomposition of animal dung in the open after being applied as a surface additive for crops yields large amounts of methane and adds to the pollutants in the atmosphere, besides contributing to vector propagation like flies and mosquitoes.

In Ghana, W. Africa, one of the main reasons of development of biogas is to treat sewage which is largely untreated and run off into the bush outside the villages, in order to improve sanitation and reduce attendant risks of epidemics an diseases endemic to Africa,(1)

INTERNATIONAL EFFORTS IN THE AREA OF PRODUCER GAS

It appears that serious work has been done in the island nations of the Indian and Pacific Oceans, like the Philippines and SriLanka, subsidised by the International agencies like UN. In Africa, countries like Ghana have taken up Biogas projects at a national level in their National Strategic planning. According to a recent survey (1), the focus in Ghana has shifted from energy to sanitation, with construction of bio-toilets. The aim is to treat human wastes to a level where they can be safely discharged into drains. The remaining sludge is used as fertilizer.

In the Philippines, GEMCOR had set up gasifiers using coconut shell charcoal, resulting in cheap gas at lower rates than from wood or biomass. Boats have been fitted with engines running on producer gas, (2).

A number of raw materials have been researched for Producer gas, including coconut, sugar cane bagasse, rice husks, corn cobs, coffee bean husks, peanut shells, cotton gin trash and stalks. The list could use organic trash, which has been reported in the recent issue of Scientific American, (3) (Dec 2010, p24). Indian cities with their large slums and attendant sanitation problems could take a leaf from these efforts initiated by India's neighbours.

During times of petrol scarcity as in the last world war, engines were developed to run on coal gas and gas from wood, which would be towed behind the vehicles.

PRIMARY REACTIONS AND PRODUCTS FROM BIOMASS GASIFICATION

The gaseous products from carbon biomass are CO, CO2, H2, CH4, N2, water. Trace amounts of higher hydrocarbons are present also.

The reactions involve the steam reaction on carbon with limited oxygen:

$4C + 2H_2O + 2O_2 \rightarrow 4CO + 4H + O_2$ [1]

$2CO + O_2 \rightarrow 2CO_2$ [2]

Also there are sub reactions of C with H, H2 and H2O, similarly with CO and H.

These reactions need the addition of heat which is supplied by burning additional raw material, and a supply of steam.

USE IN IC ENGINES

As a result of the impending shortage in worldwide fossil fuel supplies which include petrol and diesel, increasing efforts have been made to look at alternatives to the IC engine which has so far not been modified beyond the basic piston-cylinder-valve design (4 stroke and 2 stroke variants). Strong interests in the

Petroleum and automotive industry has resisted and thwarted attempts to develop alternative designs and implementation of these in Industry. One can see this in viewing the basic undergraduate syllabi for Indian Engineering colleges which still use books written before the 1970's, whilst books on steam turbines and gas turbines are also rewritten from outdated foreign texts, (pre independence 1947).

Modification of engines to use Producer gas is not difficult, provided one understands the nature of the combustion and power cycle in the IC engine. Basically, one cannot run the engine at a speed beyond the rate at which the fuel gas ignites and burns (flame velocity). In addition, the compression and air/fuel ratio are important. If too high a compression results, there is possibility of the gas igniting spontaneously, (knocking), which would damage the engine. Producer gas is capable of higher Octane numbers than petrol, (OCTANE number being a measure of the compression ratio at which detonation occurs). As a result, higher engine thermal efficiencies can be achieved with Producer gas. Further refinements are possible but may need more research for Indian scenarios. Recently analysis of the higher water content in producer gas and Syn gas has been presented where the water content of over 15% as compared to 3% for natural gas may lead to corrosion in gas turbines. (4)

PRODUCER GAS FOR POWER GENERATION

1kg air-dry wood (15-20% mc) gives about 2.3 cub.meters of gas
1 litre petrol = 2.5 to 3kg wood
1 litre diesel = 3 to 3.5 kg wood
1 kWh requires 1 to 1.3 kg charcoal, 2 to 4 kg woodchips or 2.4 to 3.2 kg rice husk.

Feasibility and viability of a gasifier project depends on many factors, including cost of fuel, labour costs, money and finance, design life, value of the energy produced, cost of disposal of the residue, and value of the sludge for fertiliser. Further benefits are there when the electricity if generated can be sold to the grid.

The existence of a national energy programme and incorporation of such schemes into the development plans at state and national level would enhance such energy schemes.

At present the focus has been blurred by the large corporations battling it out for offshore oil rights, trying to sell cheap gas guzzling cars to the public, the conflicts (oil generated) in the middle east, and other political agendas.

The attendant benefits of health and sanitation have been almost ignored in the energy plans at the higher levels.

In Tanzania, a programme for design of gasifiers for maize mills in rural areas was taken up by the Small Industries Development Organisation and the Nederlands Twente University, (5). A similar system was developed at Chulalongkorn University in Thailand. In El Salvador, with GEKA of Karlsruhe, coffee bean husks are burnt and the gas mixture fed to further dry coffee beans. In Valdosta, Georgia and Auburn, Alabama peanut shells have been used to give heat for drying. In Asia, rice husks are very commonly available as a byproduct, but according to the FAO in 1975, no mill existed which used steam produced by husk fired boilers. India and Thailand directly used rice husks as a form of boiler heat fuel, with some other countries also following suit. Parboiled rice in India is made mostly (50% usage) by husk fired boilers, with some mills in Sri Lanka, Guyana, and Italy doing the same. The Govt of Malaysia had given funds for development of two pilot plants at rice mills using one ton of rice husks per hour. Electric power output of about 350KW/hour has been obtained in 1983 (6,7).

OVERALL EFFICIENCY AND ECONOMIC ANALYSIS OF THE SCHEME

Since Producer gas production requires heat and steam production as input, there is an expenditure of energy involved which debits from the overall total of energy. The heating can be obtained by diverting part of the biogas obtained in the primary digestion stage to be used for heating and producing steam and high temperatures in gasifying the sludge residue for Producer gas. Alternatively, dried biomass used for the initial biogas production could be ignited and used for the secondary producer gas stage. So far no study has been done on the efficiency and economics of the scheme.

FUTURE STUDIES AND AVENUES OF RESEARCH

It may be possible to invoke the genetic modification of microbes to directly excrete hydrocarbons. Turning water, photonic energy and Carbon dioxide into hydrocarbons is a very old process developed by Nature, which uses chlorophyll. Perhaps more useful than solid carbohydrates, would be a liquid hydrocarbon that could directly be put to use as fuel. Algae are known to efficiently convert Carbon dioxide into fatty acids, and similarly potato plants into carbohydrates. Converting this potato starch into alcohol is a long and expensive process. There has been a search for micro organisms that could do this, (8). Alternatively, sugars can be turned into alcohol, but again there are attendant costs. Much more attractive and useful would be a way to convert raw materials directly into hydrocarbon fuels. Apart from micro organisms, mobile robots are being proposed that would "eat" garbage and unwanted plants and convert these into hydrocarbon fuel forms. (9)

The direct conversion of cellulose to alcohol (cellulolysis) using lignocellulose (wood cellulose containing lignin a component of wood), has been researched at Argonne Labs (10). The process depends on cellulase enzymes produced by bacteria. Saccaromyces cerevisiae, Zymomonas mobilis, E Coli., are some bacteria targeted for bio engineering to produce ethanol via the cellulosis route.

Producer gas has been applied as a raw material for bacterial conversion to ethanol also, using the bacteria Clostridium Ljungdahlii, which ingests CO, CO2 and H2 producing Ethanol and water. This process involves Gasification, fermentation and distillation to yield alcohol. The alternative is to use a catalytic reactor. (Catalysis involves intermediate compounds that get involved in the reaction but are unchanged in composition at the end).

The effect of physical and chemical parameters on bacterial fermentation of cellulose has been studied by various groups (10,11). Another bacteria acetivibro celluloyticus produces acetate, ethanol, water and carbon dioxide.

Recently, groups have tried to bioengineer bacteria to give oil for fuel directly. The group LS9 with UC Berkeley has engineered a bacterium to make enzymes to convert biomass into diesel oil, (13). A recent patent 7794969 uses cyanobacteria to produce n-alkanes, (14).

The end is not in sight, and clearly microorganisms exist or can be modified to excrete oils which can be used as fuels, possible without further processing. However the overall effect on the effect on life on the planet and the ecology and environment must be carefully evaluated before attempting such bioengineering on a large scale in order to satiate the need of some industrial groups which have stuck to old designs for motive engines. The alternative would be to invest in alternative designs for motive power converters.

The I.C. engine was a byproduct of the Industrial revolution and the industrialisation of the Midwest USA, with resultant mass migrations, prior to which electric cars, steam cars and other variants were in vogue in the early 20th century. In fact the steam engine served Indian railroads for well over a century before the diesel engines took over. Hence one must not get carried away by the demons of Science and Finance and attempt to change the natural order of nature and life by introducing artificial genetic alterations. Life in all probability is at a delicate tipping point today. In order to propagate a failing and inefficient design, the I.C. Engine, which is limited by the laws of thermodynamic efficiency, and further inherent limitations one must not tinker with natural life and biological designs which have optimised over millennia.

REFERENCES

1. E.C. Bensah and A. Brew-Hammond, “Biogas Effluent and Food Production in Ghana”, 4th National Conference of Ghana Society of Agricultural Engineering, March14th 2008.
2. D.B.Mahin, “Bioenergy from Crop residues”, BST, Office of energy, Wash DC, 1983.
3. Scientific American, (Dec 2010),V5,No12, p24
4. M Basu Majumdar, R Clayton, D Mumm (2015) “Chemical and Mechanical Evolution of Ceramic Abradable Turbine Coatings Subjected to Simulated High Hydrogen Content Combustion Environments”, presented at 42nd ICMCTF, San Diego

5. see ref(2),p9
6. see ref(2),p11-13
7. en.wikipedia.org/wiki/ethanol_fermentation
8. Scientific American, (Dec 2010), V5,No12,p 21
9. www1.eere.energy.gov/biomass/news.html
10. V.SenthilKumar and P Gunasekharan, J..of Sci and Ind. Res., (Nov 2005) V64,p845-853
11. D.W.Armstrong and S.M.Martin, "Bacterial fermentation of cellulose: Effect of physical and chemical parameters", Biotechnology and Bioengineering, (Nov 1983),V25,11, pp2567-2575,.
12. technologyreview.com/energy/24422
13. N.B.Reppas and C.P.Perry, US Patent 7794969, US Patent Sept 14 2010

REQUEST FOR FEEDBACK

Dear Readers

At the very outset, International Journal of Research in Computer Application & Management (IJRCM) acknowledges & appreciates your efforts in showing interest in our present issue under your kind perusal.

I would like to request you tosupply your critical comments and suggestions about the material published in this issue as well as on the journal as a whole, on our E-mail**infoijrcm@gmail.com** for further improvements in the interest of research.

If youhave any queries please feel free to contact us on our E-mail infoijrcm@gmail.com.

I am sure that your feedback and deliberations would make future issues better – a result of our joint effort.

Looking forward an appropriate consideration.

With sincere regards

Thanking you profoundly

Academically yours

Sd/-
Co-ordinator

DISCLAIMER

The information and opinions presented in the Journal reflect the views of the authors and not of the Journal or its Editorial Board or the Publishers/Editors. Publication does not constitute endorsement by the journal. Neither the Journal nor its publishers/Editors/Editorial Board nor anyone else involved in creating, producing or delivering the journal or the materials contained therein, assumes any liability or responsibility for the accuracy, completeness, or usefulness of any information provided in the journal, nor shall they be liable for any direct, indirect, incidental, special, consequential or punitive damages arising out of the use of information/material contained in the journal. The journal, neither its publishers/Editors/ Editorial Board, nor any other party involved in the preparation of material contained in the journal represents or warrants that the information contained herein is in every respect accurate or complete, and they are not responsible for any errors or omissions or for the results obtained from the use of such material. Readers are encouraged to confirm the information contained herein with other sources. The responsibility of the contents and the opinions expressed in this journal are exclusively of the author (s) concerned.

ABOUT THE JOURNAL

In this age of Commerce, Economics, Computer, I.T. & Management and cut throat competition, a group of intellectuals felt the need to have some platform, where young and budding managers and academicians could express their views and discuss the problems among their peers. This journal was conceived with this noble intention in view. This journal has been introduced to give an opportunity for expressing refined and innovative ideas in this field. It is our humble endeavour to provide a springboard to the upcoming specialists and give a chance to know about the latest in the sphere of research and knowledge. We have taken a small step and we hope that with the active co-operation of like-minded scholars, we shall be able to serve the society with our humble efforts.

Our Other Journals