

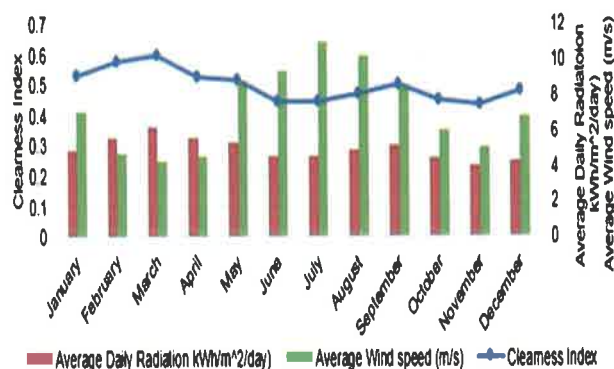
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### Management & Information Technology

**677 Comparative Study of Optimization of HRES using HOMER and iHOGA Software**

There has been several methodologies to size hybrid renewable energy system (HRES). This paper provides the comparative study of the simulation results between HOMER and iHOGA software packages. These two software packages are used to optimally size renewable energy systems for a micro-grid. A small community in Aralvaimozhi, India is considered. Aralvaimozhi has a good potential of Solar energy and Wind energy resources. If these resources are trapped efficiently using HRES, an efficient micro-grid could eventually replace the present old and less efficient electricity grid. In this study, the optimally sized HRES with least value of Net Present Cost (NPC) resulted from HOMER and iHOGA software packages have been discussed and their results have been compared for a definite scenario.

Solar and Wind Energy Availability-Aralvaimozhi, India



N Saiprasad, A Kalam & A Zayegh

**684 Innovation Management and Cooperation in the Government of Social Economy Entities**

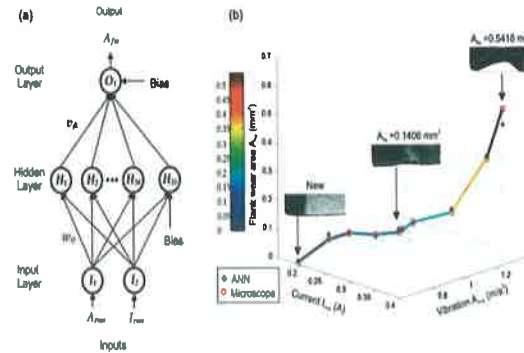
The Social Economy (SE) is characterized by a strong social orientation designed to meet the needs of various stakeholders, especially employers and customers. The government entity and influences innovativeness and willingness to establish cooperation agreements with a primary outcome of the entity via reflection governance policies. This paper aims at demonstrating that social enterprises have a social culture based on values and principles, which reflect corporate governance strategies based on innovation and cooperation. To this end, relationships are proposed where market decisions and cooperation with internal and external agents can be considered the key factors for success in this type of business partnerships.

Maria del Carmen Muñoz Medraño, Antonio Juan Briones Peñalver & José António C Santos

**688 Tool-Wear Estimation in Cnc Machine Based On Fusion Vibration-Current and Neural Network**

The costs of the cutting tools and their replacement become an important amount of the total production costs in a manufacturing process. This work presents a methodology based on machine vibration, servomotor electric current and an artificial neural network to obtain the tool-wear detection in CNC machine inserts. The effectiveness of this proposal was tested in the tool of CNC lathe machine and validated with the image quantification.

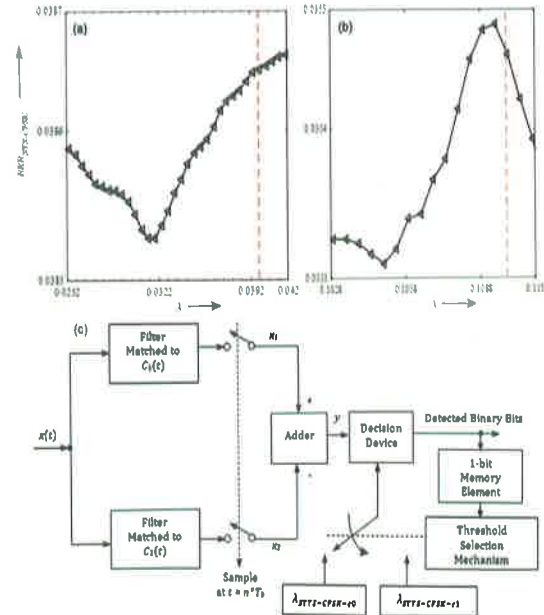
M Trejo-Hernandez & R A Osornio-Rios



**692 A New Receiver for a Passband System with CFSK Modulation: The STTS-CFSK Receiver**

A new receiver, named STTS-CFSK receiver, for passband with CFSK modulation, is developed. This new receiver uses correlations in the transmitted digital signals wisely, while assuming the correlation parameters  $p$  and  $q$  known at the receiver. The conventional receiver, the STS-CFSK receiver, does not take these correlations into consideration. Both the receivers are evaluated and compared, by extensive simulation based experimentation. Performance of the STTS-CFSK receiver is found to be superior to that of the STS-CFSK receiver, for  $SNR > 0$  dB. Usefulness of this work for 'Greening of Communication Technology' is explained.

R Chakka & A K Ahuja

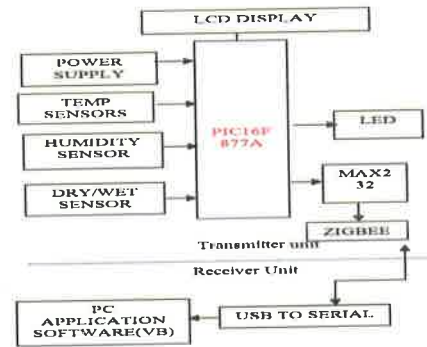


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700 Irrigation Optimization for Fruit Farms of Namakkal Area by Fuzzy Rules on Weather Parameters

Scientific research in agriculture industry includes effective water management in making the process, precision oriented and cost effective. Normal drip irrigation on rotational basis is highly attended during changing monsoon conditions and found unsuitable. The smart alternative to address this problem due to dynamic monsoon is proposed by sensor embedded plants. The plants fixed with different types of multiple sensors say temperature, soil moisture and humidity distributed in proper intervals in the agricultural land, provides requirements of the plants precisely. The experimental result using fuzzy based analysis of sensor parameter enhance the action stub by increased verities of actions than the simple binary decision making. A ten days parameter readings from pomegranate and lemon plants in namakkal area subjected to fuzzy analysis shows an increase from 9% to 14% of actions for a single day of lemon and pomegranate plants.

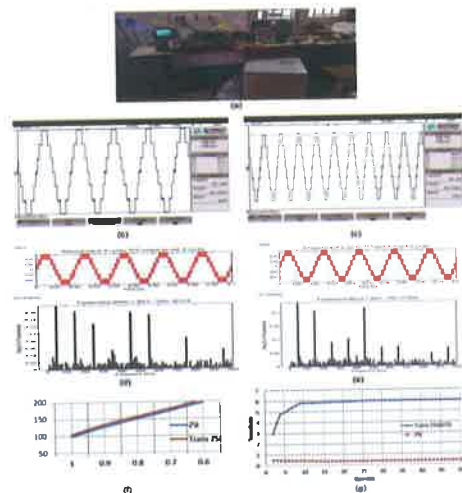
K Ramesh & A Samraj



705 Experimental Study of Seven Level Magnetic Coupled Impedance Source Inverter

In midst of better incorporated single stage topologies, an Impedance source inverter is proposed with an ability of producing buck and boosted output voltages. For achieving high voltage gain, the semiconductor switches undergo high dv/dt stress and at starting inrush currents of large values due to resonance affects the performance of impedance source inverters. To decline these impacts, magnetic coupled impedance source inverters are developed which produces the same voltage gain at high modulation ratio, while diminishing stress across switches by utilizing the property of magnetic coupling. This paper presents analysis and design of seven levels magnetic coupled impedance source inverter by maximum constant boost pwm technique using Matlab / Simulink. A prototype model of magnetic coupled inverter is developed and controlled by FPGA Spartan controller.

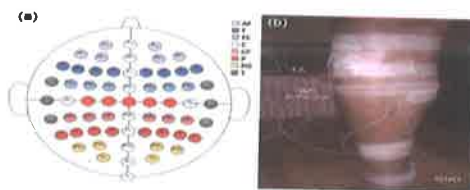
J N Reddy, D Lenine & M V Kumar



## S &amp; T and Industrial Research

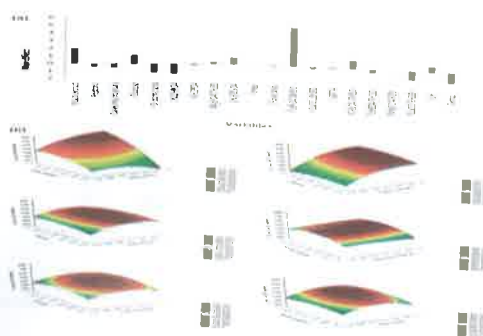
- 710 Effect of Voluntary and Involuntary joint movement on EEG signals** For rehabilitation persons suffering from neuro-musculoskeletal disorders technology has given enough power. This can be done through active orthotic devices. For optimal control and assistance of these devices, there is a need of bio-controlled closed loop assistance system such as BCI. It is a complex interaction when working in an assist as needed mode and synchronization between voluntary and involuntary movements of the joint is required. In this context, the aim of this study is to investigate the EEG dynamics associated with both voluntary and involuntary movements of the ankle joint. Frontal and primary motor cortex position are considered for this study. The results determine that the neural signals governing these two types of activities are different. Studies show that the gamma band is prominent in attention which also supports our hypothesis in the case of voluntary and involuntary movements. Similarly, we further extend this experiment for voluntary and involuntary gait cycle using exoskeleton. These synchronized voluntary and involuntary movements signal may be used in the brain-computer interface to restore human gait function.

K Sherwani, N Kumar & M Khan



- 713 Application of Experimental Designs for Optimization the Production of *Alcaligenes Faecalis* Niso Laccase** A sequential optimization strategy based on statistical experimental designs was implemented in order to enhance laccase production by a local isolate *Alcaligenes faecalis* NY50 in a submerged culture. To screen the parameters significantly influencing the laccase productivity, a 2-level Plackett-Burman design was applied. Among the studied variables, the pH, yeast extract,  $(\text{NH}_4)_2\text{SO}_4$ , glucose, and  $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$  were selected based on their high positive significant effect on laccase productivity. In order to find out the combination among the most significant variables that brings maximum yield, Response Surface Methodology was applied, where a 3-level Box-Behnken design was utilized to create a polynomial quadratic model correlating the relationship between the five variables and the laccase productivity. The optimal combination of the major medium constituents for laccase production was evaluated using the JMP program, was as follows: yeast extract, 0.896%;  $(\text{NH}_4)_2\text{SO}_4$ , 0.035%;  $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ , 0.0075%;  $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$ , 0.000133%; glucose, 0.0943%, pH 10.6 and 30 °C for 24 hrs. The predicted optimum laccase activity was  $791 \text{ U ml}^{-1} \text{ min}^{-1}$ , which was 700 times the activity with basal medium. In addition, the further optimization for both pH,  $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$  concentration lead the yield to be  $2435 \text{ U ml}^{-1} \text{ min}^{-1}$  at pH 11.0, 200 mg  $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$  which achieved after 18 hrs incubation time.

Soad A, Abdelgalil, Ahmed M Attia, Reyed M Reyed, Nadia A Soliman & Hesham A El Enshasy



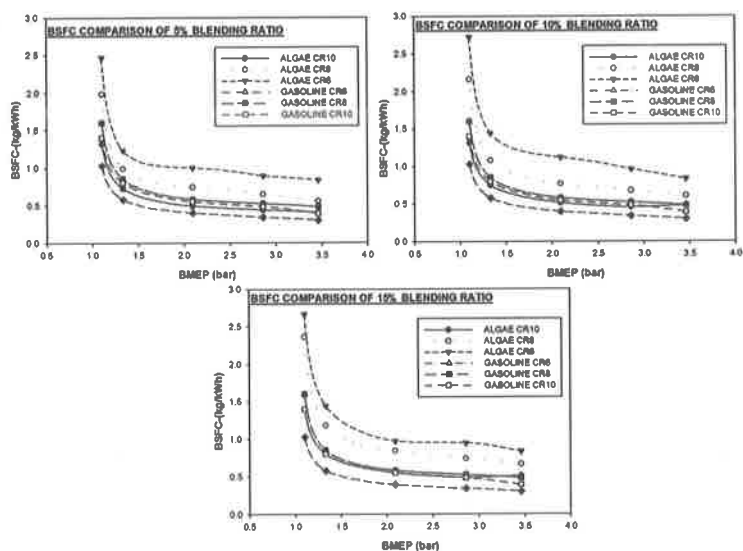
## Energy and Environment

999

723

## Performance Evaluation of Algae Oil - Gasoline Blends in Variable Compression Ratio Spark Ignition Engine

In this study, set of experiments have been performed by using raw algae oil and petrol in an IC engine. The effect of varying load on the engine at constant speed and the influence of algae oil on a variable compression ratio spark ignition engine have been illustrated. Raw algae oil derived from algae and after the transesterification process has been blended at 5%, 10% and 15% by volume with gasoline. The experiments were conducted at three different 6, 8 and 10 compression ratios. The performance parameters by using algae oil were compared with gasoline like Brake specific fuel consumption, Brake thermal efficiency, Exhaust gas temperature. Algae fuel has shown enhancement in the brake specific fuel consumption and reduction in brake thermal efficiency. Algae oil has shown the promising characteristic of reducing the friction losses in the engine as it has higher density in comparison to petrol.



M Saraswat &amp; N Ram Chauhan

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