

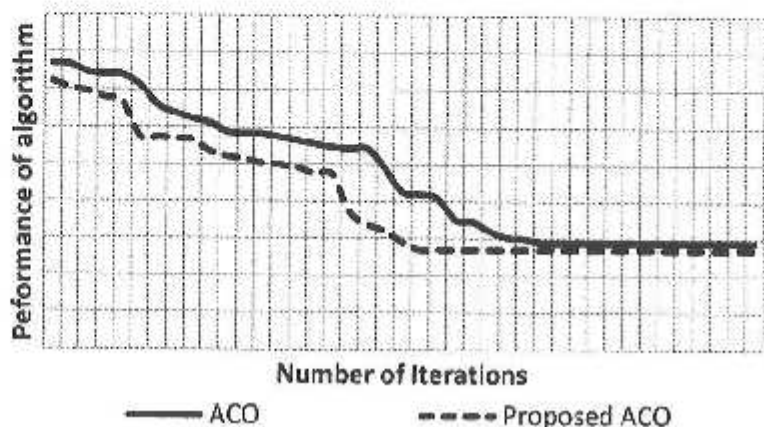
CONTENTS

Management & Information Technology

377 **A Hybrid Ant Colony Optimization Algorithm for Job Scheduling In Computational Grids**

Grid computing links disparate computers having free resources to form a low cost infrastructure. Grid computing can provide enormous opportunities for organizations to use resources from multiple geographical locations. For efficient utilization of available resources, grid scheduling plays an important role in the grid system. Scheduling is challenging in grid due to the unique characteristics. Also, the complexity of scheduling algorithm is NP-Comp.etc. In this study, a local search heuristic by way of multipoint mutation is introduced on the popular swarm intelligence inspired meta-heuristic, Ant Colony Optimization. Experiments show the proposed technique improves the Makespan and converges faster than conventional Ant Colony Optimization.

E S Kumar, A Sumathi & H A Zubar

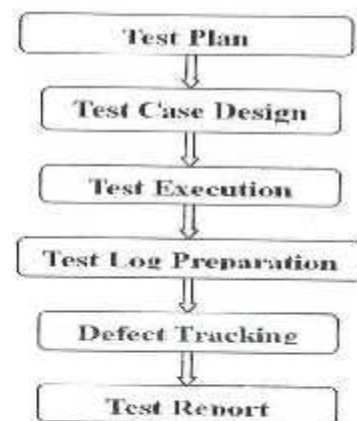
381 **Comprehensive Estimation of the Economic Security of Logistics Industry — Based on DEA Model**

This paper presents the establishment process of the safety evaluation index system of logistics industry that bases on the construction principle of safety index system and combines with the current situation of the logistics industry in China. Meanwhile, this paper applies DEA model to estimate the safety degree of the logistics industry from the system input-output point of view, which purposes are, on one hand, to demonstrate the safety state of the logistics industry during current and future period of time, on the other hand, to provide a theoretical basis for the relevant decision making departments about the strategy of the healthy development of the logistics industry.

Rong Hao, Weida He & Chuan Zhang

387 Optimization of Test Case Design in Rational Quality Manager – A Software Testing Tool

Software systems are playing important role in society and becoming more challenging to build. New methods, techniques and tools are available to support development and maintenance. Because software has such an important role in our lives both economically and socially. So there is a pressure for software professionals to focus on quality issues. Software testing is used to ensure the quality of the product. Even though, the Test Life Cycle consists of several steps, test case design plays a vital role. There are two types of testing namely manual testing and automated testing.

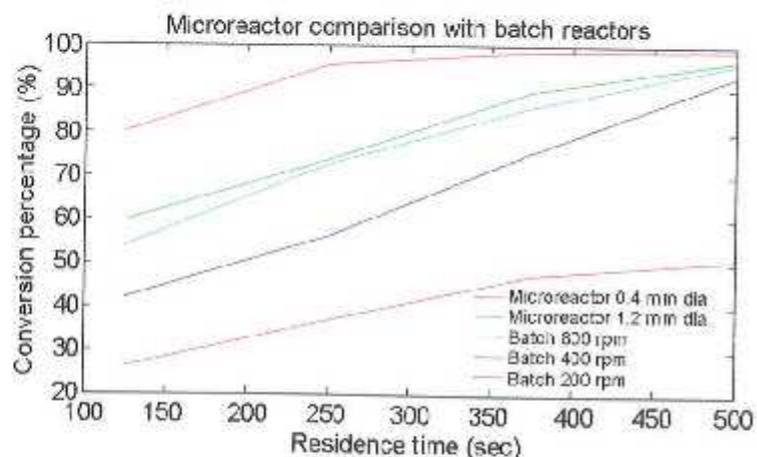


A N Kumar & B G Geetha

S & T and Industrial Research

390 Experimental comparison on efficiency of alkaline hydrolysis reaction in circular microreactors over conventional batch reactor

Alkaline hydrolysis, a nucleophilic substitution reaction was performed in microchannel tubes and the reaction efficiency was investigated and compared with conventional batch method. Reaction between n-butyl acetate and sodium hydroxide, a fast alkaline hydrolysis was employed as a specimen. The reactions were performed in a simple circular T-Junction microreactor. The riveting nature of T-Junction channels are they could facilitate the formation of rich variety of slug flow patterns. The diameters of the microchannels were scaled down from 1200 μm to 400 μm over a range of 1200 μm , 1000 μm , 800 μm , 600 μm and 400 μm . We observed a steady increase in reaction efficiency down the diameter scale for a non-varying reactant concentration.



R Antony, M S G Nandagopal, C Manikrishna & N Selvaraju

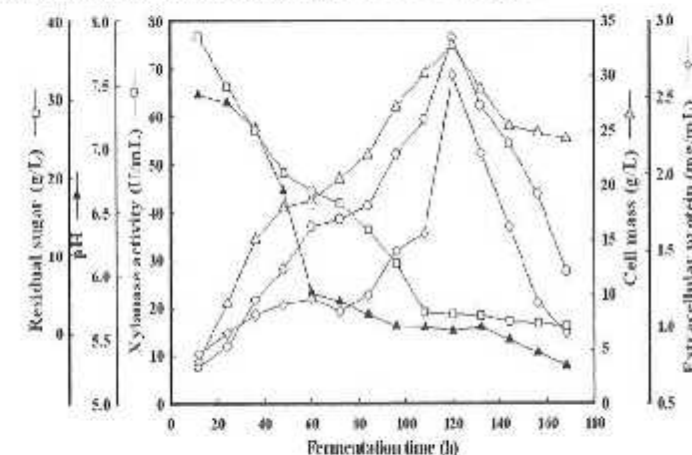
395 A Novel Approach to Solve Unit Commitment and Economic Load Dispatch Problem using IDE-OBL

The non-convex and combinatorial nature of the UC-ELD problems requires the application of heuristic algorithms to generate optimal schedules. In studies reported so far, the Unit Commitment and the Economic Load Dispatch problems are solved as separate problems. In the addressed work, the commitment and de-commitment of generating units is obtained using a Genetic Algorithm (GA), and the optimal load distribution of the scheduled units is obtained using Improved Differential Evolution with Opposition Based Learning (IDE-OBL). The power demand is varied for 24 hours to determine the schedule in the IEEE 20 bus system including transmission losses, power balance and generator capacity constraints. Optimal distribution of load among generating units, fuel cost per hour, power loss, total power and computational time are computed for each of the test systems using the intelligent algorithms. From the comparative analysis, it can be concluded that GA-IDE-OBL is a better approach for solving UC-ELD problems in terms of optimal solution, robustness, and computational efficiency.

P Surekha & S Sumathi

400 Isolation, Screening and Optimization of Xylanase Production in Submerged Fermentation Using *P. citrinum*.

Cellulase free xylanase is one of the most important upcoming enzyme having industrial application in chemical, biochemical, pharmaceutical and food industry. In the present study, a soil isolate was found to be promising for xylanase production. Biochemical identification tests, Scanning Electron Microscopy (SEM) and 16S rRNA sequencing identified the organism *Penicillium citrinum* MTCC 9620. Later on, optimization of media composition and environmental factors were investigated.



G Ghoshal, U C Banerjee & U S Shivhare

Energy and Environment

406 Study on Physiological Effects on Palm Oil Mill Workers Exposed to Extreme Heat Condition

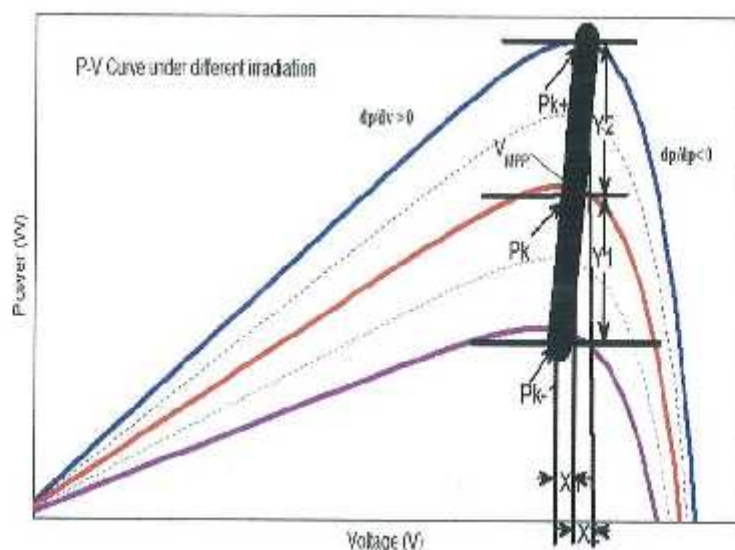
The objective of this study was to determine heat exposure on palm oil mill workers and its effect on physiological changes in them. Parameters considered environmental temperature, relative humidity, metabolic workload, body core temperature, blood pressure and heart rate. The average time of monitoring was 2 hrs for intermittent exposure and 8 hrs for overall exposure. Workers were exposed to moderate heat stress during this study period. There were significant differences between heat exposure and physiological changes before shift and after working for 2 hrs and 8 hrs, respectively. Metabolic workload of respondents in medium work category was 200-350 kcal/hr in respect to ACGIH level. Overall heat exposure levels in all divs. in this palm oil mills were found unsuitable for working duration of 8 hrs a day. This study also found that the WBGTin value exceeded the limit of ACGIH for a medium workload category (75% work, 25% rest). Ideally, every area in each division requires individuals to work for 50% of the time and rest for 50% of time for each working shift.

S NurIzzate, M T Shamsul Bahri, K Karmegam & N Y Guan

- 411 **A New Method of Maximum Power Point Tracking for Maximizing the Power Generation from an SPV Plant**

The objective of grid connected photovoltaic (PV) energy conversion systems is to extract electrical energy from the PV array and supply to the grid with high power quality and high efficiency. This paper proposes a modified variable step Perturb and Observe (P&O) maximum power point tracking (MPPT) algorithm for improving the efficiency of single stage grid connected power conversion system. Further this paper suggests an integrated controller which is used to improve the quality of power supply to the grid. The proposed algorithm and control techniques are analyzed and compared with conventional methods. The same has been implemented in MATLAB Simulink and verified.

P Sivaraman & A Nirmalkumar



Waste Utilization

- 416 **Effect of Blending of Sisal on Pulp Properties of Waste Papers in Handmade Papermaking**

In an attempt to improve the quality of the waste paper in recycling in paper manufacturing, sisal (a hard fiber) is blended with. The proximate analysis of sisal fibre has been compared with that of the kenaf and waste paper. A high cellulose content in sisal (67.19%) than the kenaf bast fibre (63.5%) and a slightly less lignin percent of sisal (10.22) in comparison to kenaf (12.7) suggests the suitability of sisal fiber for better pulping efficacy and hence paper making. The high tensile strength of sisal fiber is an important cause for blending with weak recycled fibers of waste paper. The preparation of strong paper has been optimized by varying the amount of constituents and modifying sisal fibers.

S Behera, S Patel & B K Mishra

Author-Reader Platform

- 423 **Instructions to contributors**