

Skills for Rural Youth in India: Issues and Challenge

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Abstract

India is a vast country having 1.2 billion population which represents one-sixth of the humanity. The country can be rightly considered to be a young nation as 50 percent of its population is less than 25 years of age. Many developed and developing countries of the world are looking towards India to meet their emerging manpower needs. India is faced with a problem of unemployment and underemployment. Recognising the potential contribution of India's young population to its own economy and economies of other countries, the skill development has been taken up at the national level in a mission mode. All skill development schemes are being monitored by the office of the Prime Minister. More than 20 ministries and departments are involved in imparting skills to the youth of the country. National Vocational Educational Qualification Framework and National Vocational Qualification Framework have been initiated by the Ministry of Human Resource Development and Ministry of Labour and Employment respectively. Besides improving infrastructure in existing government institutions, private investment is being attracted for capacity building for skill development. There are numerous schemes offered by different ministries and departments. There has been an encouraging response to various schemes. The country has given itself a target of imparting skills to 500 million people by 2022. India intends to reap a demographic dividend by making available highly competent and skilled manpower which will meet emerging manpower needs of its own and also of the needy nations across the globe. The paper also makes a reference to two of the social sector schemes of the Ministry of Human Resource Development, Govt of India. These schemes are: (i) Community Development Through Polytechnics (CDTP); and (ii) Integrating Persons With Disabilities in the Mainstream of Technical and Vocational Education. Both the schemes have proved to be successful. While the CDTP Scheme largely aims at developing skills among rural youth, the other scheme aims at empowering the persons with disabilities. The paper also discusses major problems and challenges in carrying out Skill Development Mission in the country.

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Study of Effects of Variation in Kinetic Energy of Working Fluids on effectiveness of Counter-Flow Heat Exchangers

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Abstract

In heat exchangers variation in either fluid temperature or fluid flow rate or both disturb the equilibrium state of the process. The restoration of the process from the disturbed state to steady state is very important in food processing industry. Simulation of the process assists in plant parameter tuning resulting in early restoration of steady state of the process from disturbed state. In this work, the effects of variation in kinetic energy of working fluids on effectiveness of counter-flow heat exchangers have been simulated. The effects of NTU and kinetic energy of both hot and cold fluids on the effectiveness of the heat exchanger have been studied. Such a study is helpful in predicting the true effectiveness of counter-flow type heat exchangers and tuning of plant-parameters for early restoration of steady state of the process from disturbed state.

Keywords: Counter-flow heat exchanger, Effectiveness, NTU, Variable kinetic energy.

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Evaluation of Curricula of B.E/B. Tech Degree in Mechanical Engineering in Chennai Metropolitan Area considering the Industrial Needs

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Abstract

Innovation is the key for survival in cut-throat competitive and flatter world. Innovation of new products / processes can be produced only with the help of a good design engineer. To sustain global technological leadership, the need for globalizing engineering education has been widely recognized by academic institutions, industry and government for several decades. This paper discusses about the need for globalizing the mechanical engineering curricula, present trends in the automotive industry, the curricula of mechanical engineering in global and Indian context and a list of recommendations to improve the existing curricula to meet the global needs.

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A Study of Atmospheric Cold Plasma Sources for Surface Modification

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Abstract

Plasma technologies (PTs) are rapidly emerging as an area of activity having a marked impact on virtually all domains of science, technology, and in particular the industrial sector. The plasma state of the matter has generated enabling technologies, which integrate the unique properties of the plasma state with processes relevant to scientific and industrial applications. For their use in the technological and the industrial sector, the atmospheric cold plasmas can be generated by a diversity of electrical discharges such as the corona discharge, dielectric barrier discharge, atmospheric pressure plasma jet, micro hollow cathode discharge, and several others too; all having different structures, power supply, working conditions and also showing variable suitability for their application in the area of surface treatment. The present paper reflects the diversity of the plasma state of matter as an enabling tool for application in the field of surface treatment, particularly the textile sector and also sheds light on the various atmospheric pressure cold plasma sources that are most suited for surface modification.

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A Computer Based System for determining Stoichiometric Coefficients

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Abstract

Chemistry plays an important role in various fields of engineering, especially material science and chemical engineering. Chemical processes involve different types of chemical reactions. Chemical reactions are represented symbolically using chemical equations. A balanced equation gives quantitative information about the chemical reaction. For balancing chemical equations, a variety of methods is used. While some of these methods are heuristic in nature, others are complicated. Therefore, a computer based system for automated balancing of chemical equations is desirable. This paper introduces a computer based system for balancing of chemical equations. The user provides the reactants and products in terms of their chemical formulae and the system computes the stoichiometric coefficients for obtaining balanced chemical equation. The functionality of the system has been demonstrated through test results underlining the utility of the system.

Keywords: Stoichiometric coefficients, System of linear equations, MATLAB.

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Study of Parameters for Magnetic Force Assisted Abrasive Flow Machining Process

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Abstract

Abrasive flow machining is a non-conventional machining process and was developed as a method to deburr, polish and radius difficult to reach surfaces such as intricate geometries by flowing a semi-liquid paste over them. Abrasion occurs wherever the medium passes through the highly restrictive passage. The key components of AFM process are the machine, tooling and abrasive medium. The AFM is capable of economically producing high surface finish. One serious limitation of this process is its low productivity in terms of rate of improvement in surface roughness. Till now limited efforts have been done towards enhancing the productivity of this process with regard to better quality of work piece surface. In recent years, hybrid-machining processes have been developed to improve the efficiency of such processes. This paper discusses magnetic force as a technique for productivity enhancement in terms of percentage improvement in surface roughness (Ra). The magnetic force is generated around the full length of the cylindrical work piece by applying DC current to the solenoid, which provides the magnetic force to the abrasive particles normal to the axis of work piece. In this paper various parameters affecting the process are described and the effect of the key parameters on the performance of process has been studied.

Keywords: Abrasive Flow Machining (AFM), Magnetic Force, MFAAFM, MAFM.

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