

## Competitiveness through Defect Mitigation professed in a Low Pressure Die Casting Facility

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### Abstract

Through this present work the author attempts to draw manufacturers' attention to the urgency of defect mitigation, as a prelude to achieving organisational competency. No manufacturer must have the license to create defects, for scrap generation comes with attendant costs which are only paid for by the society, the government and the organizations doing business with the said producer. The present work outlines a strategy of defect abatement based on a case study in Low Pressure Die Casting (LPDC) of lead castings, facilitated by analysis with statistical techniques using ANOVA and DOE. The reporting of results is largely notional and directs principally towards improvement of organisation's manufacturing competency. Use of a three pronged structured methodology involving Strategic, Operational and Tactical stimuli is illustrated, interspersed with another triple step action points viz: setting your house in order, comprehending right correction stimulus and then detailing the management process for consistent performance.

The exercise helped reduce shell core rejection to zero, entailing 25 % capacity enhancement in addition to the bad cores converted to good ones. This was effected by reduction of Hopper time for stand filling and Box time for silica sand polymerization.

**Key words:** Competitive Strategy, world class foundry, ANOVA, Defect Abatement, LPDC.

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## Industrial Needs and Perception of Employers of Instrumentation & Control Technicians

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### Abstract

The women students with Diploma in Instrumentation and Control Engineering (ICE) have poor employment opportunities in the instrumentation and its allied industries in Tamil Nadu which stress the need for a thorough appraisal of the women technicians and their education and training. Hence, the issues and effects of these influences in shaping their employment opportunities are to be critically analyzed. Also, the employer's expectation from technicians and the knowledge and skills inculcated in polytechnics are not equally matched and there are large disparities existing between the expected competencies and the existing competencies. This article provides in-depth study in the industrial needs, job analysis, a synthesis of performance standards, and a set of mismatches identified between demand and supply. Appropriate suggestions are presented to overcome the gaps.

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## Effect of Variable Degree of Reaction on the Performance of Axial Flow Compressor

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### Abstract

The design of axial flow compressor stage has been formulated as a nonlinear mathematical programming problem with the objective of minimizing the work input or the power input to the compressor. Aerodynamic as well as mechanical constraints are considered in the problem formulation. A method of evaluating the objective function and constraints of the problem is presented. The optimization problem is solved by using the penalty function method in which the Davidson-Fletcher-Powell variable metric minimization technique is employed. Optimization technique has been used in this study to optimize the work input using various variables and constraints. This work explores the effect of variable reaction blading on the compressor with regard to axial compressor performance and optimizes the work input to the compressor.

**Keywords:** axial, compressor, degree of reaction, optimization, work input.

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## Problem Based Learning in Engineering Education in India: An urgently needed Paradigm Shift

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Industry continuously needs and demands people who can think, innovate, notice, draw inferences, analytically work on the problems and take corrective actions so as to continually improve the results. In other words the two areas, which are of importance, are the problem solving skills and lifelong learning ability of the engineers. Engineers in the technical life need to be lifelong learners, continuously learning from the good and bad experiences while on the job. Simply memorizing the facts and concepts and knowing the solutions to the few problems during the graduation doesn't and cannot help an engineer in real technical life.

The literature implied an overall need for the graduates of engineering to be creative. The engineering industry wants thinkers and problem solvers, so likewise we should use education techniques that foster creativity in students (Kellar and Kellogg, 2000). The present methodology of classroom teaching does not prepare the students for these traits and the need to adopt a new methodology was long sought for.

This paper entails the survey done on various Human Resource Heads who came for campus placements in Chitkara Institute of Engineering and Technology, and relates to how Problem Based Learning can help develop, if not all, but many of the traits sought by the industry.

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## **A Study of the Status of Formal Programmes offered under the Scheme for Integrating Persons with Disabilities (PWDs) in the Mainstream of Technical and Vocational Education**

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### **Abstract**

India has made significant progress on various fronts during post-independence period. Education and training infrastructure in the country has greatly improved which is resulting in continuous improvement in rate of literacy year after year. Due to many constraints, the vast majority of the disabled people in India could not be included in education mainstream. Situation is still worse if one looks at the participation of disabled in technical and vocational education in the country. Recognizing the need for mainstreaming the disabled persons in technical and vocational education, Ministry of Human Resource Development, Government of India launched the "Scheme for Integrating Persons with Disabilities in the Mainstream of Technical and Vocational Education" during the year 2000. Under this scheme, 50 identified polytechnics/technical institutions across the country have been upgraded so as to make them easily accessible by the disabled students. Each of the identified polytechnic/ technical institution is required to offer admission to 25 physically challenged students every year in formal programmes. The polytechnics/technical institutions also train lesser educated physically challenged persons in variety of vocational skills through non-formal programmes of 3-6 months duration.

Seven years after the commencement of this scheme (2007), NITTTR, Chandigarh decided to undertake a study to ascertain the status of physically challenged students joining the formal programmes. The study aimed at finding out disability-wise pattern of admissions in formal programmes, admission criteria, improvements in infrastructure for the physically challenged students, problems faced by them and possible solutions of some of the major problems. Chandigarh College of Engineering and Technology, Chandigarh and Sant Longowal Institute of Engineering and Technology, Longowal (Punjab) were selected for undertaking this institutional case study. The information gathered has been analyzed and interpreted. Findings of the study indicate that physically challenged students have been successfully mainstreamed in institutions selected for this study. The scheme has been attracting physically challenged students from far-flung areas. The institutions are, by and large, meeting all major academic requirements of the physically challenged students. There are, however, a few issues which need to be addressed by the two institutions so as to further improve upon the effectiveness of formal programmes offered to the physically challenged students.

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