QUALITY MANAGEMENT SYSTEM FOR
ENGINEERING EDUCATION INSTITUTES

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In the context of quality of engineering education Institutes, Quality is of paramount importance.

The key word of success in today manufacturing and processing industry and the service sector is Quality. No doubt, we have practiced concept of Quality in our country through the ages, the mankind has come across a new definition to this word quality, with the emergence of Japan during the mid fifties, as an Industrial Baron in the field of electronics and automobiles. This new wave has swept the entire globe and has aroused awakening in the customer for his total satisfaction on one hand and on the other hand to the manufacturer it has given a sense of immense responsibility towards technology an in-put for management to deliver the best at the most economic price while also ensuring the quality of life to the society at large. The world-class quality emphasises on various fecets of delighting the customer over life span and the aspects taken care of are, inaddition, to economic pricing, the life time service, appropriate response, delivery on schedule and relationship between the manufacturers and the user so that an inseparable assoication develops between the two. While quality gives a product or system fitness for use, reliability of a products performance and service generates confidence in the user. Concepts of quality, reliability, availability and maintainability, therefore, should form integral part of the curriculum for their engineering education and its importance needs no emphasis.

Once the source of engineering education moves beyond the direct oversight of the degree granting institution, there must be concern regarding the nature of staff involved. A long involvement between the institutions can involve staff exchange and joint curriculum development. The resulting high levels of awareness that each institution will have will go a long way.

The question of the quality of the staff in engineering institutions also plays a pivotal role, is worthy of considerations. In a stable discipline, this can be established via qualification, but in the work atmosphere formal qualification needs to be seen alongwith experience and expertise.

The maintenance of quality of engineering education is in the hands of the institutions themselves and the employees and professional societies. It is also a socio - political - economic system, enabling engineering students to be trained and conditioned to the interest of the nation's, state's power elite gain social mobility and become consuming and producing citizens. Quality management system ISO-9000, can be used as a first vehicle to approach excellence as well.

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Quality Management System ISO-9000:

The criticism against QMS had been that standards applicability had a leaning for the installations dealing with design, manufacture and quality evaluation and was not user frienly. The revised version ISO-9000 of 94 Quality Management is applicable in all circumstances and services including education and training. Briefly the process of gaining ISO-9000 comprise of designing of quality system (which should meet the requirement of the standard as well as the need of the organisation) and then implementing the system involving entire cross section in the institution.

In depth study of the ISO-9000 standard shows that the standard encompasses important activities of the engineering education institutions as detaild below :

4.9 Process control for control system like syllabus coverage, time table, attendance register.

4.10 Inspection & training for examination.

4.1 Management responsibility for fixing accountabilities.

4.6 Purchasing.

4.19 Servicing for office area services.

4.18 Training

Some other requirements of the standard, on the other hand, hardly apply for the engineering institutions, their applicability are for dealing with very limited and specific issues.

Documentation and data control (4.5), Correcting action and Preventing action (4.14), Management reviews (4.13), Control of Quality Records (4.16), Internal Quality Audit (4.17) and Six monthly external audit are the real strengths of ISO-9000. These are the requirements coupled their policies and procedures, that really force an organization to be meticulous, consistent, progressive and accountable. The whole organisation learn new ways of working and importance of being systematic, planned and transparent.

The new standard ISO-9001 : 2000 is scheduled to be published by Nov. 2000. The list of revisions is being finalised by this year end. This is a consistent pair ISO-9001 : 2000 and ISO-9004 : 2000. Process oriented structure and is said to be seamless advance towards excellence. The organisations who with to have this standard and require International Standard ISO-9001 : 2000 can limit the scope of application or tailoring the requirments. New standard is proposed to be changed from prescriptive to less prescriptive and has a wider application for service organisations. ISO-9001 : 2000 is process based structure encompossing (a) Management responsibility (b) Resource Management (c) Product & Service realization and (d) Measurement, Analysis and improvement. ISO-9001 : 2000 can be used for Certification.

Regarding question as to how to go about installing the system in accordance with the provision of ISO-9001, to start with institutions, required (1) Making check list and forms of all that one is doing and (2) Start to fix and list tasks and accountabilities to people. These two steps are the begining. Thereafter, organisations have to start moving dialectically between drafting policies and standard. Procedures are what link-up the policies and forms. Next step is to prepare the staff to go through it.

Documentation of Policies :

In order to achieve high quality of the system and bringing uniformity in our engineering institutions, it is essential to maintain methodical documentation of every process / decision and policies. The policies in the following areas are relevant for adoption.

* ★ Counselling Policy
* ★ Student Selection Policy
* ★ Education Management Policy
* ★ Market Research Policy
* ★ Marketing Policy
* ★ Promotion of Institution Policy
* ★ Equal Opportunity Policy
* ★ Course Implementation Policy
* ★ Student Guidance and Welfare Policy
* ★ Resource Management Policy
* ★ Inter Institution Liaison Policy
* ★ Training & Placement Policy
* ★ Research & Development Policy

Certification Process - Suggested Steps:

Engineering Education Institutes desirous of achieving ISO-9000 accrediation should take the following processes for certification.

(i) Organise ISO-9000 awareness programmes. This programme should be for all the employees of the Institute. The programmes will enable to appreciate the different cluases of the standard as well as its usefulness to the organization.

(ii) Management Representative should, then, be appointed by the Head of the Institution for reviewing, updating and installing of the Quality - System. It is the responsibility of the Management Representative to play vital role to ensure that Quality-System is established and implemented, thereafter maintained as per the guidelines of ISO-9000 relevant standard. He also maintains adequate co-ordination with all internal and external agencies on the matters relating to the quality system of the organization.

(iii) A Steering Committee is to appointed, comprising of Senior knowledgeable faculty members to over see the progress of formulation and implementation of the Quality-System. Steering Committee should have periodical meetings with necessary agenda to ensure that the work is completed in a planned fashion within stipulated time schedule.

(iv) The first level of documentation i.e. Quality Manual should be prepared explicitly detailing as to how the requirements of ISO-9001 will be met by the institution. It is expedient that Quality Manual is prepared by a core team of knowledgeable employees; the core team should be especially entrusted for completion of the job within mutually accepted time frame.

(v) Once the quality Manual is prepared, the next stage is to formalise existing procedure in the Procedure Manual. Necessary improvements can be incorporated. Care should be taken that keen & energetic and knwoledgeable experts from the key activities areas are identified to write the procedure. The methodology adopted should be on the same lines as that of the preparation of Quality Manual. The procedures made should be

adequate, simple enough to follow, auditable and most importantly, users' friendly. System should be dynamic to incorporate and absorb new changes in the existing system.

(vi) During the preparation phase itself, personnel should be trained on various facets of quality awareness including use of Quality Manual and Quality Procedures and Works Instructions and related documents.

(vii) The next step is to conduct programme on Quality audit. Quality team / teams selected should be exposed to this training programme which basically suggests how to conduct audit on Quality Systems and identify non-conformities. The auditor from a particular department should not audit his own department, but that of another department. ISO-10,000 Series of standard on auditing provides complete frame work on auditing; should be used as guidelines.

(viii) Head of the Institute should start-up the implementation phase. His personal intiative and involvement becomes a strong motivator for the entire workforce and implementation drive gains adequate momentum for implementation of the Quality System. During the implementation phase staff members must have easy access to the Quality Manual and Quality Procedures, Works Instructions relevant to day-to-day working.

(ix) During the implementation phase, successive internal audits should be organised to identify non-conformities and taking corrective action. The management reviews under the leadership of the Chief Executive, considerably help to ensure establishment of the Quality System and organisations adherence to the same. It is helpful to have periodical management reviews.

(x) After completion of two cycles of internal audit, generally, the Institution should be ready for pre-assessment by selected assessor. This agency should then be approached for preassessment. Once the assessor finds everything is in order, the Institution should go for full fledged assessment for ISO Certification.

(xi) Afther this certification, efforts should be to continously improve existing practices and procedures to ensure that there are no non-conformities. After three years, the assessment body will again make its assessment to ensure that the system is in its place, having assured itself of the maintenance of the system through surveillance audits periodically during the interim period.

After Certification :

Success of the process of certification, maintenance and improvements depends entirely on the commitment and enthusiasm of the team leader as well as other team members drawn from the full spectrum of the staff. Obtaining ISO-9000 certification is the first step for Institutions to develop its people and completely improve its performance key areas to approach excellence are (i) Self-assessment (ii) Bench Marking for the guidance of educational Engineering Institutes to go forward for continuous

improvement; the process of achieving competitive Bench are indicated below :

* Identify Benchmark out put.
* Identify best competitor.
* Determine data collection Methods;
* Determine current competitive methods.
* Project feature bench mark gaps.
* Establishment of functional goals.
* Develop functional action plan.
* Implementation of strategies.
* Monitoring Results.
* Achieve Bench Mark.

Benefits :

Benefits of ISO-9000 in todays environment are summarised below :

(i)   Offers significants opportunity of improvement in all respects.

(ii) Helps install a cost-effective Quality Management System.

(iii) Receiving a stamp of International Standards leads to positive image with greater acceptability.

After transforming the Engineering Educational Institutes through implementing ISO-9000 Std., the educationist can pay more attention to staff development, effective delegation, the plight of the weaker students and many other activities that can add immense values.

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