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**THE ENGINEERING
PROFESSION IN PAKISTAN**

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The engineers working for the Government Departments have made outstanding contributions to the profession by establishing extensive networks of surface irrigation, road communications, power stations, transmission lines, and innumerable other public facilities. The vast infrastructure created after construction has brought out the need for systematic operation and maintenance of complex engineering works. Day to day functions of the engineers were unavoidably influenced by rather inflexible government rules and procedures which restrict discretion and individual judgment in pursuit of a uniform policy for treatment of all problems. The motivation for doing something new has been seriously impaired and a practice of playing safe has emerged in Pakistan ever since Independence.

The engineering profession in Pakistan after having been confined to the government departments for a long time is now acquiring new dimensions. A strong drive for economic advance, establishments of major public corporations and gigantic Indus Basin Programme are the three main factors responsible for the shifting trend. The opportunities in an expanding profession have brought out new challenges at a time when lack of unity in the profession has undermined its competence.

The expanding job opportunities for engineers also resulted in some problems like controversies and conflicts. The public corporations had to borrow engineers mostly from government departments in numbers, of course, too inadequate to implement large engineering projects.

Involvement of a number of foreign and local consulting firms was a natural consequence. Repeated discussions comparing competence and practices of departmental engineers with those of local and foreign consulting firms and the comparison of individuals of different organizations hampered the optimal use of engineering man-power available in the country. It was not fully realized that such controversies would impair the image of engineering profession in the eyes of public as well as the government.

Development of engineering competence is not possible without paying due attention to engineering man-power. Men represent the most important M of the five essential Ms in the engineering practice. The remaining being for Methods, Materials, Machines and Money. Competence of an individual engineer depends on two qualities : his "inherent ability" and his "attitude" towards profession. Development of professional attitude is the key factor for sound engineering ability. Motivation, Enthusiasm, discipline, and Participation are the pre-requisites of a professional attitude. Motivation increases with financial returns, recognition, and personal satisfaction. A motivated engineer can do wonders with unrelenting enthusiasm as a driving power. Self discipline helps one to manage his time and energy for optimal output. It also enables him to develop clear thinking and an in-depth look at the point of view of others, and to rectify his own weaknesses through systematic work. Participation is an effective way of contributing your best and of sharing experiences with other professionals. Persons with apparently average qualities some times perform far better when afforded opportunities to participate and accept responsibility.

Development of engineering competence has been affected by class system in service, service rules, lack of opportunities, and inadequate communications. The prevalent class system in service is similar to Hindu Cast System as it links the future of young engineer with his status at the time of his birth in the organization. Service Rules guarantee promotion on the basis of seniority. This tends to kill the incentive for creative work which inherently is associated with some risk of failure. Great advances in engineering are made by those who decide to try something new rather than playing safe using shields of established methods and practices. Lack of opportunities and challenges has been instrumental in employing many engineers on jobs of routine and repetitive work which soon causes their professional

knowledge to become stale and obsolete. Communication is essential for continued education which was never so important as it is today in the world where knowledge becomes obsolete at an unprecedented speed. Engineering societies through periodic publications help in continued education.

Lack of professional behaviour in application of technical knowledge and not the insufficient technical knowledge is responsible for many problems of Pakistani engineers. In addition to the quality of his engineering work an engineer is also judged by his professional behaviour by the people he comes across. Engineers must recognize the fact that their unscrupulous criticism of other engineers affects the profession at large. Engineering profession, unlike many other professions, affords a much greater flexibility in doing a given work. No engineer should be criticized because he did a job in a manner different from another engineer. The impression that no two engineers agree stems from the lack of understanding of the engineering profession.

The Pakistan Engineering Congress is truly responsible to protect ethical standards which govern the profession. The Congress which is expected to take a leading role in addressing the problems faced by the profession is today weak and ineffective. Senior members seem to be interested more in individual security than in the welfare of the profession. The constitution of Engineering Congress should be amended to include the following :

- i. Establishing and maintenance of education, ethics and professional practice.
- ii. Promote unity among engineers and engineering organizations.
- iii. More effective role of the senior members of the profession and the Executive Council in advancement of the profession. The Executive Council should advise members of the profession and engineering organizations in matters of technical disagreements.
- iv. Effective liaison with other engineering societies both inside and outside of the country.

- v. The profession must wake up to recognize the stakes. Individuals as well as organizations have to accept responsibility to jointly face and resolve the problems faced by the engineering profession.