

An Integrated Approach to Optimisation

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ABSTRACT

To evaluate the net profitability of a change in the system, an integrated approach should be used. The goal of the management should be complete optimisation and not the suboptimisation.

How can a paper manufacturing company be more profitable ?

We hear a lot of catchy words as energy conservation or higher productivity, but these action always may not result in net profit. In order to survive and be more profitable in a highly competitive market like paper, managements should strive to optimise the use of its resources. In this discussion the term optimisation is referred to as the best course of action for maximisation of net profit on investment and resources input,

Optimisation may be the result of one or combination of the following: research and development in the manufacturing process, new marketing strategy, new product development, and or better purchasing techniques etc. New and improved techniques in the above areas can be a result of research work conducted at academic institutions, equipment manufacturing companies, and other independent institutions working in this area. Whenever management decides to implement a new concept to improve the existing system an integrated approach should be taken instead of a isolated approach. An integrated approach is, taking into account the effect of the change in one system on any of the following or preceding systems.

The major activities of a paper company includes the purchasing of raw materials (s), processing the raw materials (s) into finished product (s), selling the finished product (s), and managing the personnel. These activities are performed by purchasing, manufacturing,

marketing and the personnel departments respectively. The integrated approach will consider the effect of any change in one section of a department on all sections of that departments and all other departments, while an isolated approach consider only the particular section in which the improvements or changes are made.

Let us consider an hypothetical case, Company X wants to change over to a new pulping chemical, A in the process. The new chemical is claimed to result in savings of Rs. 200/ton of pulp. But the use of chemical A might or might not be suitable for the existing cellulosic raw material as it is. The company should check if it effects the energy consumption and/or the bleaching process. The characteristics of the new pulp might also effect the stock preparation and paper making process and hence the final product. It also might need different treatment for effluent to meet centre or state Government regulations. The cost and availability of the chemical A might create complications in the purchasing department. If the properties of the final product are effected then its effect on the marketing should also be taken in to consideration. By assigning a dollar figure to the impact caused on other sections of the company by the use of chemical A, it is found that the increase in energy consumption results in an extra cost of Rs 50/ton of pulp, It also increases the effluents treatment by Rs. 20/ton of pulp. The purchasing department will incur an additional Rs 30/ton of pulp. Marketing department losses a Rs 50/ton of pulp, The net profitability calculated by integrated approach by using this chemical

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A over the existing chemical results in a Rs. 50/ton of pulp (real net profit) instead of Rs. 200/ton of pulp calculated by using the isolated approach. So the company's decision whether to switch over to the new chemical should be based on the Rs 50/ton of pulp savings and not the Rs. 200/ton of pulp savings. The intangible costs should also be seriously considered.

Quite frequently the management uses the isolated approach like energy conservation or improvement in one section etc., in making decisions without taking into consideration their effect on other activities and the overall savings of the system. Savings in one department does not necessarily indicate an overall

savings or savings of the same magnitude as calculated by using the isolated approach. An integrated approach should always be taken to determine the net savings on any course of action in optimisation.

Integrated approach can also be an effective tool in decision making process during the planning and design stages of the facilities. Putting too much emphasis on one particular process viz. stock preparation in certain cases may not be profitable if adequate care is not taken at preceding process viz. pulping stage. This approach is not limited to only paper industry, and can be effectively applied to any manufacturing company.