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Optimizing Maintenance Based on the Principles of Terotechnology

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Abstract

Due to the large numbers of stages of the life cycle of the product but also the technical term for this cycle, developing decision can not be done by one person. So, now no director, no economist or engineer or chief accountant can not take the decision alone in this complex field. As the decisions that are at the same time and the nature of economic-financial and technology necessary to take into account the interdisciplinary nature. That is why specialists have thought terotechnology would be „a combination of management, technical, financial shares accounting and other practices".

Key words: *terotechnology, efficiency, maintenance activities*.

Ensuring a high degree of efficiency of the technique involves in the first place opportune to enforcement actions by preventive or corrective maintenance. For this purpose in any organization are financial funds allocated annually for high maintenance. Those maintenance costs were in the 70 equal to about 5% of its net sales from manufacturing to industrialized countries (U.S., England, Germany.)

Faulty which occur in equipment of enterprises that result in the production process which costs a lot, and in the case SC PETROMSERVICE SA costs of maintenance works are often huge. Therefore it is necessary increasingly need competent maintenance activities that are really important absolute.

Fixed funds management strategy of any enterprise must be addressed systemically, in its full complexity in the sense that the planning, organizing and carrying out maintenance and technical equipment should be addressed in direct relationship with the research, design, purchasing, production, financing and operation.

Terotechnology principles can be summarized as follows: for efficient management of enterprises or units (UM) is required integrative treatment as a whole for all activities related to care for the technical state and maintenance techniques and equipment (appliances, equipment, machines etc.), to maintain their smooth running, the parameters of their project, for designing economic and functional elements and components, to finance more rational of all activities (work, processes etc.) for a training opportune to labor and management a rational and economical to them and in general for the production or actions with minimum expenditure. This concept has emerged in the past thirty years and is based on practical observations, but it can solve only through the analysis system (systems theory). So, the concept is viewed in the light of decision-makers from different fields, these factors are engineers, economists, managers

(directors), commanders, who have realized they must work as a team (team management). Goal of terotechnology is efficiency technical-economic processes (acquisition, production, trade, maintenance, etc.). Which, in terms of management, are of great complexity. Since a large part of the costs of maintenance are out of power for a maintenance manager is need to address the problem in a different way to give a solution. To resolve should be chosen the best solutions, best practices and processes that lead to the most efficient and effective maintenance actions to improve safety in operation, reliability, out of operation processes to reduce production and raising productivity for maintenance works.

The concept of terotechnology is not only a simple science to technical maintenance products that includes a set of activities forecasts articles, studies, projects and technical documentation for maintenance work and repairs (including the reconditioning of parts) that is made all in optimum condition (in terms of profitability). Interdisciplinary nature of the result from the terotechnology throughout all the sciences which compete to achieve stated objectives, namely: management, informatics, statistics, cybernetics, economic, operational research, automation, electronics, reliability theory, probability theory, strength of materials, mathematics, study metals and materials, tribotehnology (tribology), fluid mechanics, systems theory etc.

Thus, based on systems theory, that the use of any technical product provides a wide range of data and information that may underlie the effect of feed-back in order to optimize the system for maintenance. Rational use of non-use or incomplete information obtained in the process of exploitation in the conception, design and technical products manufacturing leads inexorably to the growth of the exorbitant costs of operating (maintenance) and reduce the efficiency of general management products (goods) of all categories.

From the resulting set up here as terotechnology deals in general specify the technical conditions of products, technical research and design their security operation, the reliability and availability of maintenance and repair of equipment, machinery, cars, etc. of the installation and putting into service, upgrading and replacement of them and feed back information on the design, operation and life cycle cost of technical products (all products). Life cycle of each product technically is a series of events from conception to the cassation or replace it. Because each product has its particularities of the design, manufacture, operation, maintenance etc. they add to the inflation, stock quotations etc., the common denominator for the measurements is the cost of different sequences of life or resource use of the products. So even these resources can be designed, used or used like some goods (products). In this way, finally, can determine how much will it cost in total research (development), design, purchase, installation, operation, maintenance and replacement products or in short, will be spending the entire life cycle of the product.

Of course the aim of terotehnology, as revealed in the set, is to achieve a minimum cost of the life cycle. So all efforts should be channeled in this direction. Also products have used and managed with maximum efficiency. Therefore one can say that a better criterion for assessing the use of the entire life cycle of their would be cost-optimal life cycle, and the decision in terotechnology it was based on the last criteria.

As decisions to be taken under the sign of uncertainty (including time of change in people's attitude, regarding the whole life cycle of products and its connection with the prices and variable costs) to require the inclusion in the definition terotechnology a "target tracking costs of the economic cycle of life". But what measures will be undertaken for the company to operate economically, in terms of the terotechnology represents some variable circumstances and all along the problem to be solved and evaluated by managers. For this reason I do indication that the definition should be adopted terotechnology term "**tracking**" and not "**making**".

Due to the large number of stages of the life cycle of the product but also the technical term for this cycle, developing decision can not be done by one person but by company executives, representatives of financial and maintenance. So, now no director, no economist or engineer or

chief accountant can not take the decision alone in this complex field. As the decisions that are at the same time and the nature of economic-financial and technology necessary to take into account the interdisciplinary nature of the process of making decisions to use the entire life cycle of products and as a result, the decision to the management of a team that will be part and managers and economists and Financial and engineers. That is why specialists have thought terotechnology would be „a combination of management, technical, financial shares accounting and other practices".

Therefore can understand now why the maintenance of all property (maintenance efficiency) is just a component of the terotechnology. Basically, if you would make implementation of all provisions terotechnology spending for preventive maintenance (PM) and right (CM) would lessen. These corrective maintenance (CM) expenses and that preventive (PM) and total expenditure on the entire life cycle should be pursued and clarified since the first phase of research design products (equipment) or plant (it) to reach the minimum expenditure (Cmin). In the U.S., logistic management is the scientific discipline that is coming mostly from the concept of technology and the principles of technology and their application in industrial practice. We know that in this respect American experts using the methods of evaluating the life cycle of products is very much approaching the methods used in terotechnology. The difference would be that terotechnology has a better scientific basis consisting founded in interdisciplinary analysis of the effectiveness of the life cycle.

Conclusions

In conclusion, the terotechnology is a rigorous scientific approach, the integrated nature of an estimate of all costs for all sequences of the life cycle, in order to minimize them by using scientific management techniques. Therefore minimize the total expenditure may be obtained by coordinating the activities of engineers, economists and managers of enterprises (large, medium or low) based on the principles of the terotechnology. The concept of terotechnology is still very new and therefore industrial applications are relatively rare, but in industry are much more applications, an example being the introduction of the system life cycle management products to companies in the U.S. and the UK. Similarly should optimize the life cycle of technical equipment by firms in Romania.

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Optimizarea mentenantei pe baza principiilor terotehnologiei

Rezumat

Din cauza numărului mare de etape ale ciclului de viaţă a produsului tehnic dar şi a duratei acestui ciclu, elaborarea deciziei nu se poate face de o singură persoană ci de către directorii intreprinderii, reprezentanţii financiari şi de mentenanţă. Astfel, acum nici directorul, nici economistul, nici inginerul şi nici contabilul şef nu poate să ia decizia de unul singur în acest domeniu complex. Fiind vorba de decizii care în acelaşi timp sunt şi de natură economico-financiară dar şi tehnică este necesar să se ţină cont de această natură interdisciplinară a procesului de luare a deciziilor de utilizare a întregului ciclu de viaţă a produselor şi ca urmare, decizia să se ia de o echipă managerială din care să facă parte şi manageri şi economişti şi finanţişti dar şi ingineri. Iată de ce specialiştii s-au gândit că terotehnologia ar reprezenta „o combinaţie de management, tehnică, acţiuni financiar-contabile şi alte practici".