7th INTERNATIONAL MULTIDISCIPLINARY CONFERENCE
Baia Mare, Romania, May 17-18, 2007
ISSN-1224-3264

REMANUFACTURING – OPPORTUNITIES AND BARRIERS

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Abstract*: The remanufacturing represents the totality of the technological processes, through which a technological equipment, that has been in a certain state of physical and/or moral wear or definitively inoperable, goes through a transformation process into a new technological equipment, with the same usefulness or a different one, reusing under different ways as many parts of the old equipment as it is possible.*

Because the durable goods represent a major investment for many of the organizations, the remanufacturing is a good opportunity for the decreasing of their purchasing costs. Thus, the purchasing of the remanufactured goods represents an important component of the effort of increasing the profit.

Key words*: Remanufacturing, Opportunities, Barriers, Technologic Equipment, Uncertainty*

1. INTRODUCTION

The intelligent manufacturers of original equipment may use the remanufacturing for gathering valuable information for the enhancing of the projects, functions and post-selling activities. These advantages are missing if third parties undertake the activity of the own products remanufacturing.

Three main alternatives may be differentiated, those optimum applications depend by the peculiar criteria of every company, thus: the size of the business, the power of the capital, the company's strategy, etc.[2]:

a) The complete integration of the remanufacturing activity within the company which manufactures these equipment. This solution has the following advantages:
   - information about the demand of the technological equipment of the respective range;
   - using the optimum resources for the equipment manufacturing and remanufacturing;
   - generating the company's prestige of system supplier;
   - enhancing the customers confidence in the remanufactured technological equipment;

- increasing the selling of the remanufactured equipment instead of the new ones, along with the increasing of their profit share.

b) Establishing a subsidiary company having as object of activity the technological equipment remanufacturing and trading. The advantages of this solution are as follows:

- maintaining the company's prestige of new equipment system supplier;
- the unlimited access to the information and original technical records;
- information about the market of these equipment;
- maintaining the customers fidelity.

c) The externalization of the remanufacturing activity, as well as of the remanufactured equipment toward another company. The consequences of this option are:

- the possibility that the labour force could migrate from the manufacturer of new equipment toward the remanufacturer;
- the remanufacturer may focus on the equipment core parts which undergo the remanufacturing process;
- the marketing of the remanufactured equipment becomes more complicated;
- The new equipment manufacturer loses his prestige as a system supplier.

2. THE OPPORTUNITIES OF THE REMANUFACTURING PROCESS

However, increases of the profits both in the case of the remanufacturers and of their customers could be remarked, instead of some constraints and some indifference of the market for certain remanufactured equipment.

Significant increases of the eco-efficiency of the technological equipment could not be obtained by the incremental increase of the actual technologies. Quick steps in the technological development are essential for the promotion of materials reuse, remanufacturing and recycling.

The new research in the area of materials as well as the simplifying of the assemblies and subassemblies, their modulation and typifying are some other elements which enhance the remanufacturing industry.

These are the main overall factors, which could enhance the remanufacturing activity:

- the promotion of the remanufactured products in case of the public purchasing;
- the focused efforts of the professional organizations and of the industrial associations for defending and promoting the advantages of the remanufacturing activity;
- tax bonus for the remanufacturer and for the user of the remanufactured technological equipment;
- corrective taxes for noxious gas;

- promoting the remanufacturing as a more skilled and a more better paid activity, to encourage the trend of the labour force toward this area;
- inserting the needed subjects in the education institutions, thoroughgoing studies about remanufacturing.

These are some of the specific factors of the remanufactured products [3].

- their inherent high value;
- by their nature the remanufactured products are durable;
- moderate technological development;
- easily dismantling parts and cores;
- High upgrading degree.

The more remanufacturers of original equipment are enrolled in product remanufacturing activities for which they are specialized, due to the economic, social and ecological advantages. Thus, appear the so-called hybrid companies, the manufacturer and the remanufacturer of the same type of equipment, which enhances the remanufacturing industry within the national economies.

Due to the requirements of the law, the hybrid companies are compelled to make the difference between the activities of the new products manufacturing and the equipment remanufacturing, although the usefulness characteristics and performances of the both similar products should be identical. More than that, the regulations of some countries do not permit the manufacturers to sell equipments that contain remanufactured parts as being new products. An outstanding opportunity for the enhancing of the remanufacturing industry is that at the level of the hybrid companies, the remanufacturing issue is present even in the conception and projecting stages of the technological equipment.

More and more USA and European companies are concerned to set up new sections in the domain of the end of life equipment recovery, remanufacturing and recycling.

3. BARRIERS OF REMANUFACTURING

Plausibly, the remanufacturing is not the strongest point of the technological equipment manufacturing industry. The perception of the remanufactured goods as second-class products, limits the increasing of the selling of the products obtained this way.

The fashion or life style oriented goods (household appliances, computers, cars), which are obtained through the remanufacturing process, are perceived by the different users in different way.

Due to the multitude of domains where it could be seen, the remanufacturing activity has not presented itself as a united industry, with an efficient communication between the members of this industry and with an adequate appearance to the prospective beneficiaries.

Open or covered barriers in the way of remanufacturing are introduced in some circumstances by the original equipment manufacturers, this is implying their increased responsibility in the domain.

The traders of the remanufactured product market should assume to fulfill some functions of reverse projecting – with high costs – for determining the technical specifications that had been classified by the original equipment manufacturers, for different products, which are to be remanufactured

Some other legal impediments go down the remanufacturing activity too, such as forbidding the information contained in the manufacturers' patented technical documents, as well as forbidding the remanufactured parts to be included in the new products.

Adopting some taxation procedures for enhancing the remanufactured products market would represent a possibility of stimulating this activity, but would create the conditions for some artificial markets, with negative influences regarding a healthy competition.

The remanufacturing process is distressed by the low cost products imports from abroad.

The remanufacturing activity fails if it joins the competition on the markets where the price is the single competitive element, unless the circumstances when it could use cheap labour force.

The lack of skilled labour force represents yet an obstacle in the way of remanufacturing, because we know that this activity is intended those who are good professionals.

The wrong public perception regarding the remanufacturing activities represent an issue that this industry should deal with and to solve implicitly.

The lack of public sensitivity regarding the economic contribution and the ecologic advantages of the remanufacturing industry lead to obtain with difficulties a legislative support.

This need to gain the public recognition and respect was one of the reasons, which lead to setting up the Remanufacturing Industry International Council (RICI).

Joining different trade associations, which activate in different production sectors, RICI tries to make visible this industry and to assure its members an enhanced assistance.

A series of barriers should be eliminated in order enhance the remanufacturing activity, by promoting some requirements at the national economy level.

- ► the regulations in the domain of the intellectual rights and antitrust.
- ► regulations regarding the materials recycling procedures.
- ► the regulations of the remanufactured products.
- ► government economic subsidies for the remanufacturing activity.
- ► government support for the organizations that deal with the peripheral areas, where the conventional businesses cannot operate profitably.

The original equipment manufacturers delay the remanufacturing activity, limiting their access to the original spare parts (supplying the spare parts through authorized dealers) and

expanding the laws regarding the access to the technical records (patenting the technical solutions).

The efficient valuation through the technological equipment remanufacturing implies a series of concentrated efforts both from the governments and from the industrial and trade organizations for the promotion of the remanufacturing norms and their quality verification, knowing that the lack of these norms represents a delay of the remanufacturing.

The lack of skilled and motivated personnel in this domain, versus the activities lead to offices (IT, services, media, etc.), is an important obstacle for the remanufacturing activity.

The reticence of some users regarding the remanufactured technological equipment owes also to the neglect of some remanufacturers of replacing a series of parts after the first operation cycle, and which surely would be defected during the next operation cycle. This practice which, to be sure, are not illegal, bring a great prejudice to the remanufacturing industry.

Another existing obstacle in the way of developing the remanufacturing industry is the incertitude regarding the quantities and the quality level of the used products.

In "*Effect of Reusable Rate Variation on the Performance in South Yorkshire*" [1], Hasan Kivanc and Surentra Gupta reveal two different types of uncertainty, which may affect the remanufacturing process.

- internal uncertainties – derived from the variables of the remanufacturing process: the quality level of the remanufactured products, the overall remanufacturing time, the process productivity ratio, the scrap occurrence probability, the costs fluidity, etc.
- external uncertainties – derived from : the quantity and the quality of the returned equipment for remanufacturing, the reusing ratio of the reused products, the level of the remanufactured products demand, the required time for purchasing new parts and subassemblies, which are needed in the remanufacturing activity, etc.

Recognizing and enhancing the remanufacturing industry by the authorities, through different legislative measures, are considered as anti-competitive by the original equipment manufacturers. These divisions determine the appearance of the rules on the most of the remanufactured equipment market, which do not admit the remanufacturers to sell remanufactured products, pretending that they are new ones.

The essential barriers in the purchasing of the remanufactured technological equipment are within the minds of the purchasers, due to their untrue perception linked to the quality of the remanufactured products.

The relative disinterest of the technological equipment manufacturers regarding the remanufacturing process as well as the relatively false perception of the beneficiaries of these machines, who usually assimilate the "remanufactured product" with an old one, having low performances, represents a barrier, which is difficult to be dismantled, in the way of installing and developing the remanufacturing industry.

4. CONCLUSIONS

In the present global economic environment we may remark that the phenomenon of reusing the technological equipment "as it is", is met more often and it is favored by the lack of the investment funds, and by the willingness to "get rid of" the used equipment, in the economies where the environment protection law is particularly restrictive.

The remanufacturing industry emergence and developing has been influenced by the necessity of reducing the production costs of the equipment at the manufacturer, on the one hand, and the interest of the users of purchasing the cheapest technological equipment but at the desiderated technical performances, on the other hand.

The management of the technological equipment recovery should impose the obligation of collecting all used products by the original manufacturers. However, the uncertainties linked to the process of returning the used equipment, complicate the modeling, analyze and development of the remanufacturing activity.

During the recovering process of the used technological equipment, we have to observe that a returned product may not be reused by the remanufacturing process in a rate of 100 percent, existing permanently quantities of materials that belong to the domain of the recycling and/or disposal.

The way of stating the ratio between the materials that are reused for remanufacturing and recycling and/or disposal, from technologic equipment that was returned for remanufacturing, represents an open research area. The opportunity of stating this ratio, as exactly as possible, differentiated on the categories of technological equipment, in the provisions of a well established remanufacturing industry, would create the conditions for a better management of the use of raw material, energy and fuel, of the requirements of the labour force and of the impact on the environment. All these influences will be remarked finally in the competitive production costs of these equipment markets.

At the same time with the manufacturing development, the great technological equipment manufacturers should develop also their remanufacturing sections, as a mandatory link in the activity of a system supplier, which should include: the selling of equipment, the maintenance, the retreat and the remanufacturing of the used equipment and the disposal of the non-valued parts.

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