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Original Research Article

ANALYSIS OF FABRICATION AND MAINTENANCE STRATEGY BY SWOT AND BEP TECHNIQUE

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ABSTRACT

The repairing and maintenance of fabrication on labour charge basis is having high potential these days. The fabrication shop needs regular checkup and servicing for this smooth running. There is tremendous growth in the number of maintenance running on the shops. As more people go in for purchasing these fabrication service there would be need for repairing, denting painting of product. The project can be started at any place but it is always better if it is established at a place where there are a number of maintenance is available. The prompt and efficient service in such activity will not find any problems in getting the job work. The process involved in this industry depends upon the type and nature of servicing needed for the fabrication maintenance broadly, overhauling, cleaning, welding, painting, polishing etc. The surface is scraped and putti/luppum is applied and allowed to dry. Fabrication of SWOT analysis of the product is kept and profit can be obtained by Break-even point analysis.

KEYWORDS:- Fabrication, maintenance, BEP, SWOT.

1. INTRODUCTION

The Indian economy is firmly on the path of steady growth. Even during the last decade when other countries were in the grip of a massive slowdown, India continued to enjoy a comfortable economic position. This recent spurt in growth is propelled by radical reforms such as the removal of restrictions on foreign investment and industrial de-licensing. Tailoring the EXIM policy to promote exports and aligning the import duties to meet WTO commitments further contributed to this development. This trend is expected to continue over the next five years, driven by a favorable business policy environment in terms of tax cuts, broadening tax base, and reduced interest rates. The liberalization of the economy has opened new windows of opportunity for manufacturing sector. Increasingly the success of manufacturing industries is dependent on innovations, research and development. It is critical not only to remain competitive but also, significant advantages can be gained by developing and commercializing new technologies With a size of Rs. 1012 billion, the engineering sector exports stood at Rs. 303.6 billion in 2001-02 and imports at Rs. 225.4 billion the same year. Indian engineering

manufacturing sector employs over 4 million skilled and semi-skilled workers. The engineering manufacturing sector comprises of Heavy engineering (70%) and light engineering (30%). India's growing integration with the global economy and the government's recognition that infrastructure needs to be overhauled are likely to ensure that the trend rate of growth increases in the next decade.

Importance of manufacturing sector in India's economic growth

The structural transformation of the Indian economy over the last three decades has been spectacular growth of the services sector, which now accounts for about 50 per cent of the GDP. However, the rapid growth of the services sector much before the manufacturing industry attaining maturity is not a healthy sign. A knowledge -based economy cannot be sustained in the long run unless it is adequately supported by a growing manufacturing economy. Moreover, a service economy cannot continue to thrive on a long-term basis in a country where over 80 per cent of the population is education below the middle-school level.

Some sectors, such as IT, ITES and pharmaceuticals, will compete globally, employing perhaps 2% of the population and bringing wealth to many parts of India. At the same time, around 60% of the population will remain dependent on the agricultural sector, sharing less than one-quarter of India's GDP. Without reform, the agriculture will continue to suffer from endemic underemployment, low wages and monsoon dependency. This will result in continued urban migration, but without the development of an industrial sector this will lead to rising unemployment in the cities. Recognition that this pattern is unsustainable is growing. It is estimated that India needs to create 7-8 million new jobs each year outside agriculture to stay at its current unemployment level of 7 percent. Manufacturing jobs are ideal for workers transitioning out of agriculture as service jobs require high level of education and professionalism. The revival of manufacturing sector can create close to 2.5 Million new jobs every year. With the removal of all quantitative restrictions on imports and the falling import tariffs under the WTO regime, it is all the more important for the Indian industry to improve its competitive edge. The sheer volume of international trade with over 70 per cent of the seven trillion dollar market being in processed manufacturing, strongly indicates the necessity of developing global competitiveness in this sector. Thus the above 8% growth of manufacturing industry in India is critical to ensure healthy balance of income parity, employment generation and sustenance of growth.

Technological maturity and pace of technological change

Technological self-reliance is achieved more easily in industries with relatively mature and stable technologies, such as the process industries, than in those undergoing rapid technological change. However it is necessary to continuously upgrade the manpower skills in technical and techno managerial dimensions. In a labour -surplus economy, new and efficient technologies tend to be discouraged unless sufficient redeployment opportunities are created. These results in a vicious cycle where new technologies are not introduced, the engineers and technicians continue to work inefficiently, and the technical manpower quality deteriorates with respect to the world. Thus the advantage accruing from the rich pool of engineers has been frittered away by not continuously upgrading the talent pool. This has, in turn, resulted in the brain drain phenomenon leading to flight of talent to advanced countries where the opportunities to upgrade exist. India has been ranked low on the ability to retain its qualified manpower when compared with the reference group of countries. Therefore, Indian scientific and engineering talent pool is

at the disposal of countries that create conditions conducive to the nurturing and advancement of this talent pool.

India: Global R&D Hub

The Indian government has put in significant effort in last 50 years to develop the scientific and technical infrastructure of the country. With more than 250 universities, 1,500 research institutions and 10,428 higher -education institutes, India churns out 200,000 engineering graduates and another 300,000 technically trained graduates every year. Besides, another 2 million other graduates qualify out in India annually.

The combination of state-of-the-art infrastructure and highly qualified manpower ensures that India is poised to be the next Global R&D hub. This is increasingly being observed in Industry as large MNCs including GE, Microsoft, Bell Labs etc have opened there R&D Centers in India – a first outside US for most of these output from India.

2. OBJECTIVE OF WORK

The units were having sufficient work few years back due to emergence of number of sponge iron plants. With the present hold on setting up new sponge iron plants. Some of the machining and fabrication units have to close shop.

The units feel that even though prices of raw materials and inputs have gone up they are getting the same rate for there jobs which they used to get 5 years back. The delay in payments worsens the situation.

Technology and working practices: Most of the units are using general purpose machines, Drilling, Vertical boring machines, Lathes, and Shaping machines mostly purchased from Punjab. Some units have installed imported second hand machines. There is no CNC or SPMs to be seen at Rourkela.

Due to use of old machines which are not maintained properly, quality suffers. The entrepreneur continues to use tools, jigs and fixtures which have outlasted their service life. Poor housekeeping further hampers their work.

Improper shop floor layouts, lack of best manufacturing practices and lack of multiskill of the workforce maker the productivity low. Safety measures are often ignored which causes frequent injuries and loss of man days.

The improvement of the previously method used by SWOT technique for the maintenance should be as low as possible is the main objective of this project work.

The scheduled improvement is to cater for the under listed purposes.

i. Technology up gradation by implementing advance machining.
ii. Set the strategy to achieve the highest service order
iii. Minimizing the cost of the surrounding with the process of SWOT analysis
iv. To increase the profit by predict the break-even point in terms of cost.

3. METHODOLOGY

Welding and cutting processes which are most extensively used are :

Manual Metal Arc, Tungston Inert Gas, MIG/MAG, Submerged Arc, Spot Welding and Oxyacetylene Welding and Cutting. Resistance Seam, Projection & Flash Butt Welding and Plasma Arc Welding & Cutting are comparatively less used. The processes which are sparingly used are

- flux cored, electroslag, electrogas, electron beam and laser beam welding. In the arc welding category, the pattern of usage broadly is:

- MMAW - Transformer Welding Sets 70%
- MMAW - Rectifier Welding Sets 18%

- MIG/MAG	8%
- TIG & SAW	4%
	100%

There are around 12 major active units manufacturing welding equipment in the organised sector, having individual annual production of about Rs one crore to Rs 50crores. Similarly, there are approximately 40 active small scale units whose individual production ranges from Rs. 2 lakhs to Rs.100lakhs.

There is an import of specialised category of welding equipment and the import level is Rs. 20 crores to 25 crores/year. The components and raw materials required for indigenous manufacture of welding equipment have more customs duty than for complete equipment. There is very marginal export from a few welding equipment manufacturers.

There are various problems faced by welding equipment manufacturers and the major ones are :

- Scattered Market
- Lack of quality consciousness amongst user Industry – particularly General Engineering and **Fabrication Industry**
- Low volume of demand for higher generation equipment.
- Quality ofinput raw materials is not upto the mark.
- Disproportionately high price of raw materials and components vis a-vis international prices.
- Advanced technology welding equipment is expensive to manufacture because most of the power electronics components need to be imported.

Some of the larger and old companies manufacturing welding equipment do have a sound manufacturing base in respect of production facilities, drawing and design capability, systematic layouts and good work culture conducive to quality production (Advani, Esab, Jai Hind Sciaky etc.). In these companies manufacturing technology methods involving plant and equipment are at par with other good and progressive engineering units in the country.

As regards Product (Welding Equipment) Technology, it was based on foreign collaborations from time to time from Switzerland, Germany, U.S.A., Sweden, U.K. and Japan. These units had the credit of fully absorbing the technology then imported and they have not faced any serious problems to get along with the collaborators.

Another set of welding equipment manufacturing companies, which started as small units but presently have grown into medium sized units, though have overall manufacturing capability, are lacking in upto-date, systematic and spacious production facilities. Product Technology is based on in-house expertizes. As regards manufacturing technology methods, they are depending on sub-contracting, bought-outs and more labour-oriented manufacturing techniques.

4. RESULT AND DISCUSSION

The Government of India allocates a budget for scientific and technological (S&T) activity under an R&D fund. The allocation has increased from Rs. 828 Million in 1950-51 to Rs. 28800 Million in 2014-15. In comparison, the share of industry in R&D has become of the order of Rs. 25162 Million, about 20 per cent of the government's contribution. The percentage share of major scientific agencies in total S&T expenditure is approximately 70 percent. In the total S&T expenditure by the government, the share of non-scientific ministries has been approximately 30 per cent combined for all sectors, including agriculture, rural development, energy, industry and minerals, transport, communication and others. The total expenditure on R&D, including from

industry, is about 0.8 per cent of GNP for the past several years. Compared to most advanced countries, which spent between 4 and 6 per cent on R&D, this proportion is quite low

Policies and targets-

The Government has facilitated S&T infrastructural development in the country through a policy framework. A Science Policy Resolution (SPR) was adopted on 4 March 1958.The resolution aimed to secure benefits from the acquisition of scientific knowledge and its application. It emphasized training of scientific and technical personal to fulfill needs in the fields of science and education, agriculture, industry and defense as well as to ensure an adequate supply of scientists and to recognize their work. In January 1983, the government announced the Technology Policy Statement (TPS), with the objective of attaining technological competence and self-reliance, providing gainful employment, modernizing equipment and technology, conserving energy and ensuring harmony with the environment.

In 2016, a new Science and Technology Policy was adopted with emphasis on:

- Optimal Utilization of Existing Infrastructure and Competence
- Strengthening of the Infrastructure for Science and Technology in Academic Institutions
- New Funding Mechanisms for Basic Research
- Human Resource Development
- Technology Development, Transfer and Diffusion
- Promotion of Innovation
- Achieve synergy between industry and scientific research
- Generation and management of Intellectual Property
- International Science and Technology Cooperation

DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH

The DSIR has been providing project based support to industries under the Programed Aimed at technological Self Reliance (PATSER) for the development and demonstration of indigenous technologies. Thirty-five technology development and demonstration projects were completed. These resulted in the commercialization of products and processes and led to the filing of 20 patents**.**

Council for Scientific and Industrial Research-

As the national R&D organisation, CSIR provides through its 40 laboratories and 80 field centres, scientific and industrial R&D for India's technological development and for meeting its strategic and defense needs.

Science and Technology Entrepreneurship Parks-

The major objectives of STEPs are to forge linkages among academic and R&D institutions and industry, to promote entrepreneurship among Science and Technology persons, to provide R&D support to the small-scale industry and to promote innovation based enterprises.

National Innovation Foundation-

The Government of India started National Innovation Foundation (NIF) in March, 2000 by providing a corpus fund of Rs 200 million. NIF is an autonomous body under the Department of Science and Technology, Government of India. NIF is developing a National Register of Green Grassroots Technological Innovations and Traditional Knowledge. It also seeks to develop a new model of poverty alleviation and employment generation by helping convert grassroots innovations into enterprises.

5. CONCLUSION

The competing imports of products, increasingly allowed on quality and cost considerations, have led to a greater consciousness of quality and costs on the part of domestic manufacturers.

The more liberalized technology import policy is also helping to bridge the technology gap. All these factors are putting pressures on the organizations to develop best-practice technology, either by importing or by generating their own. Few solitary achievements notwithstanding, there is clear evidence that technological dynamism has not taken firm root in the Indian industry. In sum, the disjointed policies in India with lack of focus have resulted in a weak innovation system and under-utilization of research capabilities created during the first phase of growth. Thus, the overall problem relates to the lack of appropriate linkages between different actors of the national innovation system.

- Predicting the BEP for profit at 56.43%.
- Adopt the government scheme to achive the order from firm.
- SWOT analysis have been done and work on the weakness in future scope.

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