HIGHER TECHNICAL INSTITUTE

MECHANICAL ENGINEERING COURSE

DIPLOMA PROJECT

PRODUCTIVITY IMPROVEMENTS IN A CYPRUS INDUSTRY

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HIGHER TECHNICAL INSTITUTE (H.T.I.)

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PRODUCTIVITY IMPROVEMENTS IN A CYPRUS INDUSTRY

by

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in

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To my parents

Demetris and Kate

and to myself

SUMMARY

PRODUCTIVITY IMPROVEMENTS IN A CYPRUS INDUSTRY

By

Andreas Demetriou

The purpose of this task was to locate a working area in a business during Industrial Training, in order to observe the procedure followed for making certain products.

For that reason the location of the machines and the movement of the components in the factory should be recorded and presented.

Also possible problems or bottlenecks should be identified.

Additionally suggestions for improving the productivity (output – rate of production) of the business and comments on the suggestions made should be noted.

The business selected is the Metalco (Heaters) Ltd industry.

The time spend there was approximately one month. All the relevant information was selected, including pictures, photographs showing the location and movement of the machines and the machine setters or operators, recorded times needed for the different tasks, tables indicating the characteristics of the products being made, appropriate graphs etc.

All the above material will be needed in order to fulfill this project work.

Searching through the project someone will find that in the Solar Collectors case the production rate was increased from 44 to 106 pieces per day basically by only buying two machines of the same kind. Of course other changes were made concerning the rest of the Workstations. Changes that is more practical in order to get better results (i.e. reducing the corresponding time of each and different Workstation to fulfill the certain task).

By DOUBLING the production (without having to pay a lot of money) which is what was expected it can be definitely said that the improvements made are true and this project work was successfully carried out.

The same thing applies and for the Hot Water Tanks case. The rate of production was also become more than the DOUBLE, fact that is more than satisfactory.

As a final comment I would like to say that this subject is very interesting and challenging as well, for someone that wants to investigate record and present the results that will obtain. I am very pleased with the job done and with the final results and conclusions that have came up.

ACKNOWLEDGEMENTS

Before starting the procedure of currying out this Diploma Project, I would like to express my special thanks to Mr. Andreas Stassis for his guidance and for all the important information that I have taken from him.

Also I would like to show my appreciation to the people working at Metalco (Heaters) Ltd, who were very helpful and cooperative during my training there. They gave me all the necessary information and provision in order to carry out this work.

Finally but not less, a great thank you to my parents for their understanding, patience and love who showed to me all this time.

Andreas Demetriou

3rd Year Mechanical

OBJECTIVES

1. The student has to locate a problem area in a factory maybe during Industrial Training.

2. Record and present the location of the machines and the movement of the components in the factory (area of interest).

3. Identify problems or possible bottlenecks.

4. Record method of work of the operators or problematic operations.

5. Suggest ways of improving productivity (output).

6. Comment on the improvements suggested and possible extra costs or savings involved.

TERMS AND CONDITIONS

1. The place of improvement has to be in a real manufacturing or any other type of business.

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CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

Managing production and operations has become one of the most important functions for globally competitive companies. The emphasis is on managing and improving productivity. The leverage arises from the product and service interaction with the increasingly high technology of the process.

Production refers to manufacturing. Operations refer to services. Productivity refers to the ratio of the outputs divided by the inputs. You see, by improving productivity means improving efficiency.

Production supervisors or managers of manufacturing and service industries have a lot in common. Both want their customers to be satisfied and loyal. They know that customer loyalty has to be earned, and that loyalty is based on providing superior products (goods or services) at the best possible price. Superior products result from careful planning, leaving nothing to chance, from the highest competitive standards, from team play by all employees and from attention to detail. All these ideas apply to management excellence for providing competitive goods and services.

Manufacturing is changing. Wasteful production can no longer be tolerated. New computer-driven equipment requires information coordination at a level never previously encountered. Manufacturing decisions have become the major basis for competitive leverage in the marketplace. Customers generally make intelligent choices. They perceive product qualities correctly and they know what the competition offers. The company that delivers the product with high quality at a reasonable cost quickly eliminates competitors that are unable to match such performance. Because the technology situation is in great flux, the ability of management to adapt to change is the key to its success.

A lot of manufacturing companies around the world have embarked upon major changes in their production systems so that they can deliver the most competitive product. They have restructured closing inefficient plants, or downsizing them. Using new technologies of adaptive automation, they have refitted and refixtured the save able old plants and facilities. They have started up new ventures with computerized equipment, and management has accepted different ideas about how to cooperate with their workers in pursuit of mutually consistent objectives.

Service procedures have changed a great deal in the past. They can be expected to change even faster in the future. The reason is that competition in the service sector was just starting to get tough as the 1990's started. This is in comparison with manufacturers who had been experiencing severe competitive challenges to be the best producers since the 1970's. Because of competitive pressures in the financial services sector, commercial and investment banks increasingly turned to computers and new methods to speed-up their operations.

The trend of service industries around the world losing global market share continues, thereby contributing to the trade deficit. As a result service industries are moving more of their operations offshore. The offshore moves are reminiscent of similar steps taken by manufacturers to decrease costs, to improve productivity, and to increase quality.

Computers and people are tied together in information processing networks. These can range from local telephone networks to global communications via satellite. Competition to provide financial services has grown and continues to grow on a global scale with competing firms in Europe, North America. Telecommunications plays a large role in the production systems of those in the financial services business. These telecommunication-driven production systems must be fast, correct, and friendly to customers and workers alike. The ability of management to absorb such new technologies and to change the way that the business is run is the key to its success.

Identical types of analysis extent to other kinds of services including transportation, health care, education, advertising, market research, insurance, and utilities. Often, the contact between a company's customers and that company's service products is the employee with a smile on his or her face, and adequate training to fulfill the service mission.

Definitely the level of personal contact is usually much higher in services than in manufacturing. Also inventories of goods in manufacturing are tangible, and therefore, easier to measure than inventories of services which are sometimes as intangible as creative ideas or legal advice.

Given the differences between goods and services, the similarities are also striking. Many service organizations have tangible inventories. Manufacturers would have contact with their customers if they ran the retail stores that sell their products.

Manufacturers have a lot to learn about dealing with customers. Service organizations have a lot to learn about the production aspects of their business.

The manufacture of goods and the provision of services is where the study of production and operations must address to. Over time, manufacturing has become increasingly dependent upon services to keep its equipment running with appropriate software, and to keep its computer-controlled machines maintained and functioning. Service is also essential for the customer using the company's products. In a similar way, service operations are becoming more like the new kind of factories that require synchronizing people, materials and information products to keep them competitive in terms of quality, cost, delivery, and variety. With the remarkable convergence between services and manufacturing that is occurring, it is competitively damaging to deal with one and not the other.