

50. Internationales Wissenschaftliches Kolloquium

September, 19-23, 2005

**Maschinenbau
von Makro bis Nano /
Mechanical Engineering
from Macro to Nano**

Proceedings

Fakultät für Maschinenbau /
Faculty of Mechanical Engineering

Startseite / Index:

<http://www.db-thueringen.de/servlets/DocumentServlet?id=15745>

Impressum

- Herausgeber: Der Rektor der Technischen Universität Ilmenau
Univ.-Prof. Dr. rer. nat. habil. Peter Scharff
- Redaktion: Referat Marketing und Studentische Angelegenheiten
Andrea Schneider
- Fakultät für Maschinenbau
Univ.-Prof. Dr.-Ing. habil. Peter Kurtz,
Univ.-Prof. Dipl.-Ing. Dr. med. (habil.) Hartmut Witte,
Univ.-Prof. Dr.-Ing. habil. Gerhard Linß,
Dr.-Ing. Beate Schlütter, Dipl.-Biol. Danja Voges,
Dipl.-Ing. Jörg Mämpel, Dipl.-Ing. Susanne Töpfer,
Dipl.-Ing. Silke Stauche
- Redaktionsschluss: 31. August 2005
(CD-Rom-Ausgabe)
- Technische Realisierung: Institut für Medientechnik an der TU Ilmenau
(CD-Rom-Ausgabe) Dipl.-Ing. Christian Weigel
Dipl.-Ing. Helge Drumm
Dipl.-Ing. Marco Albrecht
- Technische Realisierung: Universitätsbibliothek Ilmenau
(Online-Ausgabe) [ilmedia](#)
Postfach 10 05 65
98684 Ilmenau
- Verlag:  Verlag ISLE, Betriebsstätte des ISLE e.V.
Werner-von-Siemens-Str. 16
98693 Ilmenau

© Technische Universität Ilmenau (Thür.) 2005

Diese Publikationen und alle in ihr enthaltenen Beiträge und Abbildungen sind urheberrechtlich geschützt.

ISBN (Druckausgabe): 3-932633-98-9 (978-3-932633-98-0)
ISBN (CD-Rom-Ausgabe): 3-932633-99-7 (978-3-932633-99-7)

Startseite / Index:

<http://www.db-thueringen.de/servlets/DocumentServlet?id=15745>

K. Anguelov / V. Lazarov

Factors for improving the competitive power of the industrial companies in the Balkans countries through implementation of Demand Flow Technology

ABSTRACT

Demand Flow Technology /DTF/ is a modern method for industrial engineering assisting the industrial companies in the management of economic processes and improving their competitive power. This method used by leading Multinational Corporations /MNC/ and industrial companies with high degree of economics process intensity (business process), furthers the production of what the market requires at the moment, the reduction of unfinished production by improving the management of the material supplies and part-finished goods and the reduction of the expenditures for high quality maintenance of the manufactured goods. DFT is applied in a limited number of industrial companies in the Balkan countries.

On one hand the possibility for applying DFT under the conditions of the industrial companies in the Balkan countries is analyzed in the article and the enhancing their competitive power on the global market. On the other hand the specific features of this application are studied as concrete recommendations are made, the implementation of which increase the effectiveness in the current conditions.

NEW REQUIREMENTS FOR COMPETITIVENESS OF THE ENTERPRISES FROM BALKANS REGION

Globalization of the world economic forms the new challenges in front of the enterprises in the Balkans region. One of the most important is the increasing their competitiveness in one highly uncertain competitive surroundings. Most of industrial companies in the region suffer from the level of competitiveness they have in the global market conditions. The comparison between industrial production for 1985-1990 and nowadays indicates the big potential that some Balkan countries have.

Due to the market changes in globalization aspect, the competitiveness is characterized with the new client's preferences for products and services in the following aspects [1]:

1. Changes in clients` requirements towards quality of the products and services. The quality is a complex index, based on technical, ergonomic, aesthetic and image indicators, as well as the conditions for guarantee and the service after this period and also the assessment for delivery

system. Although these indexes were well-known before, it is in postindustrial society which the market forces enterprises to improve their competitive advantages in each of these directions.

2. Personalization for products and services. The client, no matter if it is another enterprise or a particular consumer has a right to give personal preference to the product or services which is different from the standard production. This product or service is made especially for this particular client, in order to supply his unique and tangible needs; is conformable to production's plan, delivery system and convenient conditions for the instalment plan.

3. Clients have free access to huge number of informational sources for potential products and services. This information includes all aspects, which are available to catch the client's attention – price, quality characteristics, how far is profitable to pay for one qualitative characteristic, is there chipper analogous etc. Now more than ever each client could, without going out of his room in front of his personal computer, buy everything which is allowed by law. Something more – the client will buy this product, which really longs for, because he has already compared all available offers.

The tendency for conformation with the client's requirements leads to the diversification of the made products. For this reason production processes, which were on the flow direction, have to be changed, and in the same time the self costs of production have to rest the same. Something more – these products have to correspond to higher criteria in respect of their quality characteristics.

As a result of this market conditions, the requirements towards one modern enterprise could be classify in the following groups [1]:

1. Requirements for the flexibility of an organization.
2. Orientation towards clients and competition.
3. Production cycle „Time to Market”.

To answer the requirements of the 21st century global market, modern methods for industrial engineering and management are developed, such as Concurrent Engineering /CE/, Business Process reengineering, Total quality management /TQM/, Virtual Enterprise /VE/ and so on. Demand Flow technology /DFT/ is a new method for industrial engineering, which creates preconditions for optimization of industrial companies' production process on the basis of several indices: management of material supply and part-finished goods depending on the moment market demand, production delivery on the market in the necessary moment, production quality.

MARKET CONDITIONS FOR THE ENTERPRISES IN BALKANS REGION

One of the main aims for the EU in the competition with USA is the increasing of industry competitiveness of member countries. This aim is included in the Strategy of Lisbon for economic and structural reforms. Unfortunately, Europe is away from USA as the competitiveness is concerned. According to [4] USA leave behind EU on six criteria from total seven criteria, as the final assessment for European level of economic is 4.97, and 5.55 for USA. Only three countries have better results than USA – Finland, Denmark, and Sweden.

As the Balkans countries are concerned, they could be formally separated to three groups:

- countries - members of EU (Greece, Cyprus);
- countries in front of full EU membership (Bulgaria and Romania);
- countries in different level of preparation for accession to EU (Turkey, Macedonia, Croatia);
- other countries.

According to the tendency for EU accession process, the increasing competitiveness of the enterprises in these counties has European significance.

From researches [2,3,5,6], made by authors of this paper in cooperation with other scientific teams, we can draw a conclusion that the problems in the Balkans countries which are candidates for member level, are the same.

From the analyses of the economic conditions, in which exist the Bulgarian and Rumanian enterprises we can point out the following statements:

- Political steadiness;
- Economic steadiness in conditions of Board of exchanges economic development and minimal annual inflation.
- Favorable geographical location – link between Europe and Asia (the last is more important for Bulgaria);
- Increasing the process of accession to European structures;
- Large number of high competant labour, including specialists in the field of informational technologies and microelectronic;
- Cheaper price for labour;
- Presence of unique natural resources: favorable climate for agriculture, mineral water with different structure etc.
- Favorable conditions for tourism development: convenient climate and geographical conditions well preserve nature, interesting traditions and historical places etc.

At the same times, with these advantages there are many menaces, most important from them are:

- Bad developed tax politics;
- Conditions for disloyal competitiveness;
- Administrative problems and high level of corruption for Public Administration;
- Limited interior consumption due to the lower purchasing power.

Following factors determine the production systems influence over the loss of competitive advantages from enterprises of these countries:

1. Low dynamics in determination of nomenclature and capacity of made production.
2. Serious lack of right judgment to the possibilities, which are created by informational society.
3. Enterprises build their activities on the base of outdated as a conception business processes. This leads directly to ineffectiveness, lower productivity, many employees occupied in process, bad quality of the product, weakness in coordination, many hierarchical level troubling the making decision process etc.
4. Business process, built on overdone examinations, coordination and control, which leads to raising the production costs.
5. Steadily planning of the production and delivery
6. Inefficiency using the space in the enterprise (in comparison with competitive enterprises from EU)
7. Inefficiency labour system for production
8. Antiquated technological base. In many cases technologies are not applicable and not equal to modern requirements for preservation environment, labour safety etc.
9. Outdated necessary equipments.

As a result – many Balkans enterprises are not competitive not only in EU level, but in their regions.

POSSIBILITIES TO INCREASING THE COMPETITIVENESS OF THE COUNTRIES FROM BALKANS REGION THROUGH DEMAND FLOW TECHNOLOGY

Demand Flow Technology possesses following features:

1. With DFT the industrial engineering is implemented in space and time on the basis of flow process and therefore has high requirements for coordination of separate operations by time and power. Narrow-fitting places are unallowable.
2. The supply zone is integrated in the manufacturing structure itself, which is the most

significant factor for the optimal use of the production area.

Removing of the typical workshop structure

DFT reacts to the market needs in the right moment.

Flexible delivery planning

6. Removing number of operations with zero added value – the assessment of quality of execution of separate operations is done in the operations themselves.

From the point of view of their long terms observations the DFT application in the Bulgarian enterprise Vidima AD, part of Multinational Corporation “American Standard” the authors of this paper could draw following main conclusions:

1. Increasing in upper level the dynamics in defining the nomenclature and capacity of the manufacturing production. This leads to client’s approach, through manufacturing according to the market needs, with correct deadline and quantity.

2. Decreasing the quantity of products having on stock, as well as unfinished production, and from there – the decreasing of necessary turnover capital. Since 1999 when DFT was implemented for the first time in “Vidima” AD production subsystem, the supply turnover number increased from 8,9 to 17 in the end of the year, and in the end of 2002 is 25. According to this the liquidity of the company increases significantly – the frozen financial sources are decreased.

3. More effectively using the production power and area. For example, the total production capacity of Vidima AD is increased with more than 2,1 in the same time the production area expand only with 12% due to the application of DFT.

4. Through development of process maps is put into practice high flexibility of the production of product included in the nomenclature. This is valid for all the productions as for example can be given partial process on casting of the bodies of sanitary accessories, which can be done in 12 different alternative routs.

5. In consequence of the passing of external quality check-up, done only by specialized sections in the industrial company, to the typical for the DFT full internal quality control, the expenses for ensuring the quality decrease from 2,5% in the beginning of the method implementation through 1,4% in 2001, to 0,6% currently.

6. The productivity is growing up. From 8 number of product, made by one employee for one shift, they increase to 25. This leded to reducing number of employees in execution of business processes.

7. Reducing the time for execution these business processes

8. Improving coordination system between different sections of enterprise

9. In the basis of the DFT method is manufacturing of such production capacity and

nomenclature that the customer ordered on the desired date for expedition. Therefore the major success or failure indicator of DFT in the given company is the deviation (positive or negative) on this date.

These results as well as other observations for application of DFT give us reason to maintain that the implementation of this modern conception for industrial production will lead to the new level of improving competitiveness of the enterprises in Balkans countries.

CONCLUSION

Demand Flow Technology, as a modern conception for industrial engineering, is logical solution of a problem and the necessity of change in the economics of Balkans countries, in response to the Strategy of Lisbon in one global world. Thanks to his implementation of business practice of Bulgarian enterprises, they have a chance to remove one of the bigger disadvantages in their systems and to achieve: raised dynamics in determination of nomenclature and capacity of made production; production with reduced prime cost due to reduction of the unfinished products when working with minimum supply availability; more effectively using the production power and area; reducing number of employees in execution of business processes, reducing the time for business processes execution; production, interior to the high requirements for production quality as reducing the operations not generating added value; improving coordination system between different sections of enterprise.

Demand Flow Technology is one more tool that helps industrial enterprises from Balkans countries could improve the level of competitiveness, demanded by EU.

References:

- [1] Anguelov, Kiril, Reengineering, ISBN 954-438-368-9, Sofia, 2004
- [2] Velev, Mladen, Assessment and analysis of the company competitiveness, Softtrade, Sofia, 2004
- [3] Tzvetkov G. and L. Tchankova, Strategies for small and medium enterprises development in Bulgaria in the stage of transition, XI Betriebswirtschaftliche tage zu Schwerin 2002 "Wachstum und Sicherung Mittelständischer Unternehmungen unter veränderten Rahmenbedingungen", Schwerin, Germany, 2002
- [4] Annual report for execution of the strategy from Lisbon, 2004
- [5] Studying over factors, determined competitiveness of the small and middle enterprises in the field of services, Contract with TU-Sofia-R&D Sector, N 306-15 NK/2003
- [6] Research the competitiveness of Bulgarian enterprises, Contract with TU-Sofia-R&D Sector, N 402-15 NK/2004

Authors:

Kiril Anguelov

Vladislav Lazarov

Technical University of Sofia, Faculty of Management, Kliment Ohridski bl.8

1000, Sofia, Bulgaria

Phone: +359 2 965 3531

E-mail:ang@tu-sofia.bg