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Strateško vodenje tehnoloških sprememb na primeru Tovarne kovinske opreme PRIMAT Maribor

Strategic Management of Technological Change on the Example of Factory of Metal Equipment PRIMAT Maribor

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Prispevek ima namen prikazati strateško načrtovanje in uresničevanje dolgoročnih tehnoloških sprememb v podjetju TKO PRIMAT. Praktični prikaz strateškega vodenja je pripeljalo podjetje do take stopnje, da lahko uspešno trži svoje zabojnike, varne proti vlomu in požaru na evropskem in svetovnem tržišču. Predstavljena so potrebna izhodišča, načrt strateških tehnoloških sprememb in izvedba prvega in drugega dela teh sprememb.

The strategic management of technological changes in the factory TKO PRIMAT is presented. The applied procedures of strategic management have brought the factory to a level at which it can successfully market its burglarproof and fireproof equipment on European and world markets. Presented are the necessary guidelines, the plan of strategic technological changes and the realisation of its first and second part.

0 UVOD

Tovarna kovinske opreme PRIMAT je edini slovenski izdelovalec mehanske opreme za varovanje pred vlomi in požari. S to proizvodnjo so njeni predhodniki začeli leta 1901, kar podjetje uvršča med tradicionalne evropske izdelovalce te opreme.

Vodstvo podjetja je v poznih 80. letih spoznalo, da izdelki niti po funkciji, niti po kakovosti niso več primerljivi z izdelki evropske in svetovne konkurence. V sodelovanju s Fakulteto za strojništvo v Mariboru in državo Slovenijo je izdelalo dolgoročni načrt tehnoloških sprememb in prvo fazo tega načrta tudi že uresničilo.

Ta prispevek ima namen prikazati strateško načrtovanje in uresničevanje dolgoročnih tehnoloških sprememb na dejanskem primeru.

1 POSLOVNA IN TEHNIČNA IZHODIŠČA

V zadnjih letih prejšnjega desetletja je vodstvu TKO PRIMAT postajalo vse bolj jasno, da je s proizvodnjo opreme za mehansko varovanje pred vlomi in požari nekaj narobe.

Uvozne omejitve so na domačem trgu sprva izključevale tuje ponudnike, zato so se izdelane količine močno povečale, izbira izdelkov pa zmanjšala. Razumljivo je, da je uvajanje novih izdelkov in tehnologij skoraj popolnoma zastalo.

0 INTRODUCTION

The factory of metal equipment PRIMAT is the only Slovene producer of mechanical burglarproof and fireproof equipment. Its forerunners started production as early as 1901, which puts the factory among the traditional European producers in this field.

In the late eighties, the management board of the factory realised that their products were not comparable, either in function or quality, to those of European and world competitors. In cooperation with the Faculty of Mechanical Engineering in Maribor and the government Ministries, they elaborated a long term plan of technological changes. The first phase of this plan has now been realised.

The present paper is a case-study of strategic planning and the implementation of technological changes.

1 BUSINESS AND ENGINEERING GUIDELINES

Towards the end of the last decade, the management of TKO PRIMAT became aware that something was wrong with its production of mechanical burglarproof and fireproof equipment.

Due to import limitations in domestic markets in the past, foreign producers were excluded from competition, which resulted in an enormous increase in product quantities and decrease of product types. It goes without saying that the introduction of new products and technologies almost completely stagnated.

Med domačimi konkurenti je imelo podjetje še vedno vodilno vlogo, vendar je močno zaostajalo pri mednarodnih primerjavah. Razviti trgi izdelkov PRIMAT niso sprejeli, ker so bili po kakovosti in delovanju neustrezni. Zaradi narave izdelkov so bile poslovne in tehnične informacije o dogajanjih v svetu nezadostne.

Z zmanjšanjem kupne moči na domačem trgu so se prodajne količine izrazito zmanjšale in problem je postal pereč.

Poslovno gledano je podjetje imelo dve možnosti:

- proizvodnjo protivlomnih in protipožarnih naprav še skrčiti ali celo opustiti,
- proizvodnjo teh naprav nadaljevati, poiskati nova prodajna tržišča, izdelke pa prilagoditi tako, da bodo ustrezali zahtevam uporabnikov na teh trgih.

Vodstvo podjetja se je odločilo za drugo možnost.

2 NAČRT STRATEŠKIH SPREMEMB

Odločitev vodstva podjetja je bila namenjena izhodiščni informaciji za vsa tehnična načrtovalna in izvedbena dela v podjetju.

Načrtovalni sklop strateških tehnoloških del je v grobem zajemal naslednja opravila:

- pridobitev bistvenih informacij o kakovosti, funkcionalnosti in proizvodnji mehanske protivlomne in protipožarne opreme v Evropski skupnosti, v ZDA in na Japonskem;
- razvoj izdelkov, ki bi ustrezali zahtevam uporabnikov v teh deželah;
- preizkušanje in overjanje novih izdelkov, kar je pogoj za njihovo prodajo na teh tržiščih;
- uvajanje proizvodnih metod in opreme, ki bi omogočale ustrezno kakovost izdelkov in preudarnost proizvodnje.

Pri izdelavi načrta je bila tradicija proizvodnje te opreme prednost; dejstvo, da je treba ob zastareli in izrabljeni opremi, slabi izkoriščenosti delovnega časa in nezadostni tehnološki disciplini preživeti in še vlagati v spremembe, pa je štelo za glavni omejitveni dejavnik projekta.

Načrt se je seveda sproti dopolnjeval in prilagajal, njegove poglavitne značilnosti pa so ostale nespremenjene.

3 IZVEDBA PRVEGA DELA STRATEŠKIH TEHNOLOŠKIH SPREMEMB IN REZULTATI

Izvedbeni sklop strateških tehnoloških sprememb je v grobem zajemal v nadaljevanju opisana dela. Posamezne faze so se med seboj prepletale in mnogokrat niso sledile načrtovanemu logičnemu zaporedju.

Among domestic competitors, the factory still occupied the leading position but lagged much behind in international competition. Developed markets did not accept the products of PRIMAT because they were inadequate in quality and function. Due to the nature of the products, business and engineering information of the world's state-of-the art in this field was insufficient.

With the fall of buying power, quantities sold were drastically reduced and the problem became acute.

From the business point of view, two possibilities remained open for the factory:

- to reduce or completely stop the production of burglarproof and fireproof devices
- to continue this production and to find new markets by modifying the products to meet users' demands in these markets.

The board of management decided on the second possibility.

2 PLAN OF STRATEGIC CHANGES

The decision of the board of management served as initial information for all planning and manufacturing tasks in the factory.

The planned strategic technological tasks roughly encompassed the following:

- gathering relevant information on quality, performance and manufacture of mechanical burglarproof and fireproof equipment in the countries of the European Union, USA and Japan;
- developing these products to meet users' requirements in these countries;
- testing and certifying new products , which is a condition for their sale in the above markets;
- implementing such production methods and machinery as to allow rational and quality production.

In elaborating this plan, the long tradition of the factory in producing this equipment proved to be an advantage, the main disadvantage, however, being the fact that the factory had to survive and simultaneously invest in changes, in spite of obsolete machinery, bad utilisation of working time, and inadequate working discipline.

The plan was continually supplemented and adapted, but its basic features remained unchanged.

3 IMPLEMENTATION OF THE FIRST PART OF THE STRATEGIC TECHNOLOGICAL CHANGES AND RESULTS

The implemented strategic technological changes roughly encompassed the tasks described below. The individual phases overlapped and did not always follow the logical planned sequence.

3.1 Informacije o kakovosti, funkcionalnosti in proizvodnji

Za pridobivanje pomembnih informacij so bile uporabljene celotne poslovne zmogljivosti podjetja. Prek specializiranih ustanov so bile pridobljene poslovne informacije o evropskih in japonskih konkurentih, z obiski sejmov in razstav pa še njihovi komercialni tehnični podatki (prospekti, katalogi). Pridobljene in proučene so bile dosegljive javne listine, (predpisi, standardi, patentni spisi).

Proučen je bil sistem preizkušanja, overjanja in nadzora kakovosti v evropskih in ameriških državah. Pregledani so bili možni dobavitelji posebnih sestavnih delov.

Kljub izrednim prizadevanjem ni bilo mogoče pridobiti pomembnih informacij o potrebni kakovosti izdelkov, kar je zaradi zaupne narave izdelkov tudi razumljivo.

Podjetje je v razvitih državah veljalo za nepomembno in do podatkov ni imelo dostopa.

To je bil tudi glavni razlog, da se je podjetje PRIMAT včlanilo v Forschungs- und Prüfgemeinschaft Geldschränke und Tresoranlangen e.V. v Nemčiji in tako pridobilo manjkajoče informacije, ki pa so bile za nadaljnje delo ključnega pomena.

Nekaj temeljnih podatkov o številu in strukturi zaposlenih, celotnem prihodku na delavca, deležem izvoza, rezultatih poslovanja in drugem podajata preglednica 1 in slika 1.

3.1 Information on quality, functionality and production

To gather the relevant information, the entire business potential of the factory was set in motion. Business information on European and Japanese competitors was obtained from specialised institutions. Visiting their fairs and exhibitions helped to collect commercial and technical material (prospectuses, catalogues).We studied all available public documents (regulations, standards, patents).

Also the systems of testing, certifying and quality control, both in European and American countries, were studied. A survey of possible suppliers of special spare parts and components was carried out.

One thing, however, proved impossible in spite of our efforts: to collect relevant information on the required quality of products, which is understandable if be borne in mind the secrete nature of things.

In developed countries PRIMAT was thought to be an outsider and had no access to such data.

This was also the main reason that the factory became a member of Forschungs- und Prüfgemeinschaft für Geldschränke und Tresoranlagen e.V. in Germany, and could thus obtain the missing information, which was of vital importance for subsequent work.

Some basic data on the number and structure of employees, total income per worker, export share, business results etc. are shown in Table 1 and Figure 1.

Preglednica 1: *Poslovni podatki podjetja TKO PRIMAT v obdobju 1988 do 1994*
Table 1: *Business data of PRIMAT for the period 1988 to 1994*

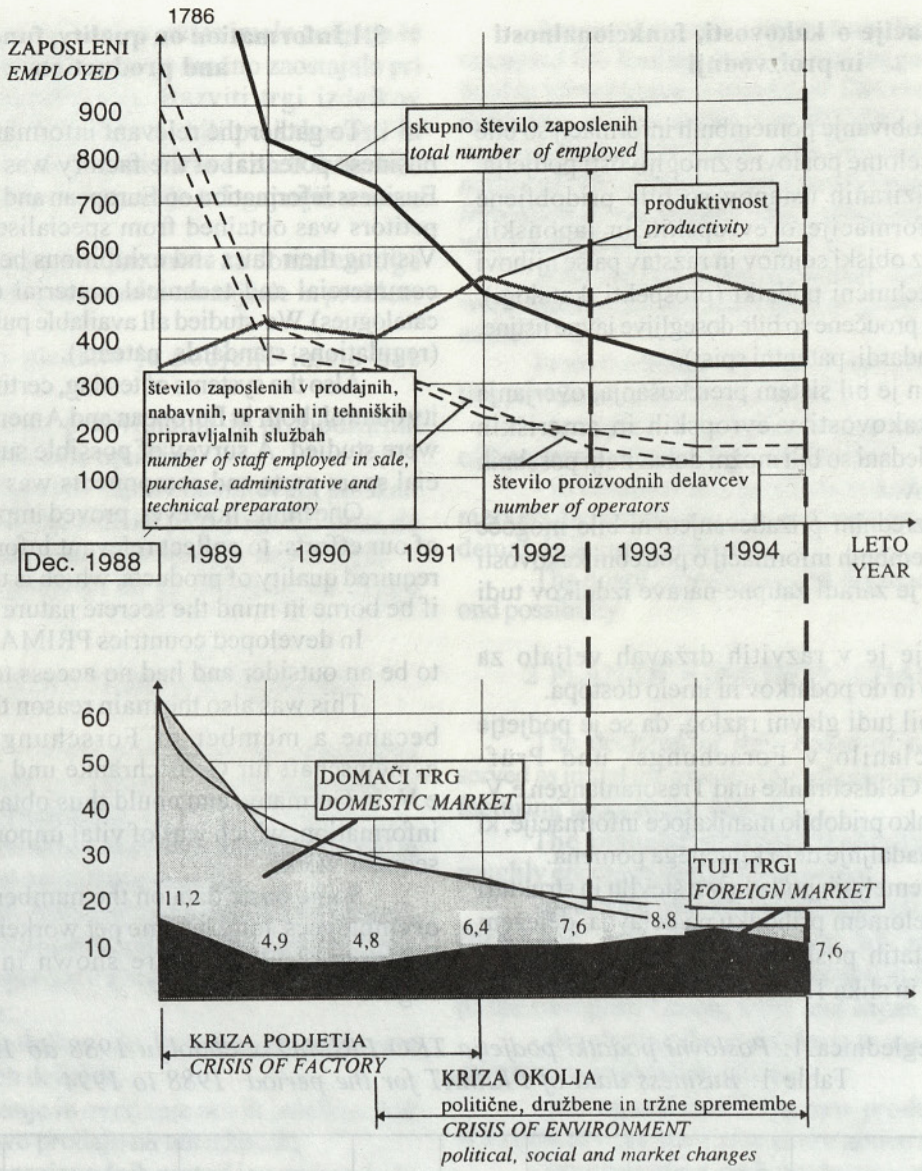
Leto *Year*	Število zaposlenih *Number of employed*			Struktura zaposlenih v % *Structure of employed in %*		CP/del v DEM *Total in come per worker in DEM*	Delež izvoza v % *Export share in %*	Rezultati poslovanja v DEM *Business results in DEM*	Struktura virov sredstev *Structure of financial resources*		Krediti v DEM *Credits in DEM*		Navidezni CP brez novih izdelkov *Estimated total income without new products*	Navidezno št.zaposl. brez novih izdelkov *Estimated number of employed without new products*
	Režija *Administr.*	Proizvodnja *Production*	Skupaj *Total*	Režija *Administr.*	Proizvodnja *Production*				Lastni viri *Own resources*	Tuji viri *Acquired resouces*	Kratkoročni *Shortterm*	Dolgoročni *Longterm*		
1988	989	797	1786	55	45	34.698	18	-7,3 mio	53	47	13,5 mio	2,4 mio	62,0	1786
1989	430	385	815	53	47	42.649	14	-2,6 mio	62	38	5,8 mio	6,6 mio	34,8	815
1990	364	356	720	51	49	39.455	17	-0,5 mio	61	39	1,5 mio	1,6 mio	28,2	720
1991	256	244	500	51	49	53.004	24	+0,003 mio	74	26	0,16 mio	1,30 mio	23,9	450
1992	191	205	396	48	52	45.604	42	+0,0 mio	81	19	0,2 mio	0,5 mio	12,5	273
1993	154	183	337	46	54	51.360	51	+0,008 mio	82	18	0,08 mio	0,04 mio	10,5	205
1994	151	187	338	45	55	48.090	47	+0,003 mio	84	16	-	0,9 mio	10,2	213

3.2 Raziskave in razvoj

Zbrane informacije so kazale, da bo PRIMAT z zmogljivostmi, ki so mu bile na voljo, težko obvladal zahtevno nalogo. V začetku 90. let se je vodstvo odločilo za sodelovanje s takratno Tehniško fakulteto v Mariboru in nekaj kasneje zaprosilo za državno raziskovalno pomoč, ki so jo tudi dobili [1] in [2].

3.2 Research and development

The information gathered indicated that PRIMAT, with the available potentials, would encounter much difficulty in performing the demanding task. A the beginning of the nineties, the factory decided to cooperate with the Faculty of Engineering, and later applied for and obtained the state research support [1] and [2].



Sl. 1. *Gibanje značilnih podatkov v obdobju 1988 do 1994 v TKO PRIMAT*
Fig. 1. *Movement trends of chracteristic data in the period 1988 to 1994 in TKO PRIMAT*

Raziskovalno in razvojno delo je bilo predvsem usmerjeno na tiste komponente mehanske opreme proti vlomom in požarom, ki jih podjetje do tedaj ni poznalo.

- Razvite so bile kompozitne stene z mineralnimi polnili velike tlačne trdnosti (tudi nad 200 MPa). Bistveno je bila izboljšana njihova odpornost proti toplotnim rezalnim učinkom, razbijanju, dolbenju, dletenju, vrtanju, brušenju in kombiniranim vlomnim učinkom.
- Razviti in izbrani so bili novi zapahni in zaklepni mehanizmi z veliko varnostjo proti vlomom.
- Razvita in izbrana so bila izolacijska polnila in endotermni materiali za ognjevzdržne izdelke, ki so po svoji kakovosti daleč presegali do tedaj znane. Izbrane so bile tesnilne snovi, ki so učinkovito preprečevale prehod toplote med gibljivimi deli naprav, novi amortizacijski sistemi pa so onemogočali deformacije tudi pri padcih z večjih višin.

The research and development work focused especially on those components of mechanical burglarproof and fireproof equipment whose production had so far been unfamiliar to the team:

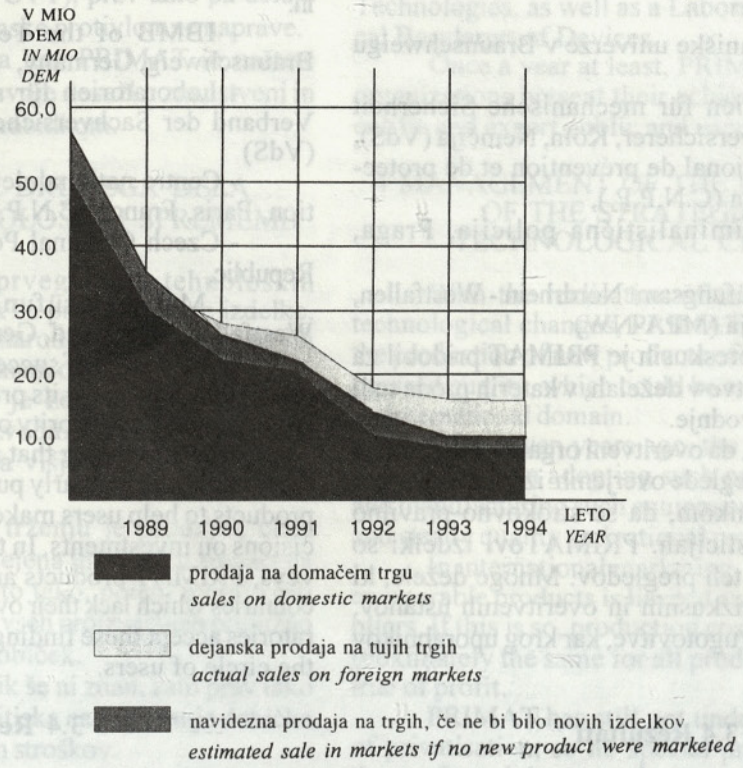
- Composite walls with mineral fillings of high pressure resistance (also above 200 MPa) were developed. Their resistance to heat cutting, demolition, grooving, chiselling, drilling, grinding, and combined burglar effects was essentially improved;
- New high burglarproof bolting and locking mechanisms were developed and selected;
- Isolation fillings and endothermic materials for fire retarding products which by far surpassed the known ones were developed and selected. Sealing materials which efficiently prevented heat transfer between the moving parts of devices, and new shock absorbing systems which prevented deformations even on falls from large height were developed and selected.

Tako razvite komponente so bile podlaga za razvoj izdelkov, varnih proti vlomom in ognju, ki so bili prav tako izdelani.

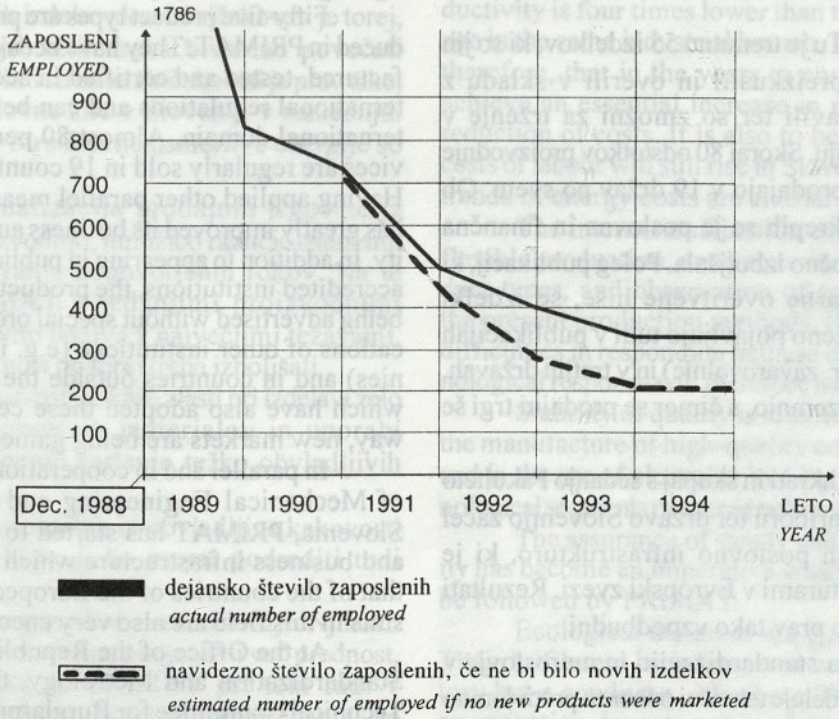
Kakšen vpliv ima razvoj novih izdelkov na prodajo in število zaposlenih kažeta sliki 2 in 3.

The newly developed components were also the basis for starting and carrying out the development of burglarproof and fireproof equipment.

The influence of product development on sales and the number of employees is shown in Figures 2 and 3.



Sl. 2. *Dejanska in navidezna prodaja na tujih trgih v obdobju 1988 do 1994*
Fig. 2. *Actual and estimated sale in foreign markets in the period 1988 to 1994*



Sl. 3. *Gibanje števila zaposlenih v obdobju 1988 do 1994*
Fig. 3. *Variance of employement in the period 1988 to 1994*

3.3 **Preizkušanje in overjanje**

Pri PRIMATu so se od vsega začetka odločili preizkušati svoje nove konstrukcije v mednarodno priznanih vrhunskih preizkuševalnih ustanovah. Med raziskovalnim in razvojnim delom in po njem so vzorce preizkušali pri:

- IBMB Tehniške univerze v Braunschweigu v Nemčiji,
- Laboratorien für mechanische Sicherheit Verband der Sachversicherer, Köln, Nemčija (VdS),
- Centre national de prévention et de protection, Paris, Francija (C.N.P.P.),
- Češka kriminalistična policija, Praga, Republika Češka,
- Materialprüfungsamt Nordrhein - Westfallen, Dortmund, Nemčija (MPA-NW).

Po uspelih preskusih je PRIMAT pridobil za svoje izdelke overitve v deželah, v katerih proda tudi večino svoje proizvodnje.

Zanimivo je, da overitveni organi v teh deželah redno objavljajo preglede overjenih izdelkov in s tem pomagajo uporabnikom, da se strokovno pravilno odločajo pri investicijah. PRIMATovi izdelki so navedeni v večini teh pregledov. Mnoge dežele, ki nimajo lastnih preizkusnih in overitvenih ustanov, upoštevajo njihove ugotovitve, kar krog uporabnikov le še povečuje.

3.4 **Rezultati**

Rezultati načrta menedžmenta prvega dela strateških tehnoloških sprememb so mnogoteri in večplastni.

Pri PRIMATu je trenutno 55 izdelkov, ki so jih razvili, izdelali, preizkusili in overili v skladu z mednarodnimi pravili ter so zmožni za trženje v mednarodnem okolju. Skoraj 80 odstotkov proizvodnje teh naprav redno prodajajo v 19 držav po svetu. Ob drugih hkratnih ukrepih se je poslovna in finančna trdnost podjetja močno izboljšala. Poleg publikacij, ki jih izdajajo primarne overitvene hiše, se izdelki PRIMAT nenaročeno pojavljajo tudi v publikacijah drugih ustanov (npr. zavarovalnic) in v tretjih državah, ki te overitve prevzemajo, s čimer se prodajni trgi še širijo [1] in [2].

PRIMAT je hkrati in skupaj s sedanjo Fakulteto za strojništvo v Mariboru ter državo Slovenijo začel graditi tehnično in poslovno infrastrukturo, ki je primerljiva s strukturami v Evropski zvezi. Rezultati na tem področju so prav tako vzpodbudni.

Pri Uradu za standardizacijo in meroslovje v Republiki Sloveniji deluje tehnični odbor za protivlomno in protipožarno varovanje (USM/TC PPV), ki je enakovreden CEN TC 263, s katerim je povezan.

3.3 **Testing and certifying**

From the very start, PRIMAT decided to have its new structures tested in internationally recognised testing institutions. During and after research and development activities, the factory had samples tested in:

- IBMB of the Technical University, in Braunschweig, Germany,
- Laboratorien für mechanische Sicherheit, Verband der Sachversicherer, Cologne, Germany (VdS)
- Centre national de prévention et de protection, Paris, France (C.N.P.P.),
- Czech Criminal Police, Prague, the Czech Republic,
- Materialprüfungsamt, Nordheim in Westfallen, Dortmund, Germany (MPA-NW).

On the basis of successful tests, PRIMAT obtained certificates for its products in the countries in which it sells the majority of its production.

It is interesting that accredited institutions in these countries regularly publish surveys of certified products to help users make correct professional decisions on investments. In the majority of these surveys, PRIMAT products are mentioned. Numerous countries which lack their own accredited testing laboratories accept these findings, which helps to enlarge the circle of users.

3.4 **Results**

The management planning results of the first part of the technological changes are numerous and mutilayered.

Fifty-five product types are presently being produced in PRIMAT. They have been developed, manufactured, tested and certified in accordance with international regulations and can be marketed on international domain. Almost 80 percent of these devices are regularly sold in 19 countries of the world. Having applied other parallel measures, the factory has greatly improved its business and financial stability. In addition to appearing in publications of primary accredited institutions, the products of PRIMAT are being advertised without special orders, also in publications of other institutions (e.g. insurance companies) and in countries outside the European Union which have also adopted these certificates. In this way, new markets are being gained [1] and [2].

In parallel and in cooperation with the Faculty of Mechanical Engineering and the Republic of Slovenia, PRIMAT has started to build a technical and business infrastructure which is comparable to that of the countries of the European Union. The results in this field are also very encouraging.

At the Office of the Republic of Slovenia for Standardization and Metrology, there is an active Technical Committee for Burglarproof and Fireproof Safety; it is the equivalent to CEN TC 263 to which the Committee is linked.

Pri Gospodarski zbornici Slovenije je bila ustanovljena Sekcija proizvajalcev varnostnih omar, blagajn in trezorjev, ki se včlanjuje v evropsko združenje EUROSAFE. Na Fakulteti za strojništvo Univerze v Mariboru deluje Tehnološki center za varnostne tehnologije (TCVT), prav tako pa deluje tudi Laboratorij za mehanske protivlomne naprave.

Najmanj enkrat na leto PRIMAT in naštete organizacije predstavijo svoje dosežke znanstveni in strokovni javnosti ter uporabnikom.

4 UPRAVLJANJE DRUGEGA DELA STRATEŠKIH TEHNOLOŠKIH SPREMEMB

Z uresničitvijo prvega dela tehnoloških sprememb so pri PRIMATu pridobili nove izdelke, katerih kakovost je mednarodno priznana in so jih uspešno tržili v mednarodnem okolju.

Drugi del načrta je že pred sedmimi leti načrtoval vpeljavo proizvodnih metod in uvajanje opreme, ki bi omogočala višjo stalno kakovost in preudarno proizvodnjo.

V mednarodnem trženju je prodajna cena primerljivih izdelkov omejena in v bistvu izenačena za vse ponudnike. Če je to tako, potem morajo biti tudi proizvodni stroški pri vseh proizvajalcih približno enaki. Isto velja tudi za dobiček.

V PRIMATu lastnik še ni znan, zato prav tako še ni zaznati izrazitega pritiska na povečanje dobička in zmanjšanje proizvodnih stroškov.

Poslovne in tehnične analize kažejo, da so PRIMATovi proizvodni stroški previsoki, produktivnost pa štirikrat manjša od evropskega povprečja sorodnih izdelovalcev. Pričakovati je torej, da bo v naslednjih letih treba bistveno povečati storilnost in zmanjšati stroške. Pričakovati je prav tako, da se bo cena delovne sile v Sloveniji v naslednjih letih še povečala. Stroškovne usmeritve energije so podobne.

Internacionalizacija prodajnih trgov terja prilagodljivo proizvodnjo, množico različic osnovnih izvedb in spoštovanje dogovorjenih rokov. Na te zahteve se PRIMAT s sedanjimi proizvodnimi metodami in opremo odziva z največjimi težavami. Tehnološko odzivnost bo torej treba izboljšati.

Stalnost kakovosti se kaže zlasti pri izdelavi zelo kvalitetnih kompozitnih materialov in uporabi elektronskih zaklepnih sestavin težko obvladljivih tehnoloških delov.

Zagotavljanje stalne in obvladljive kakovosti postaja nujnost, ki se ji bo moral podrediti tudi PRIMAT.

Ekološke omejitve bodo vedno strožje. Njihovo izpolnjevanje za proizvodno podjetje ni več prednost, ampak postaja pogoj. PRIMAT pri tem tudi v prihodnje ne bo izjema. Investicijska sredstva so trenutno v Sloveniji še predraga. Pričakovati je, da se bo cena kapitala v naslednjih letih znižala.

At the Slovenian Chamber of Commerce, a Section of Producers of Burglarproof Strong-boxes, Safes and Treasuries has been founded, which is a member of the European Association EUROSAFE. At the Faculty of Mechanical Engineering of the University of Maribor, there is a Center for Security Technologies, as well as a Laboratory for Mechanical Burglarproof Devices.

Once a year at least, PRIMAT and the above organizations present their achievements to the scientific and expert public and users.

4 MANAGEMENT OF THE SECOND PART OF THE STRATEGIC AND TECHNOLOGICAL CHANGES

With the realisation of the first part of the technological changes, PRIMAT was ready to start the production of new products of internationally recognised quality, which could be successfully marked on international domain.

Even seven years ago, the second part of the plan focused on adopting such production methods and manufacturing such equipment as to attain higher and steady quality and rational production.

In international marketing, the selling price of comparable products is limited and equal for all suppliers. If this is so, production costs must also be approximately the same for all producers. The same is true of profit.

PRIMAT has still not undergone the process of privatisation, so no special pressure to increase the profit and decrease the costs can be felt.

Business and technical analyses show that production costs in PRIMAT are too high and that productivity is four times lower than the European average in the same industrial branch. It is to be expected, therefore, that in the years to come, PRIMAT will achieve an essential increase in productivity and a reduction of costs. It is also to be expected that the costs of labour will still rise in Slovenia. The predicted trends of energy costs are similar.

The internationalization of markets demands flexible production, numerous variants of basic product types, and observation of agreed terms. With the present production methods, PRIMAT has great difficulties in responding to these demands. The technological response will therefore have to be improved.

Stability of quality is manifested, especially in the manufacture of high-quality composite materials and in the use of electronic locking mechanisms, technological segments mastered only with great difficulties.

The assurance of steady and manageable quality has become an imperative which will also have to be followed by PRIMAT.

Ecological demands are getting ever stricter. Their fulfilment is no longer an advantage for a factory but a condition. Also here PRIMAT cannot be an exception. Investment capital in Slovenia is presently still too expensive. It is expected, however, the capital costs will be reduced in the years to come.

Strateški menedžment drugega dela tehnoloških sprememb mora najti odgovore na navedene poslovne in tehnične zahteve in napovedi.

5 SKLEP

Na konkretnem primeru izdelovalca mehanske opreme za protivlomno in protipožarno varstvo PRIMAT Maribor je prikazan strateški menedžment tehnoloških sprememb v zadnjih sedmih letih.

Ta izdelovalec je z izdelavo strateškega načrta in njegovo izvedbo sam in s pomočjo znanstvenih ustanov ter države razvil, izdelal, preizkusil ter overil vrsto izdelkov, ki so učinkoviti in primerni za mednarodno trženje.

V drugem delu strateškega menedžmenta tehnoloških sprememb želi približati proizvodne metode in stroške konkurenčnim izdelovalcem.

The strategic management of the second part of the technological changes must find responses also to the above business and engineering demands and predictions.

5 CONCLUSION

The strategic management of technological changes undertaken in the last seven years is shown in a case study of PRIMAT, a producer of mechanical burglarproof and fireproof equipment.

By elaborating a strategic plan and by its realisation, and with its own potentials and the help of scientific institutions and the State, PRIMAT has developed, manufactured, tested and certified a number of products which are adequate for being internationally marketed.

In the second part of the strategic management of technological changes, the factory wants to improve their production methods and reduce costs to the level of competitive producers.

6 LITERATURA
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