13th International Research/Expert Conference
"Trends in the Development of Machinery and Associated Technology"
TMT 2009, Hammamet, Tunisia, 16-21 October 2009

INFLUENCE OF THE TECHNOLOGICAL PROCESS STRUCTURE ELEMENTS MODEL ON APPROACHES OF TIME STANDARDS DETERMINING

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ABSTRACT
*The beginning universal model for research and applied technology process, usually known as **T**echnological **p**rocess **p**rojecting **TPP**, by chronological development is gradually transformed in content and/ or timely dimension, from the simplest single models to the complex structure elements/ components integrated models of **TP**. In transformation, primary and secondary influencing factors participate. Existing created structure elements model influenced the creation and choice of variety time standards models. Integration of secondary influencing factors is possible to show in content and/ or timely dimensions, by principle of branching the tree, by complex or integrated structure elements model of **TP**. One example for one part of the content and of the chronologically complex integrated model is exposed and shown in application.*
Keywords: technological **p**rocess **TP**, elements structure of **TP**, time standard

1. INTRODUCTION
The starting universal model for research and applied technological process, usually known as **T**echnological **p**rocess **p**rojecting **TPP**, by chronological development is gradually transformed in content and/ or timely dimension, from the simplest single models to the complex structure elements/ components for integrated models of **TP**, here shown, **[1]**.
In transformation, **i**nfluencing **f**actors **IF** participate, the first primary ones with a goal of securing the hypothesis of creating structure elements model and then, the secondary ones with goal for direct creation of structure elements model (number and content of phases or levels of **TP,** belonging of element to that work kinds, defined by the subject of performing element or of the whole **TP**, composed work and time element for operation and whole **TP**).
The existing created structure elements model influenced the creation and choice of variety time standards models, exposed by various time determining approaches, technologies, methods, techniques and procedures, Integration of secondary influencing factors is possible to show in content and/ or timely dimensions, by principle of branching the tree, by complex or integrated structure elements model of **TP**. In application, it is exposed and shown by one example for one part of content and timely complex structure elements of integrated model for system and process of technology (work

phase) of machining by particles separation, one of the most dominating mechanical engineering field in metallurgic industry also, but more widely.

2. INFLUENCING FACTORS ON STRUCTURE OF ELEMENTS/ COMPONENTS AND INTRODUCTION TO CLASSIFICATION OF BELONGING MODELS

2.1. Influencing factors IF on structure elements/ components of TP

Depending on the chronological influence of some factors on setting the hypothesis for models creation, as well as the ones for the concrete models creation, influencing factors can be, conditionally, divided to primary and secondary.

Primary influencing factors PIF are the ones that enable the orientation problem and hypothesis creation for use of secondary factors. Among the most important are:

1) work **t**ime structure idea **WTS, [2, 3]**

2) basic work kinds classification.

Open set of known views of the work kinds, expressed in complementary pairs form, is shown in approach by H. H. Hilf, **[4],** and indicates the complexity of the chosen problem.

3) kinds or phases of activites for reproduction system and process,

4) levels of individual systems and processes in the reproduction system and process for goods and services, **[5],**

5) classification toward criteria of (non)goods production and (non)goods products/ services;

6) classification toward composed parts of different levels, **[6, 7],**

7) integrated model of structure elements,

8) relationship between structure elements model of **TP** and time standards determining models.

Secondary influencing factors SIF are the ones, that directly enable the model creation, its maintenance and improvement. The most important are:

1) number and content for phases and levels of **TP**

Basic phases and levels of **TP**, each of them with corresponding definition, function and purpose are: **W**ork **Ph**ase **WPH, Op**eration **Op**, **Subop**eration **Subop, Sequence Seq, I**ncidence/ **S**tandard **e**lement of **Op**eration **In**/ **SeOp**, **Mo**tion **Mo** and **Ba**sic or **Mi**cro **mo**tion **BaMo**/ **MiMo**;

2) belonging of element to that work kinds, defined by subject of performing element or whole **TP**

According to the subject of performing, it can be:

a) manual: operator performs the incidence using his own energy, without the machine energy,

b) machine/ automated: machine performs the incidence using its own energy,

c) machine-manual: operator and machine perform the incidence collectively and simultaneously,

d) manual-covered: operator performs manually the incidence, that is covered by the machine work;

3) composed element of work and time for operation and **TP.**

Composed elements of work structure for every work and nonwork/ losses and belonging times are:

a) preparing- finished work $\mathbf{W_{PF}}$**,** with the belonging preparation-finishing time $\mathbf{t_{PF}}$,

b) technological work $\mathbf{W_t}$**,** with the belonging technological time $\mathbf{t_t}$**,**

c) auxiliary work $\mathbf{W_a}$, with belonging auxiliary time $\mathbf{t_p}$**,**

d) extra "work" (technological, productive, organizational and the other losses and the rest of the operator) $\mathbf{"W"_d}$, with the belonging extended time $\mathbf{t_d}$.

2.2. Models structure of elements of TP

In Table 1., the matrix of models type and structure levels of **TP is exposed**, the first and sole **SIF**. Model types classified chronologically from 1) to **7**), while there have been 8 levels of components, where there have been included the other two **SIF** in the corresponding form, belonging of the element to those work kinds, defined by the subject of the performing element or of the whole **TP**, composed work and time element for operation and the whole **TP**. The matrix simultaneously represents the development from the most simplest model to the most complex model structure, characterized in the fact that both previously cited **SIFs** are directly applied in models 1) to 4**)** for levels 2 to 5, while in models 5**)** to 7) both cited **SIFs** are directly watched only for levels 0) to 2) and 5)**,** while in remaining levels, they are integrated with the other technological parameters and variables of structure elements, including the time variable.

*Table 1. Matrix of models type and structure levels of **TP*** relationships

Model types	***Levels of elements/ components for single models of TP***							
	0	**1**	**2**	**3**	**4**	**5**	**6**	**7**
1)	TP							
2)	TP		Op					
3)	TP		Op			Za/SeOp		
4)	TP	WPH	Op			Za/SeOp		
5)	TP	WPH	Op			Za/SeOp	Mo	
6)	TP		Op			Za/SeOp	Mo	BaMo/ MiMo
7)	TP		Op	SubOp	Seq			

3. INTEGRATION OF STRUCTURE ELEMENTS MODELS AND TIME STANDARDS DETERMINING MODELS WITH APPLICATION

Integration of structure elements models and time standards determining models (approaches, methods, techniques and procedures) are possible and need to be realized on at least two levels: the first level requests integration of all levels of structure elements for one **TP** , while the second level requests integration of all three **SIFs** for one **TP.** The cited double integration can be shown in more ways, but one of them is application of the branching of the tree principle for the structure levels of **TP** in one integrated graphic screen. To structure type 1) do 5) models exclusively immanent are the classical time standards determining models. In type 6) models classical time standards determining models can be used too, but the dominating ones are **P**re**d**etermined **T**imes **S**ystems **PDTS (MTM, WF, DMT, BMT**, etc.) on the basis of basic or micro- motions, while in type 7**)** model, the system **M**aynard **O**peration **S**equence **Te**chnique **MOST** is exclusively immanent and dominating the sequential models**.** In application, n example of integrated model for operation turning of machining subject is exposed, one of the dominating ones in the mechanical engineering field and metallurgic industry, with the graphic illustration on Figure 1.

4. CONCLUSION

From the previously cited, it is possible to conclude the following:

1) the development of **Tec**hnological **p**rocess **p**rojecting TP**P,** as a universal model for research and applied technological process, resulted by creation of more types structure elements/ components of **TP,**

2) orientation and setting hypothesis for the creation structure elements/ components model, determined **by p**rimary **i**nfluencing **f**actors **PIF**, while the concrete model creation is determined by **s**econdary **i**nfluencing **f**actors **SIF**, of which the most important are the following three: number and content of phases or levels of **TP**, belonging of the element to that work kinds defined by subject of performing element or the whole **TP**, composed work and time element for operation and whole **TP**,

3) the single type of model was possible to expose by matrix with relationships of possible 8 levels for structure elements/ components and when it has been done for 7 of the, in the past, developed model types, 8x7 elements. The first five models by ranging are classical, and the last two are multiple, at least, doubly integrated,

4) the models of structure elements of TP unambiguously determine the approaches and methods kinds, techniques and procedures for time determining, and simultaneously, multi-validly determine single methods, techniques and procedures.

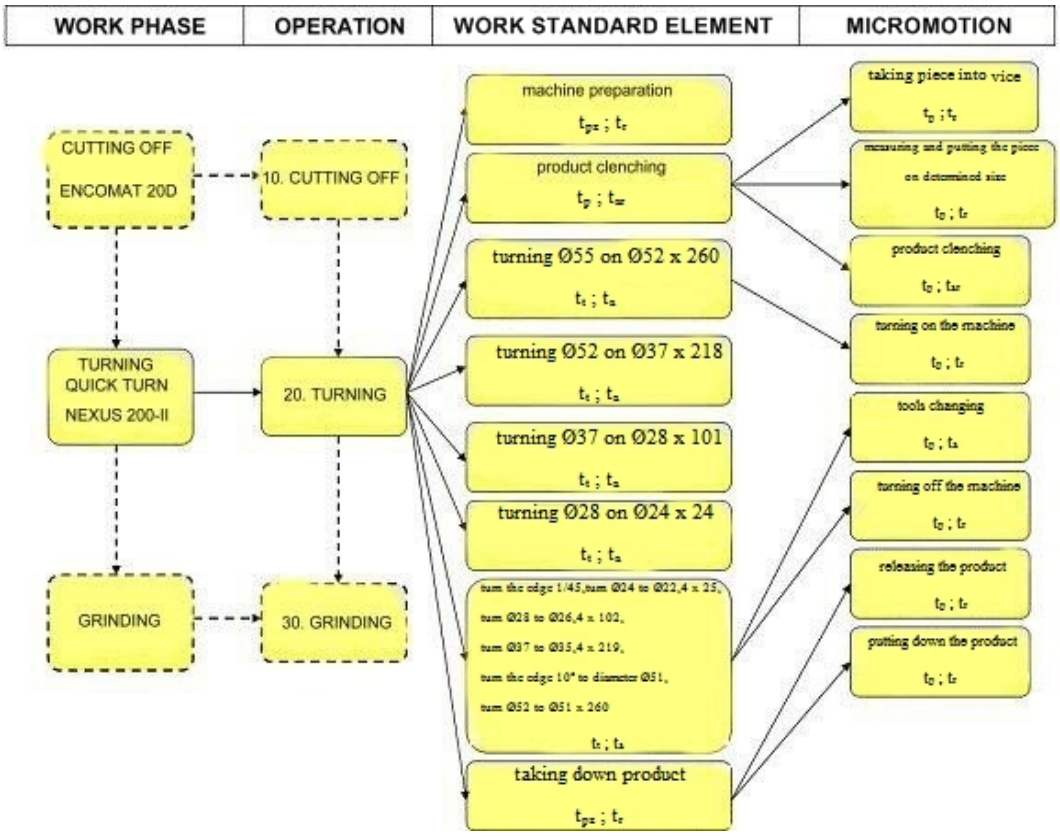

Figure 1. Graphic showing the turning operation according to chosen criteria

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