

# Planning and Managing of Installation Works Using Microsoft Project

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## Abstract

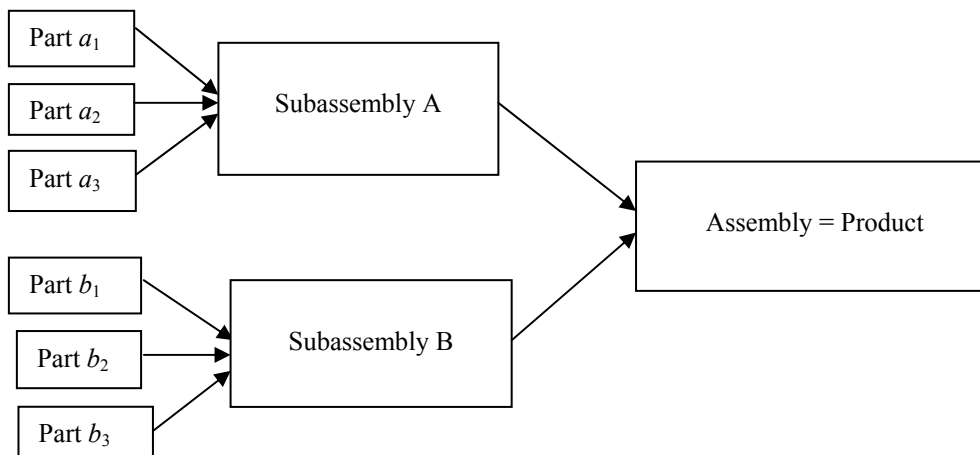
*This paper aims to present the planning process of the installation work of a parallel slide tap using Microsoft Project.*

**Key words:** tap, installation, project

## General Aspects

The final objective of the assembly process is the mounting of the finished parts in a logical sequence: subassemblies, assemblies, and aggregates which should correspond with the quality conditions stated by the regulatory documents [1].

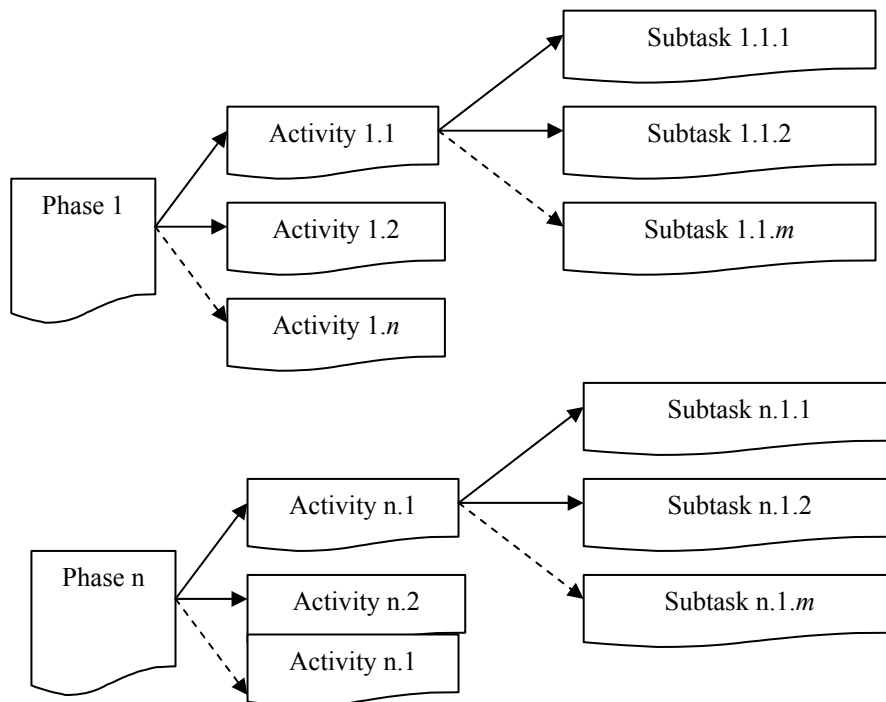
In these conditions, in accordance with the definition of a project, the installation work is made by planning and coordinating the activities which are based on a determined plan (Figure 1).



**Fig. 1.** The structure of the mounting process

Generally, this project has the structure of a project plan (Fig. 2) [3].

Hence, because of the similarity between the two models (Fig. 1 and Fig. 2), this paper aims to analyze the mounting process of a parallel slide tap.



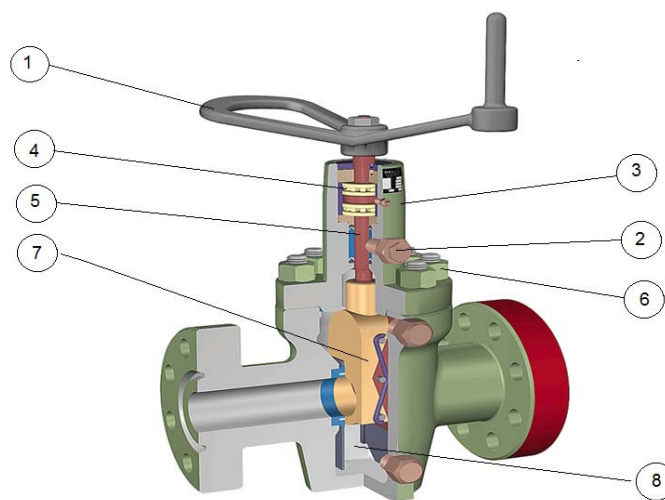
**Fig. 2.** The project plan

## The Development of the Working Model

In the case of the installation works of the valves it has been used the tree decomposition of the component activities. This method allows hierarchical addressing of activities and structures the temporal ordering necessary for planning and management of the installation works.

The development of working model for mounting works that are applicable for valves, comprises the following steps [2]:

- The identification of the type of valve construction (parallel expandable - Fig. 3).



**Fig. 3.** Parallel slide valve - part [4]

1 – hand wheel; 2 – grease; 3 – cap cap; 4 – bearing pressure ring; 5 – rod;  
6 – nut; 7 – gate; 8 – fixing plate.

- The establishment of the assembly works nomenclature.
- Determination of the typical processes (assembling the modules).
- The establishment of the necessary resources (human, material, equipment, machinery, etc.).
- The establishment of the methodology for calculating the technical standard for the installation.
- The establishment of the cost assembly works.
- Setting up additional works related operations (adjustments, assembly-disassembly, etc.).

## The Method of Driving the Technological Process of Mounting a Parallel Slide Valve

In order to determine how Microsoft Project can be used for the management, monitoring and optimization of the mounting assembly, we shall describe the following stages of work [3].

- Establishment of the nomenclature installation works. The mounting process is structured in three centralizer stages (Figure 4).

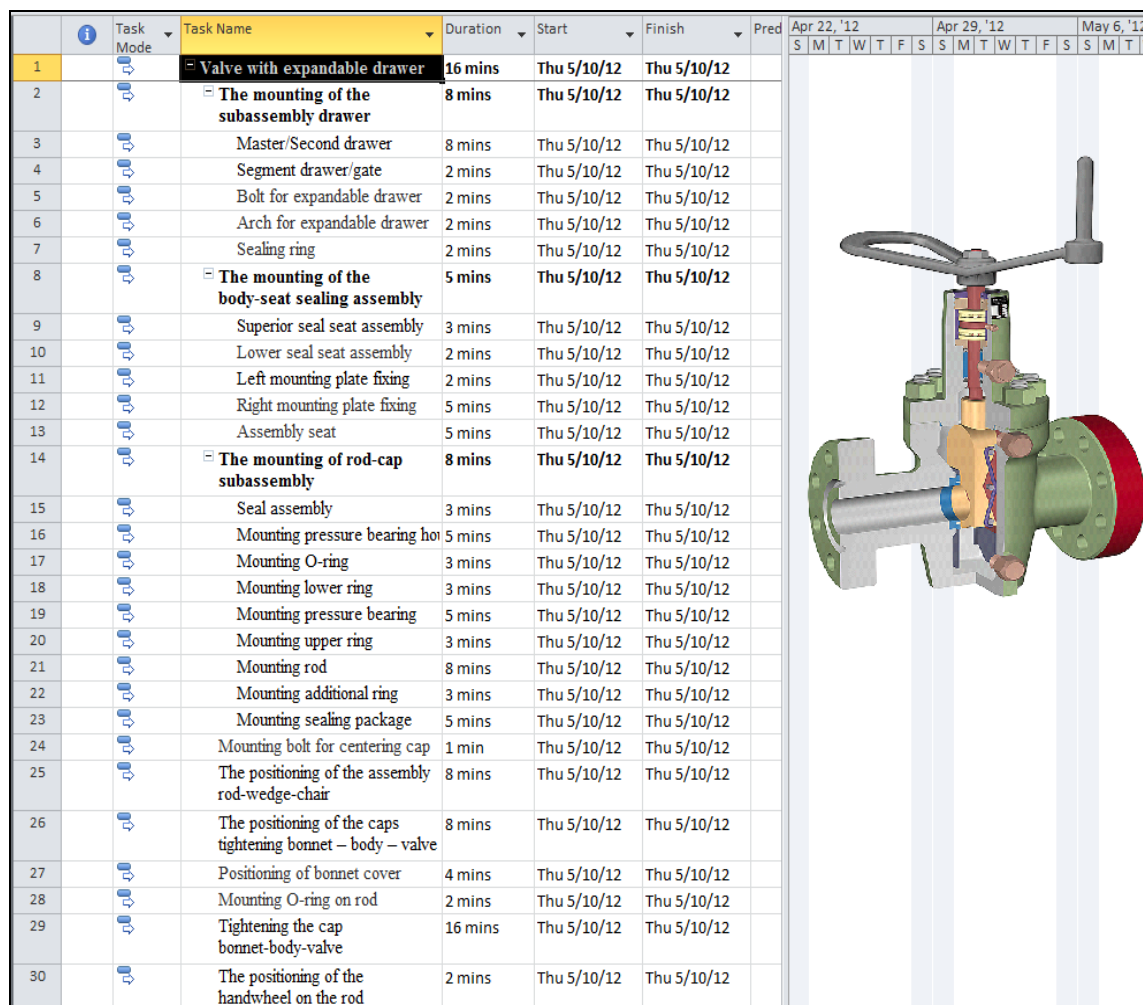


Fig. 4. The structure of the mounting technological process on stages and phases of work

- The establishment of the correlations between the operations (activities) that take place in the technological process of assembly. During the mounting process the activities succeed in a certain order, some are held in series - an activity can not be started until another has been completed, others run in parallel - at the same time (that is may overlap wholly or partially - for example the supply of raw materials in installation works). For a complex technological process, the complete set of activities necessary to accomplish it will include a combination of serial and parallel activities which form a network that can be represented graphic - Figure 5.

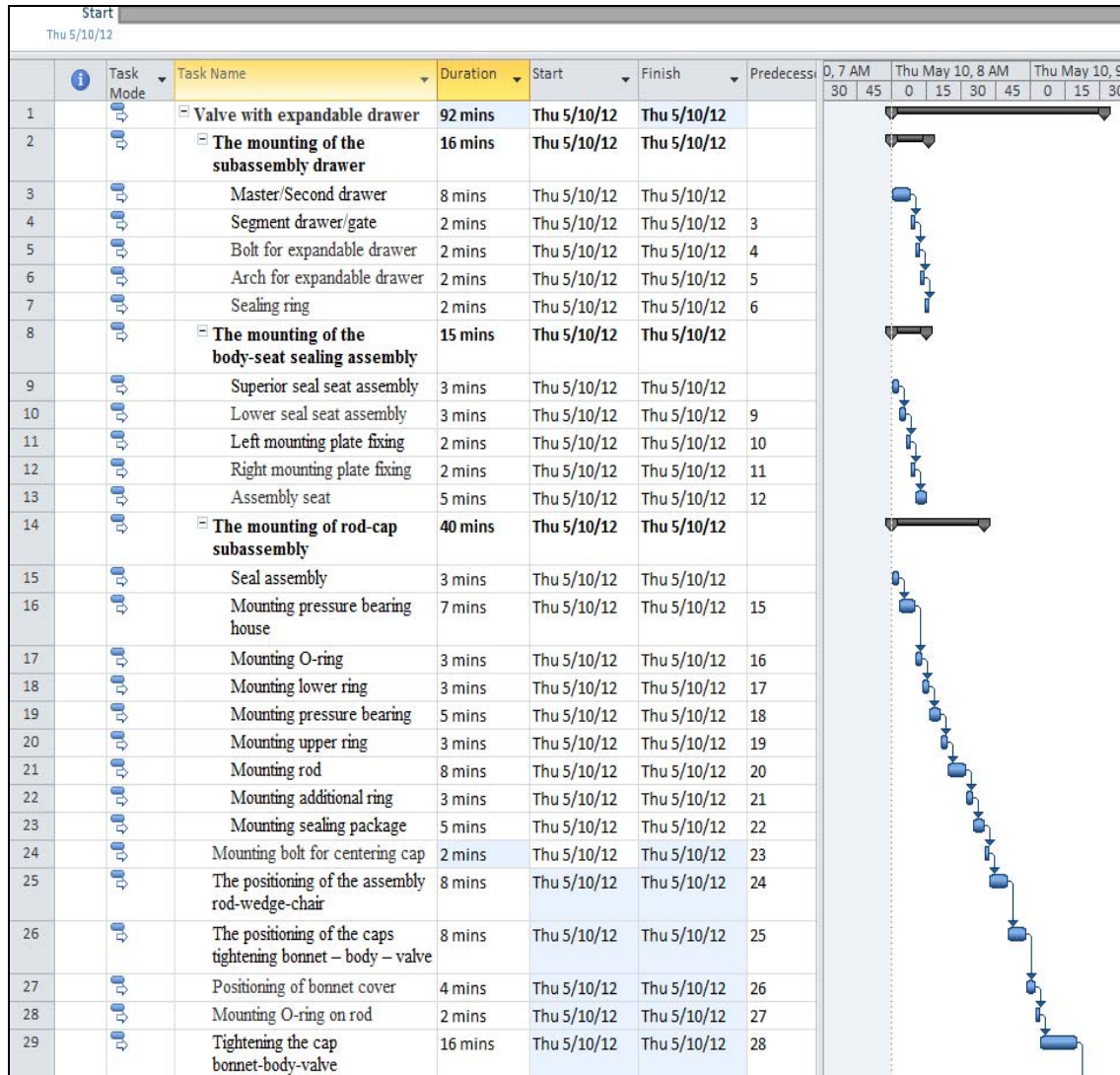


Fig. 5. Gantt chart view

- The determination of the total duration of the project (Fig. 6). All the works (activities) assembly linked by logical and chronological relationships form a network (a diagram / graph or network graphic). The determination of the total length of the technological process is shown in Figure 6.
- The establishment of the critical path and reserves of time for the activities which are not on the critical path - Figure 7.

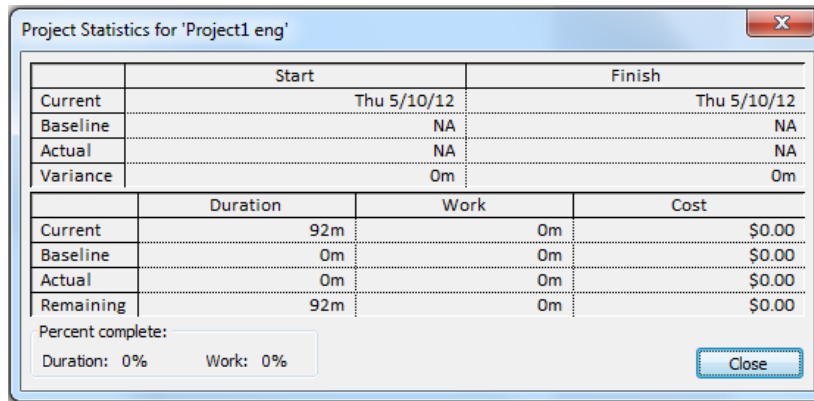


Fig. 6. The determination of the total duration of the project

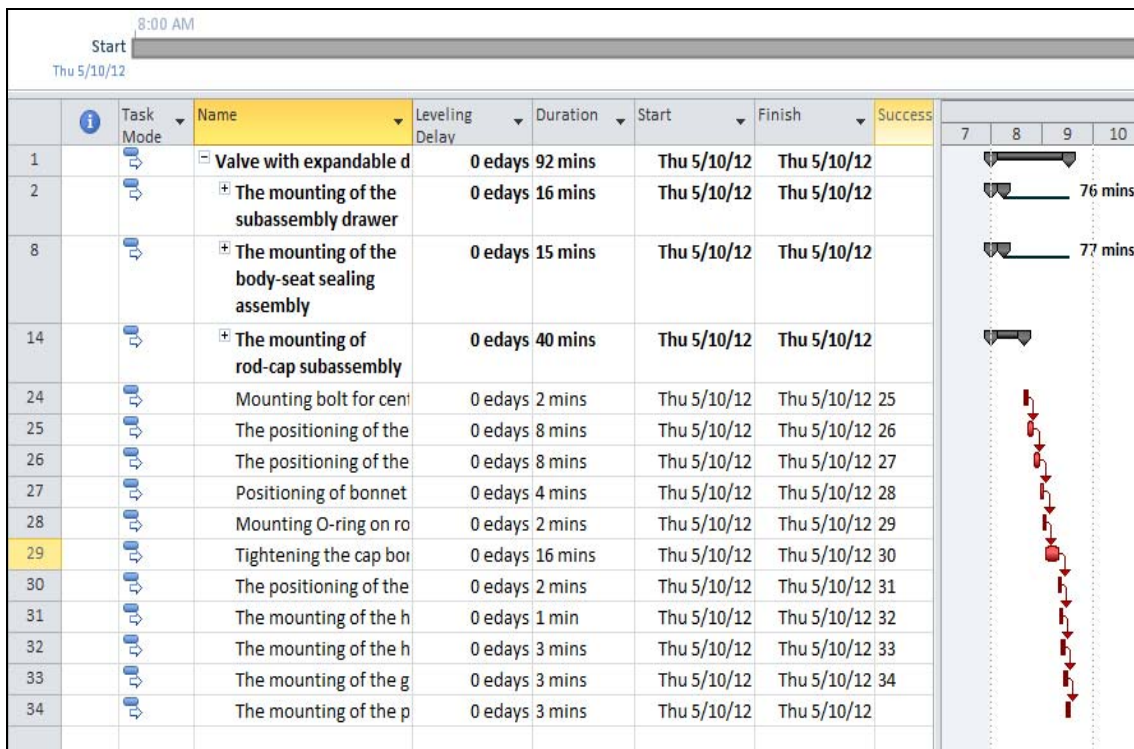


Fig. 7. The identification of the critical path

### Conclusions

At present, for the proper operation of the machines not only the structural design and dimensional accuracy are important, but also the quality of assembling surfaces of these machines.

The usability of the method is justified by:

- The systemic approach of the installation works which allows the elimination of the unworked time.
- Formation of working models which can be changed quickly by using the informatics system.

- Rapid abridgment to changes which occur during the mounting cycle (changing working times, replacing resources, identifying disruptions of work etc.).
- Making working patterns on stages of work.
- Efficient tracking, permanent record of the work which is performed.
- Rapid control of work stages by highlighting the activities that do not fit in the specified parameters.

## References

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4. \* \* \* – [www.c-a-m.com](http://www.c-a-m.com) .

# Aspecte privind problematica lucrărilor de montaj în construcția de mașini

## Rezumat

*Procesul tehnologic de montaj reprezintă o parte a procesului de producție prin care piesele finite sunt grupate într-o succesiune logică, în subansamble, ansamble, agregate.  
In aceste condiții, lucrarea prezintă o modalitate de analiză a procesului tehnologic de montaj a unui robinet cu sertar paralel, utilizând produsul informatic Microsoft Project.*