CV CONTROLS FROM DESIGN TO OPERATION

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Abstract

The cooling and Ventilation (CV) group has emphasised the need to redefine its organisational structure at the end of 98. The main objective of this operation was to ensure the CV group to be more competitive and efficient through the growing tasks of the LHC projects. The main evolution given to this reorganisation is that the new structure is more project oriented and then operates on three distinct axes: Design, Work and Operation. Process control project management requires a complete and early interaction and participation of all the actors involved. This procedure to be efficient and constructive must be considered and performed not only during the design stage but along the project planning phases and must go beyond the completion work including the process control operation activity. The paper explains the present project management for process control. It describes the present constraints and gives suggestions to a different approach to these projects to improve performances and efficiency of a control team immersed in the design unit.

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1 INTRODUCTION

The structure of the Cooling and Ventilation group was drastically changed at the end of 1998. In relation to the LHC projects the CV group left its structure organized on an operational activity model to migrate to a well-adapted project oriented structure. The major change was a partitioning in three distinct units (Design, Works, Operation) which operate on a flexible and interaction-based process. Each unit is composed of several specialized teams with some interrelated tasks and activities that must accomplish a define objective to fulfill the particular mission of the related unit. This concept encompasses everything necessary to identify and design, produce, deliver and maintain in operation a quality product or service to fully satisfy the customer.

2 CV PROJECT PROCESSING

2.1 Generality

Basically CV Project processing can be compared to a batch process. Indeed a batch process addressed in its simplest way to the production of a finite quantity of works. Each stage which composed the batch process includes a set of specific operations in relation with the project needs. In general CV projects are organized to a well defined order between the different process stages in accordance with the three major units composing the CV group.

2.2 Basic Project Processing Model

![Diagram of CV Project Processing](image)

The figure above illustrates the basic concept of a CV project stream line by looking at the evolution of the project along of the different stages in relation with the units which composed the CV group structure. In its simplest term, the project processing is made of a set of decisions and activities that are performed to transform a defined input into a defined output. It defines the flow of work through the different stages beginning with an external input and ending with an external output.

2.3 Project Process stages

The project phase consists of three process stages organized as a serial ordered set. The process stage is a part of the project processing that usually operates independently from the two other process stages. It usually results in a set of planned process operations.

2.4 Project Process operations

Each process stage consists of an ordered set of one or more process operations. The process operations represent major activities and decisions that are performed in the perspective of the final development of the project.
2.5 Project process actions

Each process operation is the most often subdivided into a set of one or more process actions that carry out the final output required by the process operation. Process actions describe minor processing activities that are combined to make up a process operation.

3 PROCESS CONTROL PROJECT MANAGEMENT

3.1 Introduction

The previous section examines how the CV structural organization takes place in its project-oriented form and also provides a vision of a project evolution along the different stages within this structural organization.

One major consideration about project processing resulting from a practical experience acquired over the last two years is that each process stage operates on a rather independently mode. As a direct and logical consequence we must consider that each unit has little dependence from the two others and the level of interaction between units is reduced to the minimum. This operating mode has not significant impacts or effects in the project successful achievement since each unit has its own objectives and responsibility. Moreover it is clear that most of CV projects do not require the need to have specialists for each technical domain dispatched into the different units.

3.2 Process Control Activity

The process control and electrical activity can not be considered as a simple activity which must be dependent on a unit in particular. This concept goes beyond the present CV organization structure. Process control activity is more and more complex and the most often involved a high technology technical infrastructure. The control activity must be organized and managed as an end to end project rather than as the sum of some disjointed functions split up into the three CV units (design, works, operation) with distributed responsibility.

The process control activity is often cross functional and always involved cross-disciplinary team works. For this reason some external competencies are required at the early stage of the project design. The interrelation tasks often request the participation of the following divisional group:

- ST/EL for the design and installation of electrical infrastructure
- ST/MA for the remote monitoring of CV plants

This collaboration with other divisional technical groups is essential to successfully perform process control project. The level of the interrelationships between other team’s works must be efficient all along the different projects phases. This contributes to ensure a deliver a high performance product.

3.3 Level of Process Control Activity improvements

Process control activity is often considered as a subsystem in itself within a global CV project. This consideration means that people from control team is not early involved as he should be. The Limit of responsibility is sometimes not really well defined and this contributes to decrease not only the performance of the control activity but also the performance of the overall system. Dysfunctional problems around the process control infrastructure are immediately visible and have direct impacts on the overall plant stability and therefore disturb the environment.

The fact that the control team is immersed in the design unit is a disadvantage to maintain a real control activity effectiveness within CV projects. A proposed conceptual solution is to consider that the process control activity must be concentrated in a dedicated section. This section taking advantage of the dynamic structures of the CV group is able to support all control activity from the project design to the operation phases.

Consequently the vision from a control activity point of view is more strategic over the CV sections and projects. The limit of responsibility is clearly defined. The control activity is, from the design stage, entirely placed under the responsibility of the control section with clear objective. In this
way the control activity is not at all partitioned along the different project stages. The section manages and co-ordinates the different phases using new mechanisms to support new projects and CV interrelated units tasks. This new form provides both stability and efficiency in the day to day relationships with the other divisional technical group involved. Within such a context a process control project can be strictly designed and followed with a real commitment from all the actors involved.

4 CONCLUSION

One of the significant factors of the likelihood of success or failure in CV projects is the level of consideration given to the process control activity. Process control is important for two reasons: producing a better final product and enabling better productivity. A quality product is the output of a quality process. The main priority of the CV group is to produce and deliver a quality product or service in accordance with the client needs. A good process control project management can only be possible if the control activity depends on the responsibility of a unique section. This perspective provides management with better planning and control mechanisms. This will improves the communication within all works activities, which will allow for a better overall coordination of work. The result will be an increased flexibility and responsiveness of people involved and will provide an environment where individuals have to better cooperate in order to accomplish tasks. This improves the effectiveness of projects and allows project leaders to control better projects.

REFERENCES