

CHAPTER 7

Conclusion and Suggestion

7.1 Conclusion

The procedure to study the establishment of quality assurance for project management of water treatment initiated from present project management evaluation. The current procedure of project execution for water treatment was set out in form of flow chart. The problems and collected data of the past project have been analyzed and identified the cause of the problem. The quality tools used to analysis the problem and to identify the cause of problem was brainstorming and cause and effect diagram (fish bond analysis).

The problem incurred in the project management of water treatment project can be categorized into three main areas as below.

1. The poor quality of work problem
 - 1.1 The failure from the design operation
 - 1.2 The failure from equipment procurement
 - 1.3 The failure from installation procedure
2. The delay of project completion
 - 2.1 Delay from equipment procurement
 - 2.2 Delay from equipment installation
3. The customer dissatisfaction

Another quality tool applied to analyze the current project execution was the Failure Mode and Effect Analysis (FMEA). With this tool, the potential failures that occur in the project, its effect, and the recommended action to prevent the failures are analyzed. Chapter 5 explained the procedure of FMEA implementation from FMEA team establishment up to RPN value evaluation, and the result of this analysis also shown in the chapter 5. There are 17 high-risk areas, shown in the Table 5.10, in the project management for water treatment plant project. All the high-risk areas have the risk priority number value (RPN) exceeds 105.

For the solution to solve and to prevent these problems, FMEA team has discussed and recorded them into the FMEA form as in term of the recommended action. They include the quality assurance activities and established documents (form, data sheet and checklist) to support these activities. Then, the current procedure to execute the water treatment project has been revised and added the quality assurance activities into. The revised procedures and the document control serve as the quality assurance system for the project management of water treatment plant.

The proposed quality assurance for project management of water treatment plant has been implemented in a water treatment project in 1999. This project investment is about 1.56 millions Baht compare with the previous project that investment about 3.9 millions Baht. Two of imported machines in the previous project were high investment. However, both projects are almost quite same complexity and the functioning is the same as well. Therefore, the figure is the same scale of project design, installation, and usual operation. After the project has finished, the results of the implementation were found that the poor quality of work reduction, the project completion delay reduction, and the customer satisfaction improvement.

Problem Areas	Before Implementation	After Implementation
1. The poor quality of work		
1.1 Reworks	216 Hrs	80 Hrs
1.2 Financial Loss	77,042.62 Bahts	23,542 Bahts
2. The project completion delay	2 Weeks	3 Days

Table 7.1 The comparison of problem areas between before and after quality assurance implementation

From the table, reworks have reduced in both design and installation phases: rework in design 23 hrs and rework in installation 57 hrs. The financial loss has reduced because of the reduction of rework and waste.

In term of RPN value changing, the percentage of change between before and after implementation has ranged from 17 % to 89%.

In addition, the improvement areas after implementation have been discussed and list as below:

1. Improve the design output
2. Improve system validation
3. Improve reliability on customer aspect
4. Improve the comprehension and clarification scope of work and customer requirements
5. Improve the project monitoring
6. The project operation cost and material cost reduction
7. Improve equipment consistency
8. Improve the current project activity

7.2 Suggestion

After the improvement of quality assurance system implementation has been evaluated, researcher has found that there are some problem areas that should be further improved. The suggestions to improve the quality assurance system for project management of water treatment are explained as below.

7.2.1 Improvement the quality assurance system for specific customer

Since there are more types of customer business, the requirement for quality assurance system of any business is different. Some business has seriously required the high level of quality assurance, especially the business that closely involves with the people such as hospital. The newly proposed quality assurance system has to be developed to the high level. That means the standard of confident level should increase maybe to 95 percent. In the other word, the RPN value to be addressed must be started from 50. The quality assurance activities or documents will be developed and implemented into the newly proposed system.

7.2.2 Continuous improvement the quality assurance system

As the quality assurance system has required improvement, the existing quality assurance system for the successful project management should be evaluated the effectiveness periodically. The confident level will be increased to 95 percent, if the present is 90 percent. That means the potential failure that its RPN value exceeds 50, will be addressed. However, the next improvement must concern the potential failures that have Severity score 7, 8,9 or 10 although the RPN value less than the acceptance confidential level.

7.2.3 Develop the procedure to control the changing requisition in the project management

In the implemented project, there was the changing requirement from the customer that affect on the performance of project management both the delays of the project completion and the financial loss. Since that requirement was not the large impact, the company has absorbed the delay of completion and financial loss incurred. However, the procedure to discuss any changing requirement before proceeding will be set up. Change Requisition document will be developed for project team to record the change point, reason for change, document affected, and resources requirement. This document will be submitted to Project manager. The meeting among customer, site management, and project manager will be set up to discuss and find out the solution whether who will absorb the additional cost or could the project be extended.

7.2.4 Develop the document and information management and control system

Since the implemented project has no more subcontractors and the project parties, the document and information has less complexity. In order to support the large-scale of the water treatment project, the document and information control system has to be developed. The content in the system should consist of as following:

1. The procedure to control incoming documents and information and outgoing documents and information.

2. The procedure for the authorization of approval document and review checklist
3. The Quality Record storage and retention policy
4. The document preparation for archiving

7.2.5 Develop the system to record and distribute the knowledge for the new problem, its cause and the solution.

In order to improve the quality of water treatment system and to prevent the problem occurrence, the problem area, cause of the problem, and the solution of the problem should be recorded and distributed to the project team to read. Not only for the present project team can learn and perceive, but the future staff also can study this knowledge. In keeping these data, computer-aided system can be developed to facilitate the process of recording. In addition, the data can be stored for a long time.

7.2.6 Develop the quality assurance system to cover the management for wastewater treatment project and customer service

In the Engineering department, there are three main operations: water treatment project, wastewater treatment project, and customer service. The newly proposed quality assurance for project management of water treatment project should be developed and/or modified to cover the project management for wastewater treatment plant. Since the wastewater project has involved with more sections such as construction subcontractor and/or regulatory department, the flow chart of project execution is not similar to the water treatment project. However, besides the water and wastewater treatment project, customer service section should be established the quality assurance system as well. This is because the customer satisfaction is an importance for the company.

7.2.7 Establishment of Auditing process

In addition to further development for the quality assurance system, the existing quality assurance system should be audited in order to ensure that the project team has executed the project within the acceptance quality level continuously. Therefore, the

acceptance quality level has to be set up, together with the answer of what the procedures to audit are, how often the audit process should be, and when the audit procedure starts. However, an importance issue that must be clarified is what the recommended action to be taken, if the project has been found that it is out of the acceptance level. The quality auditing report is important as well.



สถาบันวิทยบริการ
จุฬาลงกรณ์มหาวิทยาลัย