

# Implement of Informatization Management for Equipment System of BX STEEL

AUTHOR :GAO XIUMIN

BENXI IRON AND STEEL PLATE CO., LTD EQUIPMENT DEPARTMENT, Benxi117000, China

Email: bggaoxiumin@163.com

## ABSTRACT

Through the implement of informatization engineering ERP, the whole process from start-up, update to scrap of the equipment of BX STEEL can be managed instantly. Make use of maintenance in advance, lubrication management, spot checking, maintenance management, equipment failure management, etc., to tightly connect with the financing cost and material management, the closed loop management of equipment system informatization will be realized, which can provide the powerful scientific basis for equipment management. At present, there are 15 units online in the equipment system, 7 others will be online in September. And the third stage is in preparation.

**Keyword:** ERP, closed loop management, accurate and precise, science, push forward

Equipment system of BX STEEL carries out precise and accurate management. The aim is to realize zero failure and zero effect of equipment. By less maintenance cost to realize the maximum benefits. Under the importance of various leaders of BX STEEL, we substantially take the lead in realizing the ERP management of equipment system informatization throughout the country.

Before executing the ERP management, we never have any completed or integrated ERP equipment to assist the equipment management. So our daily management must cost many human and material resources. Different execution and omission always affected our availability. Execution of ERP system just followed the principle of Consistency Management to realize the planifying of basic data in our company, integration of various flows, and establishment and completion of management system. All of these are guided by the "first in command". At present, the equipment system has been already running with good results, which greatly improved the management level of BX STEEL. The followings mainly introduced the key points for executing systematic informatization management of equipment from execution of our ERP system, importance of leaders, establishment and completion of various flow management systems and training.

## 1. Execution of ERP equipment system

The courses that BX STEEL successfully executes informatization management of equipment system are introduced from the function of development and put into running, present running condition of ERP equipment system of BX STEEL, to detail function for each module.

### 1.1 Functional development and put into running of ERP equipment system of BX STEEL experienced 4 phases as follows:

**1.1.1** From March 2005 to October 2005, we passed the requirement discuss, finished the basic confirm for first draft of management rules and operation sticking points, and completed the verification on the system confirmation and code structure.

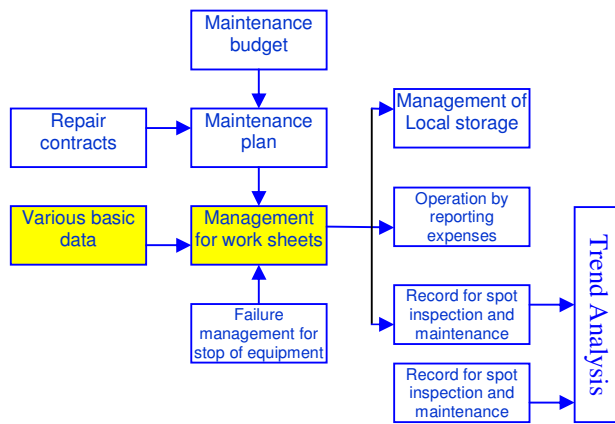
**1.1.2** From November 2005 to May 2006, we finished the verification of system development, report format and authorized solution of equipment system.

**1.1.3** From May 2006 to December 2006, the system trial runs in the experimental plant, which provide the hard basis for the first stage project and other plant put on-line.

**1.1.4** The first stage of equipment system of BX STEEL completely put on-line from June 5th, 2007.

### 1.2 Present status of running function about ERP equipment system of BX STEEL

Under the importance of various leaders, ERP equipment system of BX STEEL is based on establish of total structure of equipment manages to realize the high compact and integrated closed-loop management frame of project, material and financing management, which takes the management of work sheets as core, the contract management as basis, the repair plan and stop failure management as source, basic data as support, and record and trend analysis as manages foundation. At present, equipment system still stays in the stage of expenses pay. After expenses pay put on-line, we can completely realize the budget management for maintenance cost to prevent the excessive expenditures. And then we'll really form the high integrated closed-loop management system.



**Operation relationships among main flows**

### 1.3 Detail functions realized by main modules

#### 1.3.1 Management of equipment material

It has large basic data amount, more data sort and complicated series and hook chain relations. Each operating flow must depend on the accurate basic data to embody its detail function. Under the importance of the leaders of BX STEEL, all the staff of equipment system step one by one. At present, the on-line running basic data for equipment system is about 70 sorts, and total 4,000,000 pieces, and dynamic management is also realized. They provided the hard basis for the smoothly running of equipment system and the realization of the function.

#### 1.3.2 Local material management

The material (include spare parts, material and oil products) that get from Material Distribution Center by the production plant of BX STEEL, will be handled by Receive to Pay way in the financing account settled aspect. The local storage can provide basis for object management. By the management of local storage, the administrators will master the present material and details in the storage at any moment. Meanwhile, each receive and reject details can be inquired at any time. At present, we can timely know the storage quantity, sum and structure of each kind of material stored in each local storage of each plant. They provided the powerful scientific basis for drawing material, stipulating plan and establishment of storing ration and consumption ration.

#### 1.3.3 Management of oil product

For oil inspection, BX STEEL standardized and maximized the inspection items of various uses by classifying the oil use types. And through inspecting the standard value in the oil tank lists, and establishing the basic document of upper, lower limits and cycle, we'll automatically arrange the oil tank need to be inspected next month, and inspection items at 25th of each month according to the inspection manages requirement of oil

products, which can guide the daily works of administrators. By accumulating the inspection results, the deterioration trend and analysis diagram of oil products can be listed and printed at any time.

By setting the consumption oil tank and management of the local storage, we can realize the statistics of oil consumption amount and cost. Through the online management of oil products, BX STEEL normalized the effects to the administrators made use of abnormal information from oil market. So oil inspection management makes an active guidance for the deterioration trend analysis of same index and same type oil, and the purchase management of oil products. Through the oil consumption manages, we normalized abnormal methods for site oil feeding and changing, and decreased the wastes and lost of oil, which also make an active effect to the lubrication management of equipment, and create conditions for precise and accurate management of equipment.

#### 1.3.4 Management of maintenance budget

The most direct aim for equipment management is to decrease the maintenance cost and exert the maximum efficiency of equipment. After established the budget document through ERP, BX STEEL polled the cost from many aspects, provided the evaluation to the general expenses, effectively mastered the direction for decrease the equipment maintenance cost, and increased the financing performance of equipment management.

In order to satisfy the expenses collection and statistics of financing and equipment management departments, and realize the compare of plan and actual expenditure, our company will distribute the annual index to each plant by ERP. Moreover for the precise and accurate management of expenses, each plant will further distribute the expenses to the shop or working zone. Then we can collect to the actual maintenance expenses by execution management flow of working sheets. Consequently, the transverse and longitudinal collection, statistics and analysis of various maintenance expenses will be realized.

#### 1.3.5 Management of maintenance plan

Repair plan is the main source of working sheets execution of each maintenance project of equipment system. By overhaul, annual overhaul and periodical maintenance plan and various budget expenses, they'll automatically turns to work application sheets as per items after the online examination and approves of related department. They provided the powerful basis for the project planed by the lower administrators. Furthermore, the maintenance plans also provide main foundation for signing maintenance contract. Through laying and executing the plan, they provided the information statistics of plan accuracy for administrators, and information source for analyzing unimplemented plan by various administrators. After two years' running,

ERP equipment system has accumulated the maintenance cycle of main equipment and normalized the maintenance module. They provided a large amount of accurate information for the maintenance plan and budget distribution of the main equipment, and the accurate declare of material plan.

After overhaul and annual overhaul was approved, they'll automatically change into periodical module. So the plan provided the powerful information and record for the understanding of equipment maintenance condition by managers, detail execution and adjustment of project, collection and control of expenses, and the establishment of the latter plan of equipment.

### **1.3.6 Management of contract**

No matter what is long term or temporary contract, the expenses, operation, management, manpower, and contractor intelligences are the important factor for maintenance quality of equipment. The contract manages flow actually realized the effective application and management of contract resources, and then decreased the cost. The flow mainly guided by contract management, and provided the bases for the execution of the plan project. Through the reference correlation with contract and unit ration and with maintenance projects, they provided the base price for signing a contract, and the guidance for providing type of work, material and tools. The precise and accurate management of equipment maintenance will be realized by setting the annual price of various factors (type of work, material and tools) of the system.

### **1.3.7 Management of operation sheets**

Management of work sheets is the core of ERP equipment management of BX STEEL. They execute the maintenance plan by work application sheets, work task sheets and expenses payment. Whatever spot check, maintenance, oil feeding and exchange, and spare parts repair, they must be operated in the system by this step.

The material needed by maintenance will be drawn by the material requisition, which is automatically generated from local storage by work task sheets. They provided the effective path for the precise and accurate management of real objects. Through the project acceptance and end of a case, they provided the actual workload for paying expenditure, and the basis for revising the unit ration standard. Through entry the results, they can automatically change to equipment record to form the equipment file. In this flow, the expenditure payment and financing interface of equipment maintenance expenses will be realized.

### **1.3.8 Management of stop failure**

Management of stop failure is to establish the audit manages system through various stops machine account, and the procedure and content of accident settlement. According to the actual stop records, the system will collect the facts of stop failure, accumulate the settlement experience of accident, find and solve the potential problems, and improve the quality of equipment management. At present, we can timely establish, check and finish the record for stop failure management. They provided the information source for the automatic statistics of failure rate, operate rate and availability. They also provided the powerful basis for the online information accumulation of the administrators and the accurate draft and approve of maintenance plan, budget sum and material (spare parts and material) plan. The typical failure cases will be stored in the system, which can provide the sources for establishing emergency solution to similar accident and providing experience to administrator.

### **1.3.9 Management of record**

A system is completed or not, it depends on whether the PDCA cycle is formed. During control of the equipment maintenance cost, whether the equipment can reach the preset function or maintenance efficiency must be evaluated. The flow mainly takes the equipment as the central series interface, and influxes the record automatically changed from work sheets result entry. The purpose is to provide powerful scientific basis for the record documents used by administrators, and the analysis and suggestion. At the same time, to realize the deterioration trend analysis and management of equipment and guide the daily works of administrators through the data accumulation of spot check.

## **2. Importance by the leader, establishment and complete of the system, training all the time.**

### **2.1 Powerfully pushing the flow of operation**

“Without rule, without success”. During the execution of informatization, the small benefit of some administrators must be effected because of the change of the manage flow and recombination of the manage organization. In order to decrease or eliminate the puzzle and the pullback incurred by the administrators during the push of the various operation flows, the leaders of BX STEEL put the management system on the important position, established detail manages rules and checking system according to each flow, thus various level manages departments and administrators can follow the rules. And each module and each flow can be smoothly pushed, and greatly shorten the online progress.

During the online process, we adopt online and offline running at the same time in order to guarantee without any effect on the business. They bring much more extra works to the lower level administrators. Therefore the leaders of BX STEEL forced to push ERP by award and

punish system, which will shorten the parallel stage. And we got good results.

## **2.2 Basic data is put on the important position by the leaders, which provided solid basis for online running of equipment system.**

There is a sentence popular in the industry, “the technology is important, the management is more important and the data is most important. There is also another sentence “if the basic data completed, the equipment system will success 80%. All above-mentioned sentences stated the importance of basic data. So for BX STEEL, the related data of equipment system are about 70 sorts, after perfection it’ll be more than 1 million and the column of each data will be 10 to 60. If the operation flow of the equipment system is the bone of a person, the basic data will be the nerve center. The bones without nerve center are only a hollow shell without any viability. So the basic data make a very important roll in the equipment system. Before construct the data, our leaders give more attention to it, which greatly shorten the online progress of the equipment. They also decrease the load of the administrators, and greatly increase the confidence of the data programmer. Furthermore, data and flow supplement each other, anyone can’t be absent. But the accuracy of data and the preciseness of data management are the key point of online progress of equipment system.

Informatization engineering is a project commanded by the first. During the preparation of basic data of equipment system, we also attract the attention and the importance of the first.

Our leaders changed the Consistency idea started from the requirement analysis of equipment system. We established the data manages structure by clear the responsibility of data administrators, set up code team, organizing data program, integration and data entry, data use and data reintegration. They provide the stable basis for present smooth running of equipment system informatization. In order to clear the importance to the data programmer, the following explained the relations among the data and the functions in the flow.

## **2.3 Training all the time**

The first characteristic of equipment system: The data programming all use the standard template. Most of the data come from the spot inspectors of the lower level. In order to basic data programming reach the same standard of same type of equipment, and same consideration of same type of data, BX STEEL selects some special personnel with rich experience to train the spot inspector for data programming. Systematic online and effective operation data verified the good result of training.

The second characteristic of equipment system: Most of the interface must be operated by the site spot inspectors,

while most of the inspectors have seldom basic knowledge of computer. So the basic operation is very difficult for them, and even the data programming entered to the module, and then entered into ERP system must be operated by others. And the operation of ERP interface is more difficult than ever. For this condition, our leader decided to train and store the persons with ability. From 2005 to now, firstly, training of computer basic knowledge and basic operation was made to all the site spot inspectors. Secondly, operation training was made to all the operators in the equipment system, and the result of spot inspectors is the basic index for work qualification. With the fluctuation of the personnel, the training has already been continued until now and get very good results. At the same time, we also get the good appraise from the industry.

In a word, the equipment system of BX STEEL actually realize the simultaneity between the material circulation and the information flow, eliminate the separate information and united analysis the information of data and decision through executing the informatization project. According to the maintenance practice, we’ll unify the equipment code of the whole company to realize the standard maintenance flow and unit price analysis, decrease the spare parts storage cost, improve the assets benefit, and provide the instant statistics message. After all the operation is accord with the requirement of the decree, the accident of equipment and personnel will be decreased. And then the first level of equipment management is realized, and they will integrate with the whole produce and sale system and financing system.

With the online running and push forward of informatization engineering of equipment system of BX STEEL, the management will go into a new start. We’ll melt new manage idea, international advanced experience and technology into the ERP system, which is convenient to get more information for administrators, to improve manage methods, to update manage idea, and to recreate the good performance for equipment management.