

A Study on Procurement Management of China Power Enterprises based on the Concept of Life-cycle Management

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Keywords: Procurement Management, Life-cycle Management, Power Enterprises.

Abstract: Power enterprises are typical asset-intensive businesses. Power equipments have long operating cycle, and the health level of single equipment will seriously affect the safe and stable operation of the whole power system. Chinese power enterprises attach great importance to power enterprise equipment procurement and adopted a series of measures to improve the level of equipment procurement. However, due to the influence of traditional management concepts, there are some gaps between Chinese power enterprises and the world's most advanced enterprises in the overall strategy of equipment procurement, vendor management and asset life cycle management. This paper diagnoses the device management situation of Chinese power enterprises, finds problems in management practice and relative recommendations for improvement are put forward.

1 INTRODUCTION

Power enterprises are typical asset-intensive businesses. Power equipment has long operating cycle, and the health level of single equipment will seriously affect the safe and stable operation of the whole power system. China power enterprises attach great importance to power enterprise equipment procurement. In recent years China power enterprises adopted a series of measures to improve the level of equipment procurement. However, due to the influence of traditional management concepts, there are some gaps between China power enterprises and world's most advanced enterprises in the overall strategy of equipment procurement, vendor management and asset life cycle management. With the continuous expansion of the power enterprises assets, how to improve asset management capability has become an urgent problem to be solved by China power enterprises.

2 A DIAGNOSIS ON PROCUREMENT MANAGEMENT PROBLEMS OF POWER ENTERPRISES

2.1 Diagnostic Index System of Power Enterprise Procurement Management

Based on the characteristics of power enterprise procurement management, this paper establishes a diagnostic index system of power enterprise procurement management (see Figure 1). This diagnostic index system includes three analysis dimensions.

2.2 Problems Existing in the Procurement Management of Power Enterprises

Using the diagnostic index system of power enterprise procurement management, this paper analyzes China's power enterprises and finds there are some problems.

The first problem is, asset management strategy needs improving.

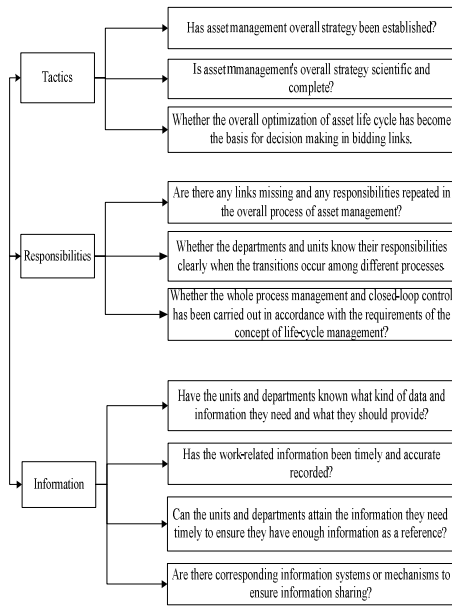


Figure 1: Diagnostic Index System of Power Enterprise Procurement Management.

First, unified asset management philosophy is missing. The life cycle of electrical equipments are consists of project feasibility study, preliminary design, bidding, equipment operation, asset retirement. All these stages have an impact on the healthy operation of electrical equipment assets. Although under the current management mode, the various stages are managed by different departments. Different departments uphold different management thinking and strategies, so a joint force of asset management can't be formed.

Second, developing equipment procurement strategies is ignored. Business procurement mode is closely related to many factors, such as external policy environment for enterprise, market environment and the company's own construction, asset operation, etc. Once the internal and external environment changes, companies need to assess and adjust the existing procurement strategy timely. At present, developing equipment procurement strategies has not been established by majority of China's power enterprises. It's hard for enterprises to select appropriate procurement strategies in accordance with the actual need of construction, operation and maintenance.

Third, the existing method of bidding evaluation doesn't consider the asset performance throughout the whole life cycle. At present, although power companies take the situation of equipment operation into account, they still take the price level as the primary basis for purchasing decisions. From a

practical point of view, low-cost devices always have some shortcomings, such as short maintenance cycle, high failure rate, higher maintenance costs, etc. It is difficult for low-cost devices to present satisfying performance in their whole life cycle.

The second problem is, the responsibility of asset management is not clear, and part of the responsibility is missing.

First, the supplier management is absent. Supplier management is an important part of material management process, as pre-sale, sale and after-sales stages of electric power equipment are all in need of perfect supplier management. Currently most electric power enterprises have not yet established supplier evaluation system, so it is hard to accurately evaluate vendor's comprehensive quality of service according to the supplier's product quality and after-sales service, and it is also hard to use the assess results in future procurement. Second, the operational departments and the financial sector is still lack of effective connection in the assets retirement. There are no clear assessment criteria and disposal process in asset retirement management, and retired assets cannot be disposed in time, and the reuse of retired assets and the recycling of asset residual are delayed.

The third problem is, asset management-related information sharing is not implemented in a timely manner.

First, the majority of electricity enterprises haven't established a unified supplier management information system. Supplier management must be established on the basis of accumulating large amounts of data on supplier's products and service. At present, the Group's subsidiary companies have to collect and accumulate the related data on their own. The basic data for supplier evaluation is inadequate, so it is difficult to provide a reference for procurement. Second, material procurement cannot be supported by the information from project construction, operation and inspection, maintenance and repair, condition assessment, technical transformation, retirement, etc. Procurement administration cannot grasp suppliers' situation of on-site service, quality and timeliness of delivery, after-sales service. It is hard to control the service quality of suppliers.

3 IMPROVEMENT SUGGESTIONS ON ASSET MANAGEMENT IN POWER ENTERPRISE

3.1 Establish Unified Concept of Asset Management, and Set up and Improve the Management Strategies.

First, power enterprises should carry out asset management based on life cycle management philosophy. The core idea of asset life cycle management is to combine all stages of feasible study, preliminary design, procurement, operation of assets, asset retirement, etc. in asset management as a whole, taking process optimization as the main focus, using informatization as the main measure, applying advanced decision and operation management method such as life cycle cost (LCC) evaluation method, condition based maintenance to eventually realization high efficiency and low cost in the entire life cycle of the assets.

Second, add a new stage of procurement strategy decision to the process. Power enterprises should create a new stage of procurement strategy (including supplier development strategy, strategic purchasing strategy) decision in the procurement process according to overall demand and schedule arrangement of the purchasing, and timely adjust the procurement strategy according to internal and external environment of the enterprise to ensure the quality of the equipment under the premise to reduce costs.

Third, establish LCC bid evaluation method suitable to the characteristics of power equipment. Not only the equipment purchase cost, but also the operation and maintenance costs, failure costs and retirement costs of equipment in its whole life cycle are included in the calculation. And the LCC value should be regarded as key basis of bid evaluation decision-making to realize the optimal life cycle cost of the equipment. In order to use LCC bid evaluation method in bid evaluation, the following questions should be paid attention to in the preparation of technical specification books and commercial code books:

a. Formulating complete procurement technical specification standard to realize the asset life cycle cost optimization, putting equipment operation data under certain operating mode into the technical

standard of equipment, to provide decision-making support of the equipment.

b. The economy of the equipment not only reflects the investment cost, but also relates to the reliability of the equipment to guarantee the normal production, safety and stability, and reduce the loss of the fault shutdown. Therefore, it is important to determine in equipment procurement business specification the economic characteristics of equipment reflected by the equipment reliability level. Using the life cycle cost method, the economic characteristics should be converted and used in the decision-making process of equipment procurement.

3.2 Establishing a Sound Supplier Management Process.

First, power enterprises should add a new stage of supplier evaluation, including supplier pre-assessment, supplier post-evaluation and supplier interaction management, in the procurement process to improve procurement process. Second, power enterprises should strengthen the horizontal coordination between operation department and finance department, and discuss and formulate asset retirement evaluation criteria and the disposal process. Once the assets retired, evaluation process should be immediately started to timely re-utilization and residual recovery and avoid the loss of the residual assets value.

3.3 Accelerating the Construction of Information Sharing Channels for Asset Management.

First, a unified supplier management system should be established to realize the dynamic relationship between supplier management system and other management information systems. The unified supplier management system can provide timely and accurate data support for supplier management.

a. Supplier management system and production management system (PMS) should be linked up, so that the supplier management module can extract the original defects data of equipment from the equipment standing book of PMS. At the same time, PMS can also get the basic information of the suppliers and equipment from the supplier management module.

b. Supplier management system and the asset management module should be linked up, so the LCC calculation data in supplier management module can be provided to the asset management module of the ERP.

c. Supplier management system and the material management module should be linked up, so power enterprises can collect information of the suppliers and supply timeliness from the materials management module in ERP.

Second, power enterprises should establish information sharing channels between the procurement process and spare parts process, so power enterprises can get access to kinds, types, quantity, state information of spare parts. When making the procurement plan, fully consideration should be paid to the assets which have been processed as a spare part, so as to avoid waste caused by repeat purchase.

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4 CONCLUSIONS

Improvement on quality of electric power equipment is the key to the healthy and stable operation of the power system. Although traditional philosophy of asset management can reduce procurement costs, a lot of equipment operation maintenance cost, maintenance cost and failure cost were brought forward due to quality problems of the equipment. Therefore, power enterprises should innovate their management modes and carry out asset life cycle management. Power enterprises should use equipment's performance in the whole life cycle as the basis of optimization decision, and eventually raise the level of equipment procurement in the power enterprise of our country.

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