Lean Thinking Application in Automobile Industry

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Abstract. The lean production, which takes the "TOYOTA" as the sample, provides a sample for the production mode for the automotive industry. China was a powerful machinery manufacturing country, which enjoyed a great advantage in labor costs. But with the increasing competition in the global market, the human cost advantage became not obvious as before. In the future, only by combining the human cost advantage and the lean thinking, could we build China's auto manufacturing characteristic of the resultant force, promote the application of lean thinking in automobile manufacturing, and promote the development of China's automobile manufacturing enterprises.

Introduction

Lean production mode stems from the lean thinking of Toyota. Lean thinking is the core of Toyota's ideas and thus become Toyota's guiding principles in daily work. Japanese car manufacturing industry has been enjoying high reputation in the world. Not only because of the low cost, and high efficiency of car production but also because of the good quality. The main reason that Japanese car manufacturing can realize the three strengths simultaneously is the usage of Toyota’s lean thinking.

Lean production mode in the Toyota manufacturing mainly embodied in "many varieties, small batch". This kind of mode of production has a series of technical system. Just-in-time production and automation are the two pillars. So-called “just-in-time” production is producing the necessary quantity of the necessary product when necessary. Automation is that automatically monitoring and managing the abnormal means [1, 2].

The Necessity of Implementing Lean Production of Chinese Automobile Industry

In master CMIC BBS, James p. Womack pointed out that the concept of lean/Toyota production system can be applied to any countries and regions of different manufacturers and different factories and different enterprises and cultures, the lean philosophy is a philosophy point out to the future industrial world[5].The lean production has profound meaning for China. "Made in China" cannot obtain higher brand value and better output. The related professionals, especially front-line production and processing workers, cannot get satisfactory wages. The main reason is the lack of lean production. In a very long time, the competitive advantage of China is the cheap and plentiful labor, but with the increasingly intense global competition, cheap labor cannot occupy absolute advantage of production processing industry for a long time, because the mechanization is gradually and will eventually replace most of the human labor.

In addition, due to mechanical manufacturing industry gradually appears to become a "buyer's market". The “many varieties, small batch” production mode has become more and more suitable for the demand of the market, which makes the production process changing a lot and exploding the defects of traditional mode of production. The production in advance turns into make-to-order. The difficulties to predict orders make a greater space for the development of lean production.

With the synergistic effect of economic development and social progress, "made in China" faces unprecedented challenges now. The requirements of turning "made in China" to "created in China" become more and more urgent. "Made in China" is an effective support for low cost strategy and
low cost advantage of manufacturing industry in our country. But along with the advancement of buyer's market, low cost is difficult to gain a competitive advantage anymore. If we can use lean production on the basis of low cost, the low cost advantage will be combined with the strong vitality of the lean production, form a new force and finally promote the development of enterprises. As China's automotive industry entering into the mass market, economies of scale and lean production mode will arises at the historic moment [3].

All in all, lean production mode entering into the manufacturing process for China's auto manufacturing, reducing cost and improving production quality and production efficiency, improving the core competitiveness of enterprise are all the key points that ensure automobile manufacturing enterprise's place in the increasingly fierce global competition.

China's Automobile Industry Lean Production of the Existing Problems

Localization

Although the concept of lean production methods can be applied to any countries and regions of different manufacturers and different factories and different (enterprise) culture, but in practice, if the essence of lean production method is not combined with the specific environment and corporate culture, it is easy to appear "rote" and "endemic" lean production.

Essentially, lean is an idea, a philosophy, its core lies in "by eliminating non-value added activities (waste) to shorten the production process", it is a kind of guiding ideology and non-production scheme, the process of execution requires a combination of their own internal and external environment, not rigid practices.

At the same time, lean production is not a task about one department, it needs close cooperation among all departments, and enterprises to ignore this point is also one of the main cause of lean manufacturing "endemic". Any one department of the whole process of normal operation, lean production cannot proceed smoothly, if managers fail to notice, it will affect the enthusiasm of lean production, eventually, managers will think that lean production is not benefit to the enterprise, so as to give up the popularity of lean production.

Employee Resistance

The core of management is human, so any kind of management activities should start from the perspective of people in the first place. In reality, however, managers often blind to this point. When companies implementing lean production mode, they emphasize only the advance of the lean production mode but no proper training and guidance to employees which make employee resistance and leading to the emergence of conflict.

Cost reduction is one of the goals of lean production, if managers didn’t define the connotation of lean production accurately, it is easy to make employee misunderstanding its profound meaning. Some employees may even link lean production with lower inventory, increased workload and layoffs directly which makes the staff want to hinder the implementation of lean production.

The Lack of Feedback and Assessment Mechanism

After the implementation of lean production, enterprises lack circulation of the process oriented evaluation feedback mechanisms, leading to the continuous improvement of lean production cannot be guaranteed [4]. At the beginning of the lean production implementation, many managers tend to make the same mistake that is overly concerned with the implementation of lean production, but ignores the feedback and assessment mechanism. The lack of feedback mechanism leads to that even if lean production has played a role, managers can't detect, slowly lost confidence in lean production.

While the lack of the evaluation mechanism, it is easy to make employees lose interest in lean production, reduce the work enthusiasm, even drop into a vicious circle.
The Trains of Thought to Solve the Problems Exist in the Process of Implementing Lean Production

The Combination of Lean Thinking and Enterprise Specific Circumstances

Lean thinking is a kind of philosophy that can be used to guide the specific work of the automobile manufacturing enterprises rather than mandatory solution. So if the enterprise wants to implement lean production they must understand lean thinking at first and combine it with the specific circumstances of the enterprise to develop a specific lean production plan which is really suitable for business, operational and feasible.

In addition, the implementation of lean production need step by step and not be anxious for success. Enterprises should first establish the basis of implementation of lean production, such as determining the production standards through 6 Sigma and TQM etc.

At the same time, enterprises also need to establish a customer oriented strategy. The pilot projects selected should have a higher success rate and strong ability of demonstration where companies can accumulate experience and seize the opportunity to spread the concept of lean production for providing employees with training system and gradually achieving the enterprise's lean production.

Lean thinking must run through the process of planning, organizing, leading and controlling in enterprise's daily work, supplemented by the continuous improvement of the feedback mechanism, and the corresponding system or methods to ensure the implementation of lean production.

In the lean production system, managers should pay attention to the upgrading of the lean production system, so that it can meet the basic conditions for the implementation of lean transformation, this upgrade is gradually, it is best not to be overly ambitious and will be completed step by step.

Full Active Participation

To implement the lean production, the first thing is to train on employees about lean production, let employees know lean production and its significance to the enterprise.

Lean production meet the requirement of order pull mode of production, this mode of production can achieve zero inventory, also reduce cost and fault, but this kind of mode of production requires higher quality employees, each link cannot go wrong, or it will destroy the whole production process, causing problems with the final product. Because of this, lean production need participation and fast response of full members. Improving staff quality, enhancing the consciousness of the employees are important conditions to implement lean production effectively.

Reinforce and stable the process of management on the basis of fully-played staff enthusiasm and creativity, such as establishing system like Honeywell turbo technologies company Shanghai factory level reporting with strict discipline [3].

Establish the Feedback and Appraisal Mechanism of the Lean Production

The benefit maximization is the eternal theme and the pursuit for any enterprise. It’s the same situation as for automobile manufacturing enterprises. In the process of lean production implementation of automobile manufacturing enterprises, profit-driven management plays a more and more important role.

In profit-driven management, "Toyota" is still the first model of the auto industry, its core content is put the economic mechanism fully into the enterprise production operation process and implement the performance appraisal in enterprise. The accounting unit is no longer the whole enterprise, but the smallest unit such as the processing team. The smallest units are the units that require the cost-benefit analysis and evaluation avoid unnecessary waste and analyze the cost assessment. The aims are to probe into its utilization, comprehensive feedback and put an end to waste. Automobile manufacturing enterprises can imitate the experience of the "Toyota" management and build up a profit-driven management mechanism with own characteristic [5].

On the management of personnel, whole-staff-participation management is better for lean production enterprises. Lean production is a guide to innovate staff appraisal system, incorporate
the incentives into the assessment mechanism, arouse the enthusiasm of employees, and give full play to the staff's intelligence. Toyota has a slogan, called "don't worry about the lack of employees’ quality; what managers have to worry about is how to avoid the waste of wisdom of employees ". If employees' enthusiasm is not enough, the problem must stem from the mechanism managers made instead of the quality of employees.

Summary

China's automobile manufacturing industry has been difficult to obtain a competitive advantage only with the low cost of labor. Companies must build their own core competitiveness as soon as possible to be in an impregnable position in the market. Because of the cheap labor advantage, the core competence of China's auto industry can combine labor advantage with lean thinking to form its own force.

At the same time, lean production is an effective way to build a conservation-minded society, which is the requirement of our country advocates. The first one is that enterprises can research the current standard of resources consumption and make effective improvement measures based on the lean production. The second is enterprises can save money and speed up the turnover of funds based on lean production. The third is enterprises can simplify production processes and satisfy the customers’ requirements quickly by quitting the low value foundations. It is important to be make-to-order.

In a word, lean production is the inevitable choice of China's automobile manufacturing, and lean thinking has become the dominant ideology in the future manufacturing for a long time, and constantly promote the development of car manufacturing and innovation.

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