

外文翻译原文（源自 <http://www.industrysourcing.com>）:

## Production process design of Pulls out the fork

The market shift is now rapid, the enterprise must unceasingly using the innovation technology the market environment which changes at times by the fast adaptation. Changes unceasingly the environment attributes to new generation's user, they may globally purchase the product. But on the other hand, changes the rapid market environment to eliminate the former product unceasingly, the majority of product's performance is very difficult to follow the user's needs. In this case, could produce causes the customer satisfactory low end, the high grade product to become the key which whether the enterprise did succeed to be.

Facing so urgent situation, enterprise, for holds the small space in the fast development's global market, must take the corresponding counter measures and the method: Some enterprise development new method, the new technology, can respond the product and the market trend development change demand fast by the time; Some enterprises through select the advanced manufacturing method (for example lean manufacture, agile manufacture, mass to have custom-made and so on) to reduce product the development cycle, caters to the user and the market demand fast; Some enterprises design the new product which through the development aberration promotes fast changes unceasingly, causes the enterprise to obtain the more economic competition superiority .....

The product mix, the design process's reorganization, has realized the customizing product batched production and under the large scale production condition personalization by large scale production's cost, the permission enterprise comes through improvement product certain components to form the new product fast. Therefore, carries on the redesign to the product mix and the processing process, the production meets the modernized production need the product, becomes a huge challenge which each enterprise faces.

“Product technical process reorganization design” is in carries on the product functional analysis in the foundation, carries on the inquire deeply to the product original structure and the performance, studies the product nowadays's flaw and the insufficiency carefully, and according to user's concrete design requirements, through carries on the redesign to the existing technical process, designs the quality to be good, the service life long new product, satisfies the competition to be intense, day by day changes market requirement.

The product innovation, improves and the design is the enterprise wins the market, the gain profit, to strive for to survive and the development opportunities important means. The research product fast response market's design and the technique of manufacture, have the special significance to Our country Enterprise.

## 1、 This design has the following superiority

(1) Interchangeable, is advantageous for the service. After the reorganization design's product is makes the improvement in the original product foundation to become, in use function and structure not too many different, but the quality enhanced greatly, therefore the versatility is very strong, this simplifies the product greatly the maintenance and the exchange, may enhance the product the service speed, saves the repair expense, raises the efficiency.

(2) Quality is high, the cost is low, not has the influence to the small batch and the mass processing. is improving and in the design, makes the improvement in the original design method's foundation, omits in the common product development design process the selection again, the redesign and the design theory proof, has saved the massive time, raised the product manufacturing efficiency greatly, has saved the production cost, enhanced the enterprise to the market reaction capacity, strengthened enterprise's competitive ability. Because the design is in the original design foundation, makes the improvement to many processing processes, but does not have the broken link original production pattern, retained has been possible the small batch and the production in enormous quantities merit, had “takes its essence, went to its bad saliva” meaning, this improves and a design big merit.

(3) Is advantageous in the enterprise uses the vanguard technology to transform the old product, develops the new product. Along with the competition day-by-day aggravating, the enterprise needs to strengthen unceasingly to the market demand fast strain capacity, depending on the traditional design and the manufacture method is obviously difficult. Using improves and the design method, may use the new technology unceasingly, innovates these the flaw which exists in the structure or the technology, and, in does not change the major function in the foundation to make the advanced product, causes the product maintains the competitive power unceasingly, thus enhancement enterprise to market shift adaptiveness.

(4) Is advantageous to the reduction product design and the manufacturing cycle.

Through to the original components' analysis, and the original processing craft's research, proposes the corrective method, enhanced the original product performance, improved the product quality greatly. Through the improvement design, makes the improvement to the product certain craft step, this is separated from the original design by no means that but makes the improvement in the original product's foundation, reduced the product design, reduced the manufacturing cycle.

Speaking of the automobile profession, the 21st century complete bikes trend of development is innovates unceasingly, raises the efficiency unceasingly, applies the new technical new method unceasingly, improves and the innovation is suspended, in has given priority to development in strategic position. At present, the world each big automobile group is stepping up the research and development regarding this, the use improves and the design concept, enhances the spare part the universalized degree,

reduces the product development cycle as far as possible, achieves with the low cost and the few units enhances the market competitiveness the goal.

Are pursuing high value and high efficiency production today, the automobile technological innovation center of gravity in the spare part aspect, the spare part must develop in advance, and participates in the automobile manufacturer the product design. But the automobile manufacturer aspect must carry on the automobile innovative design, optimizes the automobile design plan. Will use improves and the design production method will be advantageous in enhances the automobile spare part the variety, the quality and the automated level, will improve automobile's assembly quality, will reduce automobile's production cycle, will enable the automobile manufacturer to occupy the advantage in the intense market competition.

## 2、Dials the fork present situation

Dials the fork leading role moves in gear box's gear, enables the automobile to achieve the speed change the goal. On the slide gear has a ring groove, dials the fork to ride in this ring groove, when the pilot impels the gearshift lever the gearshift lever leads dials the fork axis, dials the fork axis to lead dials the fork, dials the fork to impel the gear, thus achieves the speed change. Dials the fork class components is in the automobile transmission gearbox hangs the files the important components, dials the fork assembly is in the automobile spare part development important link, the assembly quality quality, to the wrong direct reflection in complete bikes's performance and the quality.

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Attrition reason:

Speed change dials the fork early time to wear, will cause the tractor gear breakdowns and so on to be temporarily out of production, the interruption automatically or to destroy. The primary cause includes: First, manufacture aspect error. If the journal distorts, spline fit gap oversized and so on, can have the big axial force in the transmission, causes to dial the fork attrition to speed up. Second, the assembly produces error. The installation error will similarly also have the axial force, will accelerate to dial the fork attrition. Third, the gearshift mechanism rigidity is insufficient, the stop block is unreliable. If locks the spring steel drop, dials on the fork axis the steel ball trough to have the burr, the smooth finish insufficiency as well as the gearshift lever bending strain and so on, can enable the speed change shifts gears when the gear not to be able to achieve the correct position, accelerates to dial fork's attrition. Fourth, operates improper. Some pilots shift gears to make an effort excessively fiercely, creates the gear position or arrives, the steel ball has not been able to enter to the ball trough, but causes to dial the fork early time attrition. The walking tractor control handle selects on rollers method, the transmission link are many, easy to cause the speed change difficulty.

### 3、Improvement program

To a components' improvement, mainly takes the breakthrough point from the original structure and the production process. Cannot leave to the structure change to the components function analysis, so long as after inquire deeply its function, can have the breakthrough. To production process's improvement, cannot leave to the entire process each step analysis, only then has understood a step goal and the method, can discover the insufficiency and the flaw, thus has the innovation.

(1) structure:

May see clearly from the previous chapter chart 1 pulls out fork's organization mainly to divide into pulls out the jaw and pulls out the fork foot, pulls out the jaw important spot to have holds the cannelure, the wrap in Kong who pulls out on the fork axis Ji the switch port, pulls out the fork foot's end surface is pulls out the fork foot to work the time important spot. The components main working surface to hold the groove and pull out the fork foot two end surfaces, the main fitting surface and pulls out in the fork foot for a set of hole and the switch port the side.

(2) technique of production process:

1. The computation pulls out the fork components the production guiding principle, the determination production type;

2. The analysis pulls out the fork component assembly pattern and components pattern (1) understood that the components the processing technology capability, assembly technological (2) understood the main processing surface and specification

3 understands the components in product function; three. Definite semifinished materials type, structure shape, manufacture method and so on; four. Drafts craft route

(1) preferred orientation datum

(2) to determine that various superficial processing method

(3) divides processing stage

4. to determine the working procedure the centralism and dispersion degree

5 arranges the reasonable processing sequence and so on; five. Determines various working procedures the machining allowance, the computation working procedure size and the common difference.

6. Choice device and craft equipment;

7. Determination cutting specifications and computing time fixed quantity;

8. Filling in technological document.

#### 4、Machine-finishing technological process importance

### Machine-finishing

The machine-finishing technological process is stipulates the components machine-finishing technological process and the operating procedure and so on technological document. It is the machine manufacture factory most main technical paper. Its concrete function is as follows:

1. The technological process is instructs the production the major technique document, is directs the scene production the basis.

Regarding large quantities of mass production factory, because the Production organization is strict, the division of labor is careful, the request technological process is quite detailed, can be advantageous for the organization and the direction production. Regarding the single unit small serial production's factory, the technological process may simple. But regardless of the scale of production size, must have the technological process, otherwise the production scheduling, the technical preparation, the key technologies research, the equipment disposition and so on are unable to arrange, the production will fall into the confusion. At the same time, the technological process is also deals with the production issue the basis, if the product

quality question, may be clear about each Production unit's responsibility according to the technological process. Carries on the production according to the technological process, is advantageous for the quality assurance, to obtain the high production efficiency and the economic efficiency.

2. The technological process is the Production organization and the supervisory work basic basis.

First, had the technological process, before new product place in operation, before may carry on the related production the technology preparatory work. For example for the components processing preparation engine bed, designs the special-purpose labor, to clamp, the measuring instrument and so on. Next, the factory design and the dispatch department basis technological process, arranges various components the batch feeding time and quantity, the adjuster load, various job sites have the rhythm according to a time allowance to carry on the production and so on, causes entire enterprise's various administrative offices, the workshop, the construction section and the job site coordinates, to guarantee that closely completes the productive plan balanced.

3. The technological process is newly built either changes (expands) the construction work factory or the workshop basic document.

When newly built either changes (expands) the construction work factory or the workshop, only then based on the technological process can determine the production needs engine bed and other equipment's type, quantity and specification; Workshop area; Engine bed's layout; Production worker's kind of work in a factory, technical class and quantity; Auxiliary unit's arrangement.

But, the technological process is not fixed invariable, it is the production worker and technical personnel's in production process practice summary, it may make the revision according to the production actual situation, causes it to improve unceasingly and to consummate, but must have the strict examination procedure.