



Defective Product Research of Intelligent Manufacturing Oriented to MC-VE

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Detailed and in-depth requirements are analyzed on the intelligent manufacturing of mixed cloud (MC-VE) virtual enterprise. The function and contents are introduced in detail on product quality management of intelligent manufacturing based on the Internet of things. Annotation of decision process is listed on the defective product. The different types of processing are done on the defective product. At first explanations has been carried concessions release and repair business on the defective products. Then detailed annotation is done on the rework of defective products and restructuring the business in the future. At last the abandonment business is on defective products. By the research of the product defective based on the Internet of thing, it is concluded that the details handling countermeasures and methods of defective product. It could be checked on the quality of our products of defective product and queries of detailed operating, which realizes the requirements of real-time knowing the product's quality. The system could be applied for the products of input in the MC-VE. And the system is opened and extended for other parts. There are detailed analysis of product quality and judgment and processing of defective product based on MC-VE. It makes more rationalization and intelligent of products management, which improving the efficiency of intelligent manufacturing.

1. Introduction

It is the Internet as the core of mixed cloud virtual enterprise (MC-VE). And the companies are for their product or brand. Solutions are made for the enterprise to product sales and promotion of Internet marketing according to industry characteristics by analyzing the cloud research center. E-commerce service system of the whole process is adopted advanced technology and integration of the Internet, mobile Internet, network, communication network, using "cloud promotion" technology for implementation the enterprise of the era of Internet marketing. All the enterprise infrastructure, such as including servers, storage and others, and network are integrated to unified cloud platforms. The enterprise combines technology and business to users, really realizing to separate computing capacity of the business and IT assets. It can achieve shared resource, the elastic extension, according to the need to use, fast response, unified monitoring, unified operations, etc. Intelligent Manufacturing (IM) can realize the automation, flexible, Intelligent and highly integrated of production and manufacturing. Product quality standard is regulated by the inner quality and appearance of the main of the product from quantity to quality according to the technology requirements of the production (AL-Tahat, 2015) (Celen M., 2015). Some of the main technical parameters are namely to unified regulation. It is the basic foundation of measuring high or low of product quality, and also the unity standards of the enterprise product. Products quality of intelligent manufacture oriented to MC-VE can be divided into quality, qualified products and defective product according to the actual market needs and the specific situation of production. Enterprises will carry on corresponding processing in view of the different types of products. Defective products are studied in this paper for the cloud enterprise. The judgment and the specific processing are analyzed on related defective production. They include the determination of the repair business and concessions release business, rework business, restructuring the business in the future, etc. It achieves the query of quality, and other functions. The research of the product quality and defective product can realize the high efficient, strict standard and fast processing operations of product quality process of mixed cloud enterprise, in order to reach the goal of intelligent manufacturing of enterprise (Fang, C., 2015). Different enterprises and different parts have different

requirements to the qualities of parts. Therefore the situations are changing according to the quality requirement of products.

2. The quality of product in MC-VE

Each problem may affect the delivery of customer orders in the production process of MC-VE. It is critical to the product through the percent of factory pass at a time. At the same time first-class manufacturing enterprise is distinguished by the production cycle. The goal can't be achieved of short stable production period without high quality production process. Quality issues, such as the material adverse, rework, test and so on, will significantly extend the production cycle. Data are collected for data source of production process management in products production process, which provides defective products at the same time, for the maintenance operation of management (Gao Y.C., 2015). The data of maintenance management are provided to the manufacturing process management of the production process. Process was carried out on the production process management, to provide quality management for quality statistics and quality control. The production process management is archived, which could provide archives query of product and query list for product data management.

The concrete content of quality management of MC-VE include products rty queries of public clouds and private clouds enterprises. The proportion is statistical on the number of qualified on products and the total number of production. The rty queries of production order are statistical that the number of qualified products in the production order is proportionate to the total number of production. The query of defective product has fault code in the form of paragraph or table statistics, which analyze the cause of the problem. A variety of statistics report function are offered, which include the daily quality report of production, statistics of process fault code, statistics of product fault code, product scrap statistics, process scrap statistics, inspection and collecting data of product summary.

Defective review sheets are created for defective test of MC-VE enterprise, which offer concessions release, repair, rework, restructuring in the future, judgment of scrap processing. They are provided such as qualified rate statistical of product quality inspection, failure of Plato analysis, responsibility, team failure analysis, defective statistical query, etc (Guan, X., 2015). The contents of the test for products include mainly inspection records of workshop process, and include the first inspection and wip process sampling. It includes incoming inspection, inspection of warehouse location, dispatch of warehouse. It is responsible for dealing with online quality problem in the production process. It handles quality problem of customer feedback. Quality inspection process can provide detailed quality management process of standard, collection, process, analysis. Inspection records of product quality are established. These are provided on the quality inspection personnel, inspection results, faults, tracing the query parameters.

3 Defective product of being decided and disposed of product

3.1 Defective product of being decided and instruction

Review form of defective products in MC-VE can be analyzed and saved, there can be done many times before being checked. The right of analysis and check are controlled from the system access, which can be conducted by different researchers. The qualified number and unqualified number can be diagnosed by analyzing inspection items and fault code. These are decided on quantity of scrap and treatment methods. Responsibility workshop and responsible team of the fault are set. These are input on the reason analysis, temporary measures, prevention countermeasures. Analysis is conducted by the inspection personnel. The quality supervisor is responsible for checking. This business model can be contented and system logic process can be done according to the different judgments approach. Other ways of dealing with the defective product, such as concession release, repair, rework, remanufacture in the future, are allowed to maintain the scrap quantity in the process of analysis in addition to scrap itself. Namely for the quantity of defective product, part of the defective product are done the corresponding business processing, part of them are done the scrap directly. Unqualified amount in the inspection form is likely to change when making the defective product reviews. Unqualified amount get bigger from sampling to full inspection. The unqualified amount in inspection form are unified when reviewing form of defective products. The products will be directly online produced in this process for some repair and part changing operation(Kowalska, M., 2015). The new work tickets can be especially provided to be printed label operations. There are better to have submitted to the business operations and state at present between the system analysis and checking.

3.2 Defective product of being decided – concessions and release business

The defective product will be tested by concessions and release, and be made to be qualified product as a concession. The product will be transferred downward to continue producing in the next process workshop except scrap quantity. Annual target is unchanged for working ticket in products. The specific completed number includes the amount of completed and scrap. The discarded number is the cumulative number of scrap. Quality status for product includes defective product and qualified products. Production status is production and

completion for production. The number of defective in a test sheet still generally is determined. And the number of defective is used for inspection statistical of qualified rate. Process records of qualified inspection are created. The quality status is qualified for work ticket line stock. Stock is the number of completed in line. The product type includes product in the processing and finished products. Storage state is tail process and put in storage, and the other for initial.

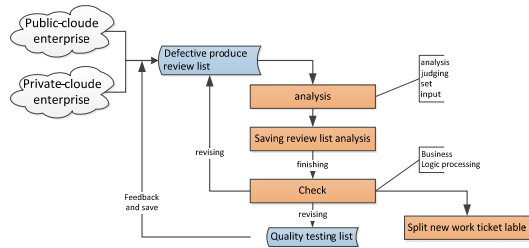


Figure 1: The flow of being decided of defective product

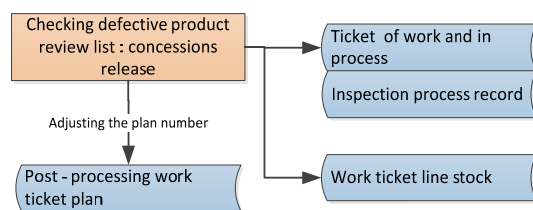


Figure 2: The flow of concessions and release business

3.3 Defective product of being decided – repairing business

A new ticket is not derived for all repair of defective product in MC-VE. Defective is marked to the original work and the line stock, which use for maintenance and register. And inspection process record is created to be defective once again. Work ticket in process keeps the plan of products unchanged. The completed and scrap number are determined. And total scrap number is accumulative. The defective situation is recorded in the case of production quality status. Storage state is recorded to be an initial state for working ticket line stock. The quality status for qualified outweigh the quality of defective. The storage number is the number of being completed in system. The type is in processing. The original work referrals as a qualified product for part of the repairing product, which is used for being transferred to the next process workshop. Qualified inspection of process record is created. A defective product is broken up to be new work ticket, which is used for maintenance and registration (Kumari, S., 2014) (Largoni, M., 2015). The number plan and completed, scrap are respectively recorded for the original ticket in products. The number of being completed is namely qualified number. Scrap number is specific and accumulated scrap number. Production status is completion status. Storage state is the tail process and is put in storage, and the other for initial for the original ticket line stock. Status of quality and stock number is for qualified product in storage condition. The type is the finished product. New work ticket in this process of workshop is the same job scheduling as the original work. Plan number and completed number are defective and scrap number for new workers in products. Production status is concrete production in system, and quality status is defective. Quality status is defective too for the new ticket line side inventory. The stock number includes the defective number and the scrap number. The storage status is the initial state.

3.4 Defective product of being decided - reworking business

It is not much different on the business logic for the all part rework and the part rework. The original work ticket will terminate the production for all the rework. And the original tickets will continue to produce for some part rework. Work ticket plan of derived rework is organized production after arrangement. Plan number includes the scrap number in the condition of ticket of work and in process for all the work of rework. Production status is the specific production process. Quality status is defective. Quality status is qualified in the condition of working ticket line stock. Its type is the finished products. Stock status is completed. This workshop of work ticket can be only chosen before the current process workshop of working procedure on rework decision process. The judgment begins to be redone from the last workshop, which has set to rework business functions (such as extrusion) of process workshop in this system. Plan number and the completed number include the rework number and the qualified number for some rework of the original ticket in products. Scrapping number is for the number of being determined to be scrapped. And quality status is defective. Production status includes

production and completion. Quality status is qualified for the original ticket line stock (Leitao, P., 2015) (Mitra S., 2015). The type is the finished products. Storage state is the tail process and is put in storage, and the other for initial.

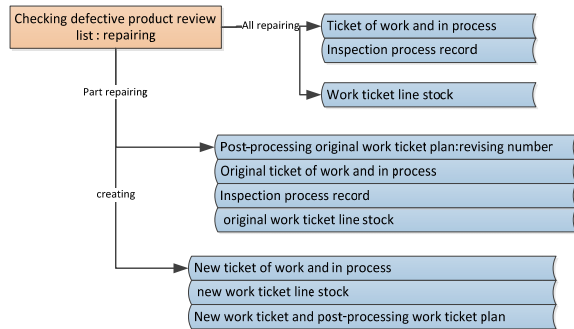


Figure 3: The flow of repairing business

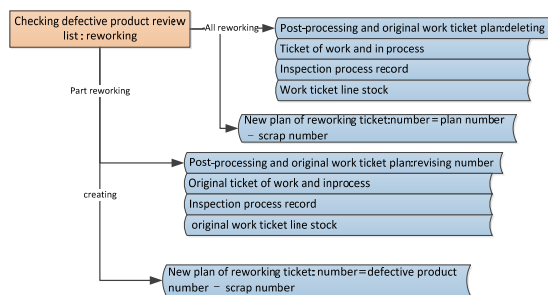


Figure 4: The flow of reworking business

3.5 Defective product of being decided - restructuring business in the future

Restructured number of work ticket is generated for being reformed in the future. Plan number is unchanged for working ticket in process. Scrap number is the original number of completion. Production status is the completion. And quality status is qualified. The type is the finished products of product for the working ticket line stock. The quality status is still qualified (Paletta G., 2015). Storage status is to apply for. The line number of restructuring in the system in the future will be not the same as the number of product in process as scrap processing for the original work ticket. Plan number remains the same for the original work ticket in process. Completion number is the qualified number. Scrap number is the defective number of being judged. And quality status is defective. Production status is production until completion. The quality state is qualified for the original ticket line stock. Stock number is the qualified number of being determined. The type is the finished product. Storage state is the tail process and is put in storage, and the other for initial. A new process of work plan will be not generated for all future restructuring and part of the restructuring in the future, which is generated by restructured the business. Defective line product in process can only be used for the new production orders corresponding to future reform. Working ticket of the line itself in process will no longer follow up production (Wang P., 2015). Plan number and the completed number include defective number and scrap number for new working ticket in process. Quality status is defective, and production status is product from starting to completion.

3.6 Defective product of being decided - scrap business

The business logic is the same for all the scrap and part of scrap. The result of production is just different. They won't produce new work tickets and new process plan. Plan number is unchanged for all the scrap work ticket in process. Scrap number is the original finish number, and quality status is defective. Production status is production until completion. Status of quality is qualified for working ticket line stock. The type is finished products of product, and storage status is completion. Plan number remain unchanged for some scrap process of the original work plan (Zhang Y.F., 2014) (Zhou J.T., 2014). Completed number is the qualified number. Quality status is defective and qualified. Production status is produced until completion. The quality status is qualified for the original ticket line stock. Stock number is the qualified number of being determined. The type is the finished products. Storage state is the tail process and is put in storage, and the other for initial.

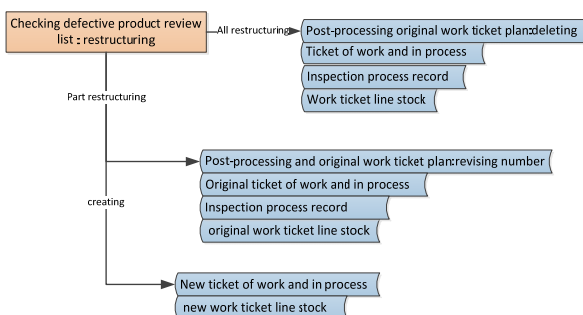


Figure 5: The flow of restructuring business

4. The query of the product quality

Inspection system of product quality is developed according to the specific requirements of the product quality inspection of intelligent manufacturing in MC-VE (Zhu H.P., 2015). It includes product quality inspection and quality business queries, etc., as shown in Figure 6 for information query of quality inspection sheet. Query conditions are the commencement date, type of document, machining workshop, ticket number, product code etc. The contents of query include the product name, product drawing no., quantity, amount of inspection, defective product quantity, the creation date, founder, completion date, inspection, state, and the corresponding scheduling etc. Query results are obtained for the product's classification and inspection items, project name, specific types, standard, upper limit and lower limit, the experimental value, the determination of specific, inspection application number, etc. Details of defective product could be real-time obtained by the query of quality inspection of public and private cloud product. Business arrangements are done on restructuring and scrap of defective product in a timely manner. It is a foundation for the enterprise to reduce the amount of the defective product, as well as saving resources and costs for mixed cloud enterprise. Different product type are controlled and processed to be back to the company according to real-time, finally realizing the defective product of enterprise by the minimum number.

Figure 6: The implement of the query system

5. Conclusions

The requirements and specific contents are analyzed on functional management of product quality according to intelligent manufacturing of MC-VE. Defective products are carried on the preliminary judgment to product of public and private cloud enterprise. Multi-level processing are done for different types of defective products on the basis of decision, such as concessions release and rework, repairing, remanufacture in the future, scrap. The query of product quality inspection is developed by combined with specific instances of intelligent manufacturing in MC-VE. Real-time query can be achieved about the quality of products from mixed cloud enterprise, which avoids a large number of the defective products of enterprise. The defective products are dealt with in time, reducing waste of raw materials and also saving cost. It is the foundation of cooperation of efficient of public clouds and private clouds enterprises.

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