

Big data and full life cycle application on belt conveyor

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Abstract: The life cycle process refers to a design theory that comprehensively plans and optimizes all relevant factors in the product design stage in consideration of all aspects of the product life history at the design stage. The full life cycle design means that the design product is not only the function and structure of the design product, but also the life cycle process of designing, designing, producing, distributing, operating, using, maintaining, and recycling until recycling.

Keywords: design. design product; maintaining.

1. INTRODUCTION

The life cycle process refers to a design theory that comprehensively plans and optimizes all relevant factors in the product design stage in consideration of all aspects of the product life history at the design stage. The full life cycle design means that the design product is not only the function and structure of the design product, but also the life cycle process of designing, designing, producing, distributing, operating, using, maintaining, and recycling until recycling.

Parallel design emphasizes the impact of life cycle follow-up activities on the overall performance of the product and the links of various aspects of the product from the initial stage of product development to achieve optimal product performance.

2. PROBLEMS FACING BIG DATA PLATFORMS

The problem with the development of big data in China is that the characteristics of big data and the challenges faced by the big data research institute determined by its whole life cycle are mainly the research on the collection, storage, processing, usability and mining of big data. A general problem with data research. China's technical capabilities in the data field are still far from the international advanced level, including: the production, transmission and application of big data. [1]The details are as follows:

1) Big data collection problem. How to reduce big data, reduce the size of data without losing value, like data cleaning, removal, etc., that is, how to effectively deal with the role of big data like physics, the size of big data is small but not Loss value; how to extract high value-added concepts, knowledge and wisdom from a flat big data.

2) Big data storage issues. For structured data, the query, statistics, and update of massive data are inefficient; for unstructured data, such as images and videos, it is difficult to store and retrieve files; for semi-structured data, storage and analysis need to be converted into structured data. Or it is difficult to store according to unstructured data.

3) Big data management issues. How to manage distributed, polymorphic, and heterogeneous big data, there is currently no effective means.

4) Big data analysis and processing problems. Distributed computing and parallel computing can provide effective support, and how to effectively use existing distributed and parallel technologies to carry out big data analysis and processing remains to be studied.

5) Application problems in the field of big data. How to apply big data to assist specific field applications, such as: rapid prevention and control of public security, police research and decision-making, and how to explore the value of industry information resources and improve the utilization of big data in the field.

3. BELT CONVEYOR FULL LIFE INTELLIGENT MANAGEMENT

Intelligentization is the most obvious feature of the intelligent belt conveyor. The belt conveyor intelligent control system comprehensively analyzes, calculates, displays and warns through the sensor network of various parts of the fuselage or by intelligent robots to collect various key data. , alarm, to achieve intelligent control of belt conveyor operation, intelligent maintenance, work order generation push, intelligent spare parts plan push and life management, can automatically initiate fault self-diagnosis and fault self-processing procedures, or through directional push to intelligence The handheld terminal notifies the nearest person to handle the fault.[2]

Upgrade and improvement: belt conveyor intelligent control system automatically counts a certain part of the belt conveyor, such as tensioning device, roller, roller, rack, etc., the damage rate in a period of time, and transmits the data to the equipment at the same time. And equipment manufacturers, to inform the belt conveyor in the production of parts aging and failure rate, easy to upgrade, improve and improve the equipment.

Spare parts planning: belt conveyor intelligent control system automatically counts the damage period of a part of the belt conveyor, automatically monitors the service life of a component, and can transmit data to equipment users and equipment at the first time. Manufacturers, on the one hand, enable belt conveyor users to reduce inventory and spare parts in time. On the other hand, belt conveyor manufacturers can customize production according to the needs of belt conveyors. [3]

Maintenance: belt conveyor intelligent control system for real-time online monitoring of key parameters of belt conveyors such as drums, rollers, drive units, etc., according to the maintenance and repair cycle of each component, timely delivery Suggestions for maintenance, repairs, and maintenance plans are sent to the dispatching room, terminal, and hand-held terminal in the form of work orders to guide the belt conveyor manager to repair and maintain the belt conveyor.

Full-life intelligent management, in the design and manufacture of belt conveyors, deep integration of next-generation information technology, key components should be intelligent, key data of key components should be integrated into the big data of the belt conveyor intelligent control system Information platform for automatic warning, alarm, and automatic partial troubleshooting through cloud computing and big data analysis. [4]

4. BELT CONVEYOR MAINTENANCE

In order to ensure the normal operation of the belt conveyor, it is important to prevent it, and it is very important to carry out regular maintenance and maintenance.

Inspection and maintenance of the cleaner

The difference in diameter between the two drive rollers will cause the conveyor belt to slip on one of the rollers, which not only causes premature wear of the conveyor belt and the drum, but also has a large effect on the power distribution of the two transmission shafts. The pulverized coal is stuck on the reversing drum, which can cause the tape to run off and wear. The cleaner cannot over-compact the surface of the drum, which increases the running resistance of the belt conveyor, but does not leave the drum too large to function. The main points of inspection of the cleaner are: checking the contact situation; the wear and integrity of the parts; whether the cleaner is working and the accumulation of pulverized coal. [5]

2) Inspection and maintenance of conveyor belt tension

Roller slipping is often a manifestation of insufficient conveyor tension (but not for other reasons). This can be achieved by adjusting the belt conveyor and tension to eliminate slippage. If the tension is too large, it will cause tape. Vibration; In addition, additional pressure is added to each bearing component to reduce its service life.

3) Inspection and maintenance of bearing temperature of reducer, hydraulic coupler, motor and all rollers

Poor lubrication, overload operation or component wear are the main causes of excessive bearing temperature. By checking the bearing temperature, problems can be detected in advance and handled in time to avoid accidents.

4)Conveyor belt joints, fastener inspection

Conveyor joints must be inspected daily. Because belt breaks often occur at the joints of the conveyor belt. Check the conveyor fasteners to be comprehensive and attentive.

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