

Exploring the Common Failures and Routine Maintenance of Jeans Overlocking Machine

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Abstract

Purpose – This paper explores the common faults and daily maintenance methods of the overlock machine of the jeans production line. The overlock machine is one of the most widely used types of equipment in jeans manufacturing enterprises. It proposes targeted and operative solutions to enhance the regular operation of the overlock machine.

Design/methodology/approach – Based on the application of overlock machines in jeans production lines, in-depth research and analysis of overlock machines in jeans production lines, use of case study method, continuous optimization of liberation methods for common faults of overlock machines, clarification of standard operating steps and daily maintenance methods for overlock machines.

Findings – For common types of failures such as broken threads, broken needles, skipped stitches, wrong stitches, and sewing material problems in overlock machines, The author goes deep into the production line, tracks the operation of the jeans production line equipment, analyzes the causes of the failures, and propose solutions one by one.

Research limitations/implications – Overlock machine troubleshooting does not apply to other sewing equipment, and proficiency requires specialized training.

Practical implications – By sorting out faults and solutions, we can maintain a virtuous cycle of overlock machines on the production site and provide hardware for the smooth operation of the production line.

Originality/value – The method proposed in this paper guides sewers and production line team leaders to enhance overlock machine maintenance and provides technical references for all types of jeans manufacturers to maintain and repair their overlock machines.

Keywords: overlock machine, jeans, sewing failure, routine maintenance

Paper type: Research paper

1. Introduction

The manufacturing industry in developed countries has developed gradually, while China's manufacturing industry has shown a leapfrog development in a short period. Manufacturing is the main body of China's national economy, and it is a general trend to continuously promote the development of the manufacturing industry (Bi Na, 2022). on February 28, 2022, President Xi Jinping emphasized the need to adhere to the growth of the real economy, promote the advanced industrial base, and accelerate the construction of world-class enterprises. The essence of jeans production and manufacturing is that workers use equipment to complete processing tasks, and sewing equipment is an essential production component. Management of equipment by manufacturing enterprises is a business imperative, and production lines require equipment spot checks and equipment repair and maintenance work, reducing equipment risk (Ma Lili, 2019). The Overlock machine is one of the essential sewing equipment in the jeans production line. How to maintain the movable rate of the overlock machine is the hardware guarantee to improve the efficiency, jeans production line in advance to find out the common failures of the overlock machine for prior management, and do an excellent job of routine maintenance of the overlock machine is the top priority.

2. Literature Review

The Chinese jeans production industry has been following the traditional production model, which needs more

effective equipment management and is efficient (Wei Dinghui et al., 2020). Zheng Ji et al. (2017) pointed out that modern high-speed industrial overlock machines generate strong vibrations in each moving component during high-speed operation, which affect their working accuracy, so it is crucial to analyze the dynamic characteristics of high-speed industrial overlock machines and effectively control and manage their whole machine vibrations for overlock machine troubleshooting. Neglecting the maintenance of the equipment during the production process often leads to the undesirable consequence of production line disconnection in case of equipment failure (Song Ying, 2021). Overlock machines, known as lockstitch machines, are generally divided into three, four, and five threads. Their primary function is to prevent the raw edges of garments from becoming unstitched and pilling. Since overlock machines are highly used in the production process of jeans and operate under high loads for a long time, it is imperative to master the causes of their failures and solutions and to learn routine maintenance. Luo Yan et al. (2022) pointed out that jeans are one of the most classic clothing items and have always been loved by consumers. Zhang Fengshuo and Wang Yanzhen (2022) concluded that with the progress of technology and the improvement of people's living standards, jeans have gradually evolved into a diversified, casual, and fashionable versatile product. According to a global market analysis report by Just Style, the global denim market was \$57.3 billion in 2018 and is expected to reach \$60 billion in 2023, with jeans accounting for more than 75% of the market share of all denim products. Li Siyi (2017) noted that denim fabric is textured, thick, and comfortable. Wear-resistant unique characteristics and his unique weaving method determine that only denim fabric can achieve such process effects as draws and cat whiskers in fabric recycling. It also does not cause damage to the style structure of the garment. Wu Jiabin (2019) points out that the audience of denim clothing can cross all social categories, such as regardless of class, regardless of race, regardless of gender, and regardless of religion, thus having a wide range of social needs. Li Tingting (2017) pointed out that China is also a large producer of denim garments, and the total production of denim garments is continuously growing. Zheng Peng (2018) proposed the modular production of jeans and divided the jeans product system into four main modules: body module, placket module, pocket module, and waist module. Moreover, empirical research quantifies and analyzes the standard time of each operation unit in production. In the context of the rapid development of China's production manufacturing industry, the existing literature that although many scholars have analyzed the importance of overlock machines in jeans production, from the perspective of jeans production lines and the use of overlock machines. However, more research needs to be conducted involving the types of faults and daily maintenance of overlock machines, leading to a more scattered theoretical level and a severe lack of application level. In general, the existing research has two blind spots: firstly, jeans as a widely used introductory class of garments, so how to manage the overlock machine with a high usage rate in the jeans production line and sort out the types of overlock machine failures in advance is a problem yet to be explored; secondly, how to do the daily maintenance of the overlock machine in the jeans production line to prevent problems before they occur and help improve the efficiency of the production line has not yet been launched for specific analysis. Given the above two gaps, the author will go deep into the production site of the jeans production line. Based on the actual production line, the author analyzes the common failures, daily cleaning, and maintenance of overlock machines, then effectively controls the production interruptions caused by overlock machines and provides technical reference for the maintenance and repair of overlock machines for various jeans production enterprises.

3. Research Methodology

3.1 Enterprise Site Survey and Research Method

Visit the production lines of different enterprises, summarize the experience and lessons learned in the use of overlock machines in the production process, collect and analyze field data, take a favorite jeans enterprise as a research pilot, analyze the use of overlock machines in the production process, pre-production preparation, production process control, and quality control in the production line of the jeans manufacturing enterprise, and summarize the experience for the problems We also discussed and learned from the employees.

3.2 Case Study Method

According to the application of the overlock machine in the jeans production line, we continuously optimize the liberation method of common faults of the overlock machine to improve production efficiency and reduce cost. In-depth research and analysis of overlock machines in jeans production lines to clarify the standard operating steps and daily maintenance methods of overlock machines and to verify the effectiveness and practicality of the proposed solution measures in the improvement study of common faults of overlock machines in combination with actual cases of sewing workers. Through detailed case study analysis, problems are identified from overlock machine practice and summarized for exploration. Based on theoretical and practical research, the efficiency of jeans production enterprises is continuously improved.