On the Characteristics and Countermeasures of Radio and Television Technology Maintenance in the New Era (Postprint)

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Abstract

An analysis of the characteristics and countermeasures of broadcast television technology maintenance work in the new era must first clarify the main features of such work, which are primarily manifested in increased broadcast duration and frequency, computer network-assisted operations, diversification and complexity of transmission and broadcast control methods, and large system capacity. Based on these characteristics, effective measures can be derived, including understanding the operational principles of broadcast television system equipment, recognizing different manifestations of fault conditions, implementing emergency response procedures, strengthening the construction of technical maintenance talent teams, and improving broadcast television technology maintenance management systems, thereby providing a comprehensive exposition of the importance of broadcast television technology maintenance work in the new era.

Full Text

Discussion on the Characteristics and Countermeasures of Broadcast Television Technology Maintenance in the New Era

Abstract: This paper analyzes the characteristics and countermeasures of broadcast television technology maintenance in the new era. The primary characteristics include increased broadcast duration and frequency, computer network-assisted operations, diversified and complex transmission and broadcast control methods, and large system capacity. Based on these characteristics, effective measures are proposed: understanding equipment operation principles of broadcast television systems, recognizing different fault manifestations, implementing emergency response procedures, strengthening the construction of

technical maintenance talent teams, and improving broadcast television technology maintenance management systems. These measures comprehensively demonstrate the importance of maintenance work in the new era of broadcast television.

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The primary function of broadcast television is to disseminate information, playing a crucial role in media communication. Its main transmission method involves audio and video technologies to deliver better and more comprehensive messages to users. In the process of information dissemination, relevant staff should release innovative online news to attract audience attention while authentically portraying programs to improve broadcast television ratings. Simultaneously, personnel should innovate broadcast television technology, improve information processing operating systems, and promote these advancements to facilitate program innovation.

1.3 Diversified and Complex Transmission and Broadcast Control Methods

Scientific and technological progress drives rapid industry development. As the capacity of broadcast television transmission systems continues to increase, transmission methods such as digital compression, satellite compression, and optical cable transmission have emerged. For traditional technologies, single-channel broadcasting can no longer satisfy new transmission systems. Therefore, relevant personnel should innovate based on single-channel systems to ensure flexible debugging of broadcast content and establish integrated broadcast control systems.

2.1 Understanding Equipment Operation Principles of Broadcast Television Systems

Maintenance personnel should master the operational principles of broadcast television equipment to facilitate effective maintenance. Broadcast television equipment develops numerous faults during long-term operation. To accurately diagnose equipment failures, maintenance staff should analyze both equipment signal flow and the principles of the equipment awaiting repair. All-solid-state broadcast television equipment consists of large-scale complex integrated circuits that cannot be diagnosed through visual inspection alone. Therefore, fault resolution should combine equipment operation principles with detection using relevant instruments to troubleshoot and ensure smooth equipment operation.

For daily maintenance, managers should schedule regular inspections and maintenance.

During the production of broadcast television equipment, inspection reports should be used for verification. These reports represent important resources for establishing a broadcast television equipment technical archive management system. Only by establishing such an archive management system can the root causes of faults be correctly identified when errors occur, while also playing a crucial role in maintenance. Staff should comprehensively grasp and analyze the basic operating conditions and fault statuses. During fault elimination, personnel must thoroughly understand equipment failures, maintain detailed records, conduct in-depth fault analysis, and implement appropriate corrective measures.

2.3 Emergency Response Procedures

During routine inspections, refined management systems should be established to avoid serious consequences from minor issues. To ensure stable operation of broadcast television systems, the operating environment should be optimized to reduce losses caused by equipment itself. While guaranteeing system components and equipment, service life should be extended and costs reduced. For components prone to failure, emergency measures should be implemented. Therefore, staff should maintain a positive work attitude to avoid negligence caused by personal factors. The complexity of equipment systems creates difficulties for technical maintenance work, necessitating reasonable and unified workflow standardization.

2.4 Strengthening Technical Maintenance Talent Team Building

Broadcast television encompasses many advanced technical devices requiring versatile technical personnel for operation. To ensure smooth broadcast technology maintenance work, a team of professionals with specialized knowledge should be cultivated. Emphasis should be placed on innovative thinking among technical personnel, encouraging innovation in relevant technologies. Staff should develop problem-identification and problem-solving skills in their work to effectively improve professional competencies, master broadcast television equipment performance, and understand fundamental operational principles. Enhancing employee motivation and innovating broadcast television technology will enable every technical maintenance personnel to fully recognize the importance of their work.

2.5 Improving Broadcast Television Technology Maintenance Management Systems

To ensure the smooth development of broadcast television technology, effective management systems should be formulated with clear regulations and procedures to avoid confusion. Station regulations must be observed rather than

following personal preferences; all actions should comply with institutional requirements. Improving the broadcast television technology maintenance management system serves as an important guarantee for maintenance work, giving full play to supervisory roles and motivating employees. Establishing effective communication platforms ensures mutual communication and assistance among departments, constructing a monitoring and guarantee management system to improve broadcast television listening and viewing systems while perfecting system safety operation mechanisms. For stable broadcast television operation, relevant personnel should promptly monitor operational status and rapidly resolve issues. Managers should establish specialized technical teams. In daily maintenance management, relevant staff should clarify management systems, combine maintenance schedules during operations, effectively implement technical personnel post responsibility systems, and establish incentive and penalty mechanisms to enhance employee motivation. This ensures quantification and refinement of various maintenance management indicators, thereby promoting reliable equipment operation.

2.6 Establishing an Operation Management Framework

As shown in Figure 1, the continuous advancement of triple-network convergence in broadcast television, along with the construction of NGB (Next Generation Broadcasting) networks, promotes multi-directional development of broadcast television network services and facilitates three-orientation transformation of network operation and maintenance. The network management and dispatch center serves as the specific manager of operation and maintenance, effectively controlling products and network operations. Through customer research, the establishment of a network management and dispatch center enables effective implementation of operation and maintenance management and tracking, further achieving operation and maintenance management objectives and demonstrating process-oriented, engineering-oriented, and automated management workflows. Simultaneously, relevant indicators should be established to strictly control reservation rates and repeated complaint rates. Therefore, the customer area closest to the service point should be utilized as the most basic unit for public operation and maintenance implementation.

[Figure 1: see original paper] Company Operation and Maintenance Architecture Diagram

2.7 Improving Broadcast Television Program Broadcast Quality

Broadcast television transmission covers a wide area with technically breakthrough capacity, enabling multi-channel rapid transmission of numerous broadcast television programs. Relevant maintenance and management personnel must continuously update maintenance technologies, adhere to maintenance concepts that keep pace with the times, conduct proper maintenance to ensure normal operation, and minimize equipment failure risks.

In summary, the above discussion demonstrates that broadcast television technology maintenance is critically important work. Typically, broadcast television operations must prioritize maintenance. Maintenance work relies on accumulated experience and corresponding diagnostic judgment abilities developed over long-term practice. Therefore, relevant personnel must innovate through practice, master innovative maintenance methods, and ensure the smooth development of broadcast television work.

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Note: Figure translations are in progress. See original paper for figures.