Postprint: Research on Technical Assurance Methods for Broadcast Safety in Radio and Television

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Abstract

In recent years, with the rapid development of science and technology, broadcast television technology has also achieved significant progress, exerting important influence on television station program broadcasting and picture quality. For television station program broadcasting, ensuring high-quality, safe, and smooth program broadcasting is inseparable from the application of broadcast television technology. In the process of television station program broadcasting, coverage signals are transmitted in a point-to-multipoint manner, characterized by irreversibility. Therefore, the application of broadcast television technology plays a crucial role in the safe broadcasting of television stations. Based on this, this paper elaborates on the significance of safe broadcast television broadcasting and investigates the implementation methods of broadcast television technology in safe broadcasting, by integrating the conceptual characteristics and current constraints of broadcast television technology.

Full Text

Preamble

Ensuring the safe and reliable operation of broadcasting systems constitutes one of the most critical core tasks in television program transmission. From a business perspective, media assets must realize their value through program playback and the dissemination of broadcast television content. Consequently, a key operational objective of broadcast control systems is to achieve secure and reliable program transmission and broadcasting. However, current safe broadcasting practices in radio and television still exhibit certain deficiencies, necessitating further research into the implementation methods of broadcasting technology to meet safe broadcasting requirements.

1. Concept and Characteristics of Broadcasting Television Technology

Broadcasting television serves as a program carrier that transmits images, sound, and other content to users through wired and wireless means. Broadcasting technology plays a vital role in ensuring smooth and secure program transmission. The broadcasting process is highly systematic, requiring effective control and supervision through broadcasting technology at every stage. Various emergency situations must be handled promptly to reduce adverse factors, enabling safe and smooth broadcasting that fully leverages its role in disseminating positive energy, promoting socialist values, and guiding public opinion. Broadcasting technology exhibits distinctive characteristics, particularly in its diverse transmission methods and the close relationship between transmission systems and coverage scope. Against the backdrop of continuous technological development, innovations such as network cloud technology, digital compression, fiber optic transmission, and satellite transmission have effectively expanded coverage and transmission capacity [1]. Additionally, broadcasting transmission systems feature spatial characteristics that enable highly efficient transmission.

2. Current Status of Safe Broadcasting Television

In recent years, broadcasting technology has made significant progress alongside rapid socio-economic development. The public can access various news and information through home television broadcasting, satisfying daily entertainment needs. Satellite direct broadcast technology has broken geographical constraints, making broadcast television programs accessible from virtually any location. Safe broadcasting technology is gradually achieving widespread application, with continuous improvement during the development and digital transformation of broadcast media.

Emergency backup systems, such as emergency videotapes, can ensure zero-delay continuation of television program broadcasting when servers fail. In software systems involving automated broadcasting, subtitles, and databases, proper maintenance is essential. In hard-disk broadcasting systems, database software represents the most critical component, typically configured with primary and backup devices that regularly clean information and backup files promptly. During maintenance of automated playback software and subtitle systems, efforts should focus on minimizing system crashes and controlling random errors. Firewall installation with regular restarts and cleaning is necessary. For video server software maintenance, timely server restarts, disk replacements, and using channel recorders for simulcast may be required depending on the situation [4].

Both traditional and new media components require comprehensive testing and unified management by relevant departments, with heightened attention to coordinating program content and operational effectiveness. Effective solutions

should be actively explored for technical standard issues. Unified testing standards must be established alongside unified departmental management. To achieve unified supervision and management across platforms, comprehensive digital emergency plans should be formulated while meeting cross-platform data sharing requirements. Every workflow should reflect innovation and improvement in broadcasting technology, thereby reducing technical disparities and better leveraging broadcasting technology in safe broadcasting.

4.2 Transmission Equipment Operation Guarantee

Most broadcast television transmission equipment is typically installed at high-altitude locations. Consequently, adequate lightning protection devices must be installed to ensure comprehensive lightning protection measures and proper performance, safeguarding the operational status and safety of broadcast transmission equipment. These devices require timely maintenance and inspection using precision instruments to accurately check grounding resistance and examine lightning protection equipment and related accessories, ensuring they meet requirements and provide sufficient protection for broadcast transmission equipment. Broadcast transmission equipment generally operates at high frequencies for extended periods, which may affect reliability and stability. Therefore, timely maintenance and inspection are essential, along with establishing scientific and effective management systems tailored to specific needs, thereby ensuring good operational status and safe broadcasting of television programs while improving broadcasting efficiency.

4.3 Construction of Safe Broadcasting Mechanisms

To ensure adequate protection for safe broadcasting of radio and television programs, establishing and improving corresponding management mechanisms is essential alongside proper technical support, thereby achieving enhanced maintenance and management levels. Cable network companies should further refine and optimize program safe broadcasting quality management and corresponding business processes, while formulating targeted policies and systems. Broadcast television stations must adopt effective measures to align with current network development trends, improve broadcasting processes, and ensure program quality and visuals meet corresponding requirements. Additionally, integrated safe broadcasting systems should be established at satellite receiving stations and television transmission towers to provide greater support for overall broadcast quality improvement [5]. Many broadcast television stations currently conduct joint inspections by maintenance and repair personnel to check equipment, ensuring timely detection and resolution of issues. By updating management concepts and implementing strict quality supervision, broadcast television stations can achieve overall program quality improvement and promote further development.

4.4 Unified Platform Supervision and Management

The relevant requirements and policies of the National Press and Publication Administration must be further implemented and enforced. Broadcasting television monitoring departments must not only ensure program safety but also strengthen unified supervision and management of program content, related media, and broadcast platforms.

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