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Paper 17: Standard Schemes and Engineering Cases of Transformer Noise Reduction for Typical Distribution Room in Residential Area

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Introduction

In recent years, environmental noise pollution caused by distribution transformers has become one of the hot issues that the public is most concerned about. This paper proposes three standard schemes of noise reduction for transformer in typical distribution room.

Standard Schemes

The noise spectrum produced by distribution transformers mainly consists of 500Hz. There are mainly three kinds of noise propagation path in distribution room. For different propagation paths, three standard schemes are designed to block noise propagation. Due to the similarity of noise spectrum of different distribution transformers, the selection of sound insulation materials in the schemes is mainly aimed at the low-frequency noise, i.e. frequency at 500Hz and below. This makes sure that transformer noise is reduced exactly.

Type of distribution room	Main noise propagation path	Standard scheme
Stand-alone	Air	Scheme 1: ventilation soundproof door and ventilation muffler
Co-built	Air-wall-air	Scheme 2: acoustic enclosure
Co-built	Transformer base-floor-air	Scheme 3: vibration isolator

Engineering Cases

In recent two years, based on the above three standard noise reduction schemes, Guangzhou Panyu Power Supply Bureau has carried out reformation for six distribution rooms with much complaints. All of them have achieved satisfactory results. Two cases are shown above.

Conclusions

The schemes have the advantages of precise noise reduction, convenient reformation and excellent economic benefits, and can completely solve the long standing problem of noise disturbance in the whole power network.