

2012 AASRI Conference on Power and Energy Systems

Exploitation and Application of Galloping Database Based on PMS System

LI Junhui^{a,*}, Zhu Kuanjun^b

^aChina Electric Power Research Institute, No. 13,Haotian Bei Street, Liangxiang, Beijing, 102401,China

^bChina Electric Power Research Institute, No. 13,Haotian Bei Street, Liangxiang, Beijing, 102401,China

Abstract

Our country is rich of line galloping, there are many important galloping data failed to collect systematically and completely because there is no unified management platform. After the galloping occurrence in 2009-2010's winter the department of productive of the State Grid Corporation organized a lot of human to carry out the research of galloping information, this work is time-consuming and inefficient. The State Grid Corporation has used the production management system (PMS) which is a powerful and easy to use. With the help of the system we can create a galloping database which can save resources and storage the galloping data. To build and put it into application of database can provide technical support for line galloping prevention and galloping research work.

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Keywords: Transmission line, Galloping, PMS, Galloping Database.

1. Foreword

In recent year, galloping disasters in domestic power transmission line are frequently increased, State Grid Corporation has collected a large quantity of observation data at the galloping site, these data aren't effectively collected and managed, its utilization efficiency is obviously too low, which brings great inconvenience for galloping protection works in power transmission line of the corporation. In particular to winter of 2009~2010, large area icing galloping phenomenon successively occurred in seven power transmission lines in Henan, Shanxi, Hunan, Jiangxi, Zhejiang, Liaoning, Hebei and Shandong etc provinces, which caused mechanical and electrical faults in several lines with different voltage classes and seriously affected safe and stable operation of the grid. After fault occurred, the production and technology department of State Grid

Corporation organized a large quantity of man power and materials to carry out fault investigation on galloping of the power transmission lines, this investigation work lasted for one month, it is time consuming and inefficient. Repeated works were frequently carried out, efficiency was very low, therefore it is urgent to develop a set of galloping data management system for the power transmission line to specially store and manage galloping data.

The production department of State Grid Corporation owns special production and management system (PMS) which can manage count information of the power transmission lines and equipments in the scope of the whole grid, and provincial company of each grid has established special network with the headquarter to carry out data transmission, each city-region team realizes mutual connection and mutual accessing with PMS of the provincial company. The headquarter can conveniently realize data transmission with each provincial company, and realizes information exchange and share. Whereas PMS system has strong count information management function of the power transmission lines and equipments, this paper develops the galloping database system in combination of the galloping condition of our domestic power transmission lines, the galloping database is completed by means of PI3000 platform on basis of the current production management system (PMS).

2. Building plan of galloping database for power transmission line

2.1. Building target of system

Design target of the galloping database for the power transmission line is to establish a unified collection, storage and analysis platform of the galloping data for the power transmission lines in scope of State Grid Corporation on basis of the production and management information system (PMS). Data share and communication of the galloping information are realized through PMS system.

2.2. Building principle of system

Main building principles consist of:

- Intensive and standardized principle must be insisted on during building, system design is simplified and optimized from intension, uniform and economic etc angles, standardization design shall be outstanding.
- The building faces to future and long term development of the corporation, applies principles of “unified design and building in section” and realizes stable propulsion of system building.
- Boundaries and interface relationships with variable existing, on-building and on planning other types unified building systems of the corporation related to this system must be fully considered during building, data collection and storage plan and user application plan shall be comprehensively considered, play building efficiency of the information system at maximum degree.
- Technical lines shall be in accordance with relevant technical requirements of “SG186” engineering and “SG-ERP”.

2.3. Description of each function module in galloping database

The galloping database consists of following modules: galloping historical data of domestic power transmission line, galloping treatment data of domestic power transmission line, galloping data inquiry and statistic function of domestic power transmission line etc.

According to requirements of PMS system, the galloping historical data of domestic power transmission line and galloping treatment data of domestic power transmission line these two function modules are placed

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