

Non-Interruption Work Methodology in TEPCO Distribution System

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Electric power supply reliability is generally evaluated by system reliability indices, such as SAIFI (System Average Interruption Frequency Index) and SAIDI (System Average Interruption Duration Index;). Tokyo Electric Power Company (hereinafter called "TEPCO") has realized "SAIFI; 0.18 times, SAIDI; 4 minutes" in fiscal year 2001, "Top Class" reliability all over the world.

The factors affecting reliability are classified into "**fault frequency**", "**area of outage**" and "**restoration time of fault**", therefore, fault frequency reduction and fault duration shortening by countermeasures for these factors must contribute to reliability improvement. There are unavoidable "**fault outage**" caused by natural phenomena, however, "**planned outage**" is caused by "power company's work". Therefore, it is definitely required to reduce the planned outage and as a result "non-interruption work".

In TEPCO, "6 divided and 3 connected system" is adopted for 6.6kV distribution system, therefore, in case of fault, distribution lines out of faulted section can be restored immediately, moreover, in case of distribution construction and maintenance works, working section can be minimized by switching over from neighboring distribution systems.

However, with rapid growth of electricity demand and with advanced and diversified utilization of electricity, minimization of work area and work without interruption is required. Therefore, TEPCO has been promoting "non-interruption work method" since 1985, as a result, SAIDI due to "planned outage" is shortened from 34minutes in 1985 to 2 minutes in 2001. "Non-interruption work" are as follows:-

- 6.6kV non-interruption work method
 - a) Temporary switch method, b) By-pass method, c) Temporary interconnection method
- Low voltage (LV) non-interruption work method
 - a) LV changeover method b) LV temporary interconnection method
 - c) Temporary transformer method
- Generating car method

In order to apply the non-interruption work methods, the condition setting of distribution network configuration (subdivision of sections, appropriate segmentation of distribution line, etc.) is required, moreover, work manuals, linemen's education, efficiency improvement by introduction of bucket track are also important. TEPCO has advanced the "non-interruption work" by efficient and effective investment for these conditions. As a result, by introducing "non-interruption work", system reliability, safety & productivity of works are improved by work conditions improvement.

Furthermore, TEPCO has been developing new technologies for "non-interruption work" for more system reliability improvement.

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