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SOLUTION OF MONITORING FOR SURGE ARRESTORS

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Abstract

Devices that are commonly used for effective protection of power system elements are surge arresters. However, like all other devices this one as well needs to be checked if it is functioning or not. In addition to the elements that are part of the surge arrester, it is practical to perform tests whose comparing in a certain time interval will give us some warnings that the arrester is canceled and that we should provide a spare or that we may need to replace it immediately.

Keywords: Surge arrester, monitoring, leaking currents.

INTRODUCTION

Surge arrestors are protective devices for protection of electric power system (EPC) from overvoltage. Their function is reflected in the fact that when the arrestors are passing their resistance is decreased taking the part of the overvoltage towards the ground. After the overvoltage disappears their resistance is increased and it returns to the value it had before the influence of overvoltage. By design, surge arrestors are divided on:

- Silicon-carbide, namely classic surge arrestors;

- Metal-oxide, or zinc-oxide;

- Pipe surge arrestors;

Second division is almost identical to the first one and it covers:

- Surge arrestors with non-linear resistor and spark gap;

- Metal-oxide surge arrestors with no spark gap;

Silicon-carbide surge arrestors used to be called valve surge arrestors. This name came from the way they were used.

Some of the differences between previously mentioned surge arrester types are:

Silicon-carbide surge arrestors react when they face overvoltage which is higher than their voltage response limit, after which their voltage decreases to remaining voltage. At the

time when surge arrestors react there is a rapid voltage decrease which can be called a transitional regime;

Zinc-oxide surge arrester does not have a limit at which it is reacting so after a sudden voltage increase there is a conduction of electricity through the knee;

Zinc-oxide surge arrester does not have follow up electricity after the overvoltage stops because when the overvoltage disappears surge arrester goes back to high resistance state automatically at which small level of electricity goes through conductor;

After many years of Silicon-carbide surge arrestors usage in the electric power facilities of medium and high voltage, Metal-oxide surge arrestors became a standard and they were massively used. Zinc-oxide is mostly used as a Metal-oxide. In the beginning the only option for housing of metal-oxide elements (so called ZnO bannock) was porcelain, but today composite silicone housing is equally used.

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