

CAUSES OF OVERVOLTAGE IN HIGH-SPEED ASYNCHRONOUS MOTORS AT VACUUM CIRCUIT BREAKER SWITCHING

Shevchenko S., Danylchenko D.
National Technical University
«Kharkov Polytechnic Institute»,
Kharkov

At the early stage of the development of vacuum switching equipment, there was a problem of overvoltages in the case of switching off the vacuum circuit-breaker due to the breakdown of the current arc to its natural transition through the zero value (the phenomenon of "cutoff").

At present, the problem of overvoltages caused directly by the cutoff of current, has lost its relevance. Due to the selection of the optimal material for the manufacture of contacts, but to fully solve the problem of high-frequency overvoltage during switching vacuum circuit-breaker failed, since the ability of the vacuum to extinguish the high-frequency current arc leads to the following adverse processes:

1) escalation of overvoltage in the cycle of high-frequency repeated breakdowns when disconnected;

2) overvoltage in the cycle of high-frequency preliminary breakdowns when turned on;

3) overvoltages caused by virtual cuts of current.

In the course of repeated inflammations, the contact strength of the switch increases. At the same time, the voltage of repeated inflammations, the amplitude of the current of frequency ignition, and also the overvoltage on the disconnected winding ("escalation of overvoltage") increase. Multiple re-ignitions create a series of impulses with steep fronts that affect the winding insulation windings.

Excessive escalation continues until one of the three conditions is met:

a) the transitional restoring voltage will not exceed the increasing breakdown voltage;

b) the total current in the BB will no longer pass through the zero value or the speed of its transition exceeds 250-350 A / ms.

c) there will be violation of the isolation of switched equipment.

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