STUDY OF INRUSH CURRENT REDUCTION AS RESULT OF ENERGIZING AT POWER TRANSFORMER 500 KV KRIAN SUSTATION USING SEQUENTIAL PHASE ENERGIZATION (SPE) METHOD

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ABSTRACT

During energization of power transformer, inrush current with peak up to several times magnitude of normal current may occurs. This kind of current can cause some troubles to electricity power system. Therefore, some kinds of method to reduce inrush current have been really needed in order to maintain power system quality. One of those method is Sequential Phase Energization. In this method, some factors like time delay of switching among three phases of transformer and neutral resistor value must be taken account in order to achieve an optimal result.

In this final project, the influence of this method on power transformer’s inrush current reduction will be explained. In order to know the performance of this method, some simulation will be done by using Alternative Transient Program-Electromagnetic Transient Program (ATP-EMTP) software. In this case, power transformer of 500 kV Krian Substation will be taken as the model.

In the end of this final project, recommendation for the optimal value of switching time delay and neutral resistor for Sequential Phase Energization method on 500 KV Krian Substation are given. From simulation, the inrush current is reduced significantly, 81,48% on phase 1, 72,22% on phase 2, and from 81,93% on phase 3.

Keyword : inrush current, ATP-EMTP, power transformer, Sequential Phase Energization method.
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