



Line Recompense Succession Reimbursement Transmission Recognition

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Abstract: *Transmission line is the most important part of the power system. Transmission lines a principal amount of power. The requirement of power and its allegiance has grown up exponentially over the modern era, and the major role of a transmission line is to transmit electric power from the source area to the distribution network. The exploded between limited production and a tremendous claim has grown the focus on minimizing power losses. However, the fault detection that interrupts the transmission line is itself challenging task to investigate fault as well as improving the reliability of the system. The transmission line is susceptible given all parameters that connect the whole power system. This paper presents a review of transmission line fault detection.*

Keywords: Fault in transmission line, Fault location techniques, Traveling wave method

I. INTRODUCTION

Regarding the distribution system, transmission lines perform the most important part that is to transfer electric power from the generating station to load centres. Since the development of the distribution and transmission system, power system engineers have been an object for locating and detecting faults. As long as the fault detected in short duration, it provides a good service for protecting the apparatus as well as an open way for disconnecting the part where this incident happened at fault, and with the help of this, it gives safe way to the system from any damages. So it is needed to detect the fault otherwise due to fault it causes any disturbance which further tough time to the interconnected system that based on limitations. The structure of the transmission line constructed to investigate the location of the fault and can give separation only the part where the fault occurs. Stimulating method help in identify and isolate the fault in short period. A stable voltage can be achieved by the use of a series capacitor. If the line current leads the voltage, mean voltage increase. On the other side, there could be a voltage drop if line voltage is lagging by the line current. In this outlook, the voltage that has been boosted up and the voltage dropped decreased by the series capacitor as if the line inductance is smaller for the series recompensed line as associated with the unpaid line.

II. FAULT DETECTION METHOD

Transmission lines operate spreading power from a generating station to remote load centres. Due to the existence of lightning strokes, the system has some mis-operation like a short circuit with this problem line could be overloaded hence it can damage the equipment. Due to the occurrence of a fault, the phase voltage does decrease and enormous current flow, which could damage the



equipment. In this condition, fault detection play important role which can interrupt in the system very quickly. In the transmission line, the fault is comprised of ten parts that could interrupt in the three phase system, single line to ground, line to line fault, double phase to ground and the last one is three phase fault. A single line to ground fault occurs when it makes contact with the ground during the occurrence of fault the impedance. Z_{fag} , has some value it could not be considered zero impedance but still less than the impedance line. The magnitude of the fault current is frequently increased as compared to the normal current that is operated, but the magnitude of voltage remains unchanged frequently. Table 1 shows the occurrence of each type of fault.

TABLE I

Fault Category	Design	Occurrence	Simplicity
Line-Ground	L to G	85	Very low
Line-Line	L to L	8	Low
Double Line Ground	L-L-G	5	Moderable
Three Phase	3 Phase	≥ 2	Very high

The series compensation is more efficient on transmission voltage that is essential to know because in series compensations have faced some technical problems when it is operated mainly with this problem is occurred like slow voltages and also high voltages [1]. These operational problems occurred due to a different type of caused like as line loading conditions and voltage control adjusted. In series compensations system has used a capacitor. This capacitors one side has to effectively controlled otherwise it will be based on voltage problems. For this reason, we can use series compensation for decrease voltage problems otherwise most probably overvoltage can cause these problems. On the other hand, in series compensation increase the voltage when the lines are heavily loaded and also low voltages occurred on the line. And flashovers occur due to high voltages or shrink the lifetime of devices and caused short circuits. We can use series compensation as a flows control of power. On the other hand, in a series compensated line based on current and voltage inversions each other [7].

Furthermore, a double-circuit transmission line is a method which based on digital distance relaying and this method can protect the first-zone of transmission lines series double- circuit [11]. To an approximation, the fault distance as a considered from one end of the lines and this method is autonomous on fault current and source impedance. The double series circuit and using MATLAB/SIMULINK software of this method can guess exact fault distance. Through the algorithms to find the fault location, it is applicable for both single lines and double- circuit series lines. The series-compensated is anticipated at the relays of current differential are measured to locate more refined fault location solution [12].The technique of fault location which one is proposed by using the fault specified it is achieved by differential protective relays and also using this manner differential relays are utilized with communication infrastructure. With the purpose that is detaching for distinguishing the zones where the fault is occurred by the onlyline which is faulty precisely as well as indicating a particular type of fault both one is crucial that get help from data of one end only [13].The faults contain distinct frequency bands are generated by transient current waves and using the transient current signal that captures frequencies having two



bands up to the 1dB that behave as wavelet like wavelet mother which is used. By using the frequencies of these two bands, it is determined by fault zone and to select faulted phase is used the mother wavelet. This phase which is faulty considered as average which has some value of factors of all current and by using 6 dB as mother wavelet to obtain a model signal. The external or internal regarding fault into the account by defining two of the energies related to signal model

III. ANALYSIS OF METHODS

Most of the methods that have been analysed depend on the values whether it could be phasor voltage or else current that is calculated given voltage as well as a current transformer at the substation or converting places. This is required for collecting the material at any rate three transformers that are connected to the end terminal of sub-transmission line or can say to transmission line [25]. Transformers that are connected with the end of a transmission line are very much luxurious particularly when HV lines get tangled in the system. Some algorithm fault impedance-based algorithm needed both current and voltage information [26]. The major disadvantages of using a current transformer during transient fault that is involved in their performance the namely possibility of magnetic core saturation [27]. With the probability of saturation condition, the flux remains up to the fixed for some duration of time when the voltage is no longer convinced respect of the secondary coil and the current of secondary kept beside the zero position. Time of saturation (period) relies on the magnitude of current especially on current transformer along with power factor and primary ratio X/R .

TABLE III

S. No	Methods Base	Types	Function Requirement
1	Base Impedance	One end terminal	This method is used for impedance of transmission.
		Two end terminal	
2	Travelling Wave	One end terminal	In this method, one end terminal relies on time duration among voltage or else current on the other side two end terminals rely on the time duration that is to be delayed.
		Two end terminal	
3	Magnetic Field		In these low detecting coils on the end terminal of vertical magnetic field strength, the rest other is sensed horizontal field strength

3.1 Method of Impedance Based

In this method, two ways are single ended method used for a frequency that is related to phasor information and multi terminal method that is used for operating any data based on utilization. The method that is used for sensing the position of fault with the use of voltage and current called impedance base method in a transmission line to investigate the area of fault whether it is to occur or not. These calculations are needed by the impedance of the transmission line per unit length. That why the single ended impedance based fault does not need communications due to the

simplest and fast fault location methodology. It has good numbers of application in power system having solid sequence with some value, having high ability to resist the fault as well as tapping the loads along with non-homogenous that gives challenges on the correctness of finding fault called single ended method [25]. It has 2 types of single-ended method that are simple reactance and Takagi-based

The method that is used for the improvement of the correctness of single ended method called two ended method. For the load fault, this is necessary to have knowledge for collecting information for finding the position of phase fault. The problems related to one-terminal impedance based fault location method can be removed with the use of both sides of transmission line [28]. It is to be difficult to detect short time fault accurately having impedance related to finding position method of a fault having limited information exists for voltage as well as for the current and information which is already mentioned quite unnecessary for a condition called steady state.

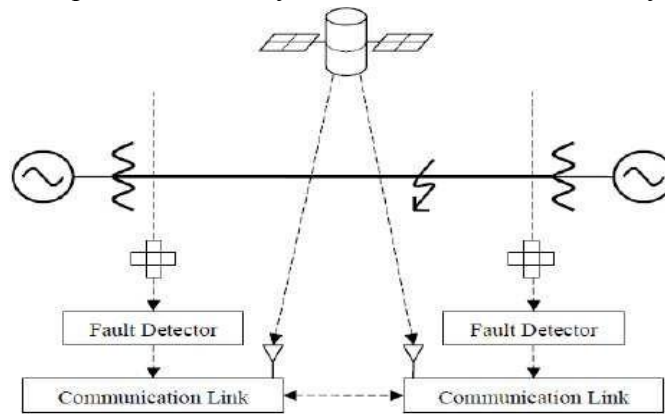


Figure 1. Synchronize fault detection timing with GPS satellite

IV. CONCLUSION

Focusing on any research work regarding literature review is the very most important task because it builds up the thoughts and strong setting that can develop quickly. This development allows for making improvements based on unsolved questions thus clearly explain all limitations related to the progress of research work. Most of the prose worked on detection of fault related to the power system. For the improvement of power quality meaning that to make power purer, the compensated circuit is considered to be attached. While to enhance the system with reliability and supply of power respected time. Thus more important is to detect of fault as well as locating them as soon as possible.

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