TWO SOURCES (MSEDCL/RAW POWER TO DG POWER) AUTO CHANGE OVER SYSTEM

[1]Rinky Maity, [2]Prem G. Thakare, [3]Abhishek H. Bhosal, [4]Ashish A. Jadhav
Department of Electrical Engineering, Mumbai University/ Vishwaniketan's Institute of Management Entrepreneurship & Engineering Technology [I MEET] Khalapur, Raigad-Maharashtra-410202
rsmaity@vishwaniketan.edu.in

ABSTRACT

The auto changeover system for two power sources, namely MSEDCL (Maharashtra State Electricity Distribution Company Limited) and raw power from a DG (Diesel Generator) is an innovative solution for seamless and reliable power supply management in situations where multiple power sources are available. This system automatically switches between MSEDCL power supply and DG power supply based on predefined criteria, such as voltage, frequency, and availability, ensuring uninterrupted power supply to critical loads

Keywords: auto changeover, DG set, MSEDCL,

INTRODUCTION

The auto changeover system from MSEDCL (Maharashtra State Electricity Distribution Company Limited) to raw power or DG (Diesel Generator) power is a crucial mechanism that allows for seamless transition and uninterrupted power supply in case of power outages or load shedding. This system is designed to automatically switch between the power supply from the main grid provided by MSEDCL and the backup power supply from a DG set, ensuring continuous power availability for critical operations and equipment.

In this short note, we will explore the key aspects of the auto changeover system from MSEDCL to raw power or DG power, including its purpose, functionality, and benefits. We will also highlight the significance of such a system in various industries and sectors where uninterrupted power supply is essential for smooth operations and productivity.

PROBLEM DEFINITION:

MSEDCL/Raw Power to DG Power Auto Changeover System

The problem at hand involves the need for an automatic changeover system between the power supply from Maharashtra State Electricity Distribution Company Limited (MSEDCL) and a diesel generator (DG) power source. This system aims to address the challenges associated with power supply disruptions or outages, particularly in areas where MSEDCL power supply is unreliable, and a backup DG power source is utilized.

Two sources are involved in this problem:

1. MSEDCL Power Supply: MSEDCL is the primary power supply source for a given location. However, it may face interruptions due to various reasons such as load shedding, maintenance, equipment failure, or natural disasters, resulting in power outages that can disrupt normal operations and cause inconvenience to the end-users.
2. DG Power Supply: A DG set is used as a backup power source to provide electricity during MSEDCL power supply failures. DG sets run on diesel fuel and are capable of generating electricity independently, but they require manual intervention to start, stop, and switch between MSEDCL and DG power sources.

The problem is that the manual process of switching between MSEDCL and DG power sources can be cumbersome, time-consuming, and prone to human error. It may also result in delays in power restoration, increased downtime, and inconvenience to the end-users. Therefore, there is a need for an automatic changeover system that can seamlessly and efficiently switch between MSEDCL and DG power sources based on their availability and priority, without any manual intervention.

The proposed solution for this problem is an automatic changeover system that can monitor the availability and quality of power from MSEDCL and DG sources, and automatically switch between them based on predefined

criteria such as voltage, frequency, and load demand. This system may also include features such as alarms, alerts, and data logging to provide real-time monitoring and reporting of power source status and performance. In conclusion, the problem of MSEDCL/Raw Power to DG Power auto changeover system involves the need for an efficient and reliable system to automatically switch between MSEDCL and DG power sources, mitigating the challenges associated with power outages and ensuring uninterrupted power supply to critical loads. Such a system can enhance the reliability and resilience of power supply in areas where MSEDCL power is unreliable, and DG sets are used as backup power sources.

METHODOLOGY

4.1 Block Diagram:

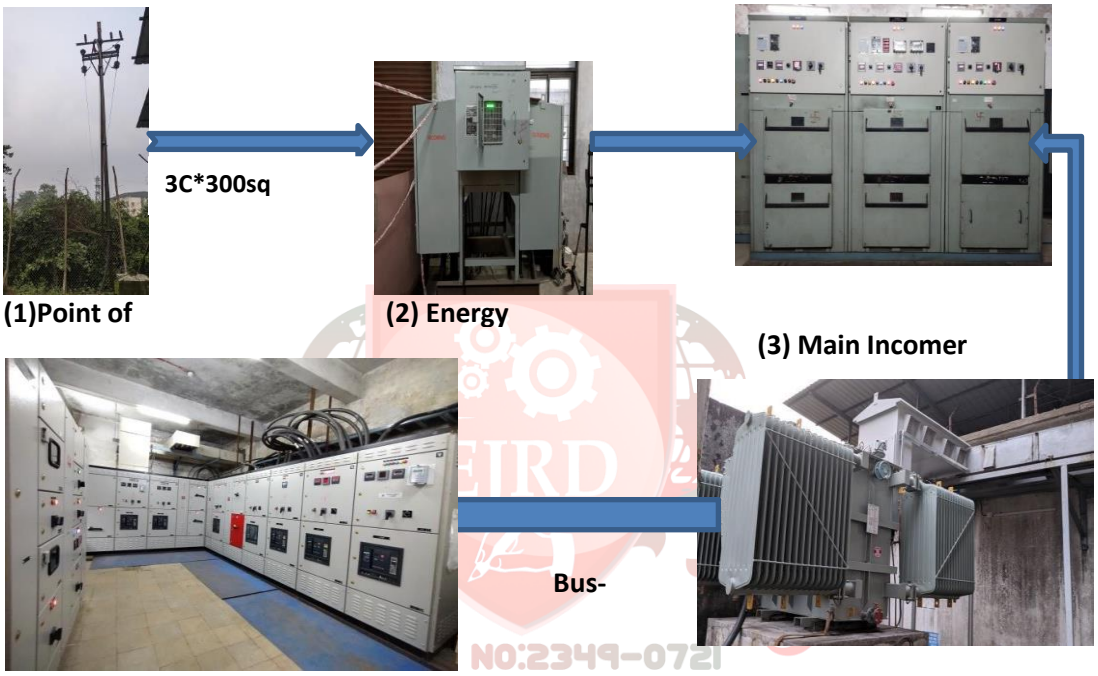


Fig.4.1.- Power Transmission In INNOVASSYNTH TECHNOLOGY (i). L.T.D.

This figure shows the power supply configuration. In first Picture shows the Point of supply that is 22kv incoming from MSDCL. Then 3core*300sqmm cross link polyethylene cable laid MSDCL energy meter this meter shows the consumption of Electricity and helps to decide tariff rate.

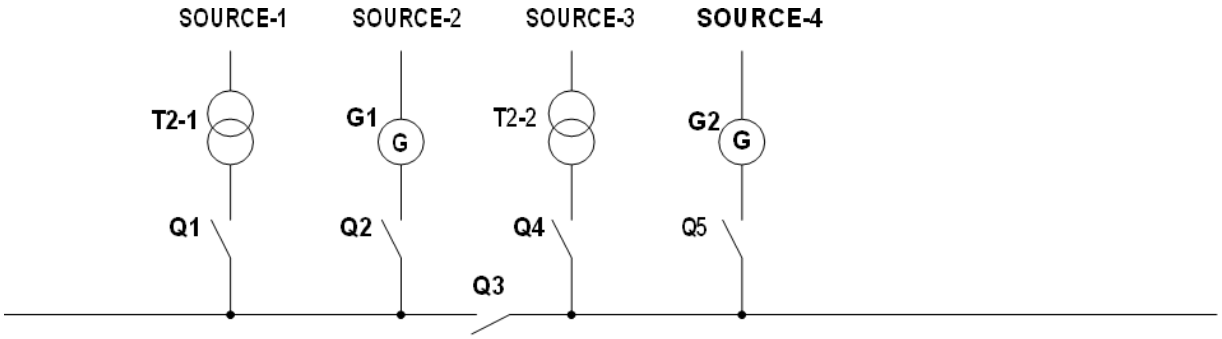
In third picture shows the main HT Circuit breaker (sf6) that breaking capacity is 26kv by using pressurized sf6 gas. This breaker implemented in HT room at 1992. The first one is Main Breaker that transfer supply to second and third breaker

The 3coare*300sqmm XLPE Cable laid from Circuit breaker to transformer. This transformeris step-down type that converted 22kv to 440v. That 440volt goes through bus-bars in bus-duct at power House

In the Power house Total 7Nos New Air Circuit Breakers has implemented. This Breakers are "Electrically operated Draw-Out type" that EDO/EF breakers they are charged with the help of in build motor and closing coil (the manual charging option is also present). Hence, EDO breakers are ready to operate within a few seconds of their opening.

RESULTS

Fig-6.1.- .Truth table of expected outcomes



TRUTH TABLE

SR. NO.	Q1 I/C-1	Q2 I/C-2	Q3 B/C-1	Q4 I/C-3	Q5 I/C-4
1	I	O	I	O	O
2	O	I	I	O	O
3	O	O	I	I	O
4	O	O	I	O	I
5	I	O	O	I	O
6	O	I	O	O	I
7	I	O	O	O	I
8	O	I	O	I	O

I : CLOSED
O : OPEN

The above figure shows Four Different types of sources:Source-1 = Transformer-1; Q1= Circuit Breaker Of Transformer-1 Source-2 = Diesel Generator-1; Q2= Circuit Breaker Of Generator-1 Source-3 = Transformer-2;Q4= Circuit Breaker Of Transformer-2 Source-4 = Diesel Generator-2; Q5= Circuit Breaker Of Generator-2 ; Q3= Circuit Breaker of Bus-Coupler

CONCLUSION

An auto changeover system can be a useful solution for ensuring uninterrupted power supply in situations where there are frequent power outages or fluctuations. This system allows for the automatic switching of powersources, such as from the main power supply to a backup generator, without any human intervention. This can help avoid any downtime or loss of productivity due to power interruptions.

Implementing an auto changeover system requires careful planning and design to ensure that it functions properly and safely. It may also require ongoing maintenance and monitoring to ensure that it continues to operate effectively over time.

Overall, the success of the MSEDCL/Raw Power to DG Power Auto Changeover System project will depend on the specific implementation details, as well as the needs and requirements of the organization or facility that will be using it. Proper planning, design, implementation, and maintenance will be critical to ensuring a successful and reliable system.

REFRENCES

[1] MSEDCL (Maharashtra State Electricity Distribution Company Limited) Auto Changeover System:

[2] "Design and Implementation of Auto Changeover System for MSEDCL 33/11 kV Substation Using

Programmable Logic Controller (PLC)" by A. R. Khan, V. B. Borghare, and P. M. Patil. International Journal of Emerging Technology and Advanced Engineering, Volume 3, Issue 11, November 2013. https://www.ijetae.com/files/Volume3Issue11/IJETAE_1113_75.pdf

[3] Raw Power to DG Power Auto Changeover System:

[4] "Design and Implementation of Automatic Power Changeover (APC) System for Raw Power to DG Power in Rural Areas" by R. S. Bagul, S. S. Kadam, and S. S. Kulkarni. International Journal of Research in Advent Technology, Volume 3, Issue 8, August 2015.

[5] http://www.ijrat.org/downloads/august-2015/IJRAT3AV3I8009.pdf