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**ACTIVE ISLANDING DETECTION TECHNIQUE FOR PV-VSC-BASED SYSTEM
WITH PCC VOLTAGE HARMONIC PROFILE INJECTION-BASED HYBRID
GRID SYSTEM**

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ABSTRACT

Optimal selection and sizing of Distributed Energy Resources (DER) is an important research problem for the Advancement of distributed power systems. Integrated micro grid is an innovative architecture in distributed power systems, in which several micro grids are interconnected with each other for superior control and management of the distributed power systems[1]. Right coordination among DER in micro grids, and proper harmony among the micro grids and the main distribution grid are critical challenges. Types of DER and capacities of them are needed to optimize such that proposed integrated micro grid provides reliable supply of energy at cheap cost. In this research, the problem is formulated as a nonlinear mixed-integer minimization problem which minimizes capital and annual operational cost of DER subject to a variety of system and unit constraints. Evolutionary strategy was developed for solving the minimization problem by using matlab model

KEYWORDS: Photovoltaic systems (PV), voltage source converter (VSC), maximum power point tracking (MPPT)

I. INTRODUCTION

Achieving an islanding protection scheme with rapid detection And DER disconnection from local network is drawing Considerable research attention in present literature. Passive methods are based on multiple points of common coupling (PCC) parameter based decision techniques where there is no considerable impact in power quality rate of change of PCC voltage harmonic profile is used For grid instability by injecting it to the control dynamics of The voltage source converter (VSC) system. With the help of mppt technic it is very advantages to track maximum energy and pass to the PV system. the vsc also plays and very important as with the help of vcc it is easy to convert the energy and remove the harmonics in the system.

II. MATERIALS AND METHODS

PV System Modeling :

Photovoltaic power generation has been receiving considerable attention as one of the most promising energy generation alternatives. It can hold the world electricity consumptions. Photovoltaic (PV) industry has been continuously growing at a rapid pace over the recent years. Irradiation effect Photovoltaic output power is affected by incident irradiation. PV module short circuit current (I_{sc}) is linearly proportional to the irradiation, while open circuit voltage (V_{oc}) increases exponentially to the maximum value with increasing the incident irradiation, and it varies slightly with the light intensity In this model we consider a current source (I) along with a diode and series resistance (R_s). The shunt resistance (R_{SH}) in parallel is very high, has a negligible effect and can be neglected[1]. The output current from the photovoltaic array is $I = I_{sc} - I_d$ (2.1) $I_d = (eqV_d/kT - 1)$ (2.2) Where I_0 is the reverse saturation current of the diode, q is the electron charge, V_d is the voltage across the diode, k is Boltzmann constant ($1.38 * 10^{-19}$ J/K) and T is the junction temperature in Kelvin (K)[1].

Voltage Source Converter (VSC) :

There are three basic types of dc-dc converter circuits, termed as buck, boost and buck-boost. In all of these circuits, a power device is used as a switch. This device earlier used was a thyristor, which is turned on by a pulse fed at its gate. These converters are now being used for applications, one of the most important being Switched Mode Power Supply (SMPS). Similarly, when application requires high voltage, Insulated Gate Bi-

polar Transistors (IGBT) are preferred over BJTs, as the turn-on and turn-off times of IGBTs are lower than those of power transistors(BJT),thus the frequency can be increased in the converters

Maximum Power Point Tracking (MPPT):

A typical solar panel converts only 30 to 40 percent of the incident solar irradiation into electrical energy. Maximum power point tracking technique is used to improve the efficiency of the solar panel[2]. There are different techniques used to track the maximum power point. Few of the most popular techniques are: 1) Perturb and observe (hill climbing method) 2) Incremental Conductance method 3) Fractional short circuit current 4) Fractional open circuit voltage. BUTbut the technic we used in our proposed system is Perturb & Observe (P&O) is the simplest method. In this we use only one sensor, that is the voltage sensor, to sense the PV array voltage and so the cost of implementation is less and hence easy to implement. The time complexity of this algorithm is very less but on reaching very close to the MPP it doesn't stop at the MPP and keeps on perturbing on both the directions.

Figure:

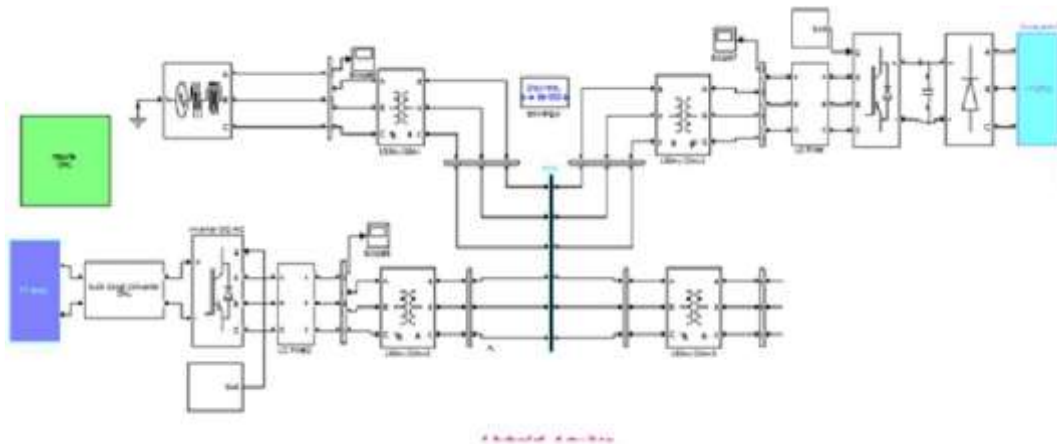


Fig 1.1 MATLAB model of praposed system

HYBRIDE SYSTEM

As per shon in above fig it is clearly seen that in this system we had used the term as VSC system and MPPT system as describe above . With the help of this tow system it is very efficient and reliable sytem the harmonic value is reduce a lot as compare to main grid . It is easy to give continue supply and maintain the system as active islanding

III. RESULTS AND DISCUSSION

Resulsta and Harmonic distortion In individual

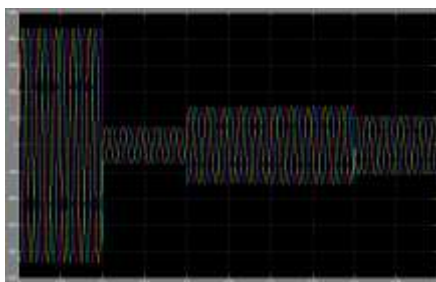


Fig 1.2 Grid Side Voltages

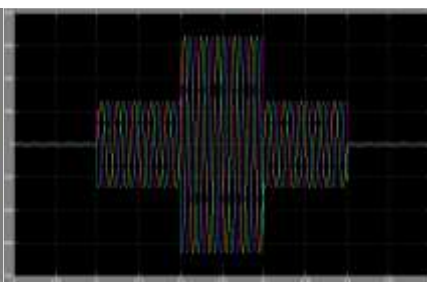


Fig 1.3 pv system voltage

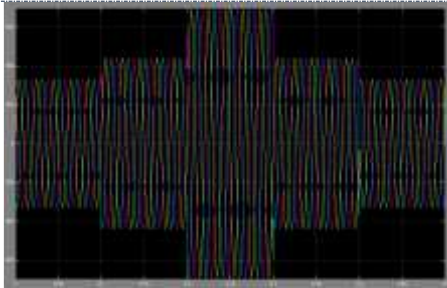


Fig 1.4 wind system voltage

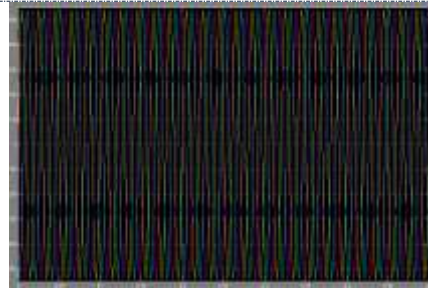


Fig 1.5 balance voltage

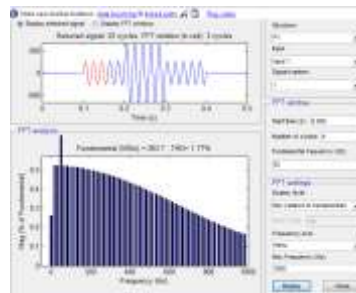


Fig 1.4 wind system voltage

IV. CONCLUSION

According to above results the Rate of change of PCC voltage harmonic profile Injection-Based Hybrid Active Islanding Detection Technique for PV-VSC-Based Microgrid System is most preferable in the HVDC/EHVAC... as per the proposed method the load sided balanced condition is satisfied and the THD from the load side is followed as below. As per all above results and simulation it is clearly seen that as per the existing system its is more convent our proposed system . here in our system we are getting harmonic resultant below 13 percent and as for future scope we are getting the system more reliable then pv system. Our pv system is getting just 1.7 percent of harmonic.

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