ANALYSIS OF DUAL INPUT Z-SOURCE MATRIX CONVERTER

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Series Z-Source community, Connecting in helping vast o preferred concept of Z-supply dc hyperlink, changed into initially projected for boosting the output voltage of strength digital inverters. Throughout this paper, that idea is prolonged on a three-section oblique matrix converter. The converter relies upon at the ultra-sparse matrix topology characterized via way of means of the minimal vary of semiconductor switches. The collection Z-supply community is positioned among the three-transfer enter rectifier level and moreover the six-transfer output electric converter level, in both the wonderful or terrible rail. A short shoot-via nation produces the voltage raise. Associate in Nursing optimum pulse breadth modulation approach is advanced for better boosting capability of the converter and decrease of transfer losses. An evaluation is made among the matrix converters mistreatment collection and standard cascade Zsource networks. The inpouring modern-day and Z-supply capacitor's voltage are decreased in the collection Z-supply matrix converter.

***Index Terms*— AC-AC Converters, Matrix Converter, Z-Source, Converter.*)**

I. INTRODUCTION:

A new converter topology for grid connected Hybrid Renewable Energy System (HRES). A topology named Dual Input Z-source Indirect Matrix Converter (DIZIMC) consists of an Ultra Sparse Z-source Matrix Converter (USZMC) interfacing PV and Wind Turbine (WT) to the grid. The DC link of the proposed converter is replaced by Interconnection Sources System (ISS). The ISS operates according to whether the sources produce energy or not. It allows connecting the sources individually or simultaneously and even isolates them if necessary. The DIZIMC provides several advantages such as reduced number of IGBTs and compact size inherited from USZMC, the use of Z-sources instead of conventional DC/DC converters keep the matrix configuration of the global structure. The global model of the proposed system was tested by simulation under Mat lab environment. The obtained results show clearly freedom in connecting the operational sources, also a better quality of energy injected to the grid. Since the apparition of matrix converters, numerous published papers were increasingly carried, which substantiates their importance and their benefits that provide. Their integration in renewable energies systems provides interesting advantages. The elimination of the DC link capacitor for energy storage offers a small structure and improves reliability The perpetual demand for energy is tremendously increased to meet the daily needs of the human being. Nevertheless, the conventional resources used are exhaustible and impact negatively on the environment ecosystem, known as global warming which threats all forms of life on the planet. In this sense, the world converges towards the use of renewable energies which are not only available and inexhaustible but also inhibit the emitting of CO2 gas. However, these non-conventional resources are naturally intermittent depending on diverseness of climatic conditions, so that, these sources were emerged under a Hybrid Renewable Energy System (HRES).

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II. Literature Survey:

This work provides a list of references to find the mapped papers, thus paving the way for enhancing the efficiency, reliability, and robustness of such systems This BSU plays also an interesting role to store the surplus of energy when the maximum power level of the WECS converter is reached in case of wind and/or irradiation abundance[1] The implementation of the proposed system is carried out under the mat lab / Simulink environment, the results obtained validate the effectiveness of the technique and its feasibility in simulation and even in the case of practical implementation in real time[2] The proposed control strategy has been experimentally implemented and practical results are presented to show the effectiveness of the proposed hybrid system. The effectiveness of the proposed optimal design using the improvised MOPSO algorithm is established in comparison with Improved Hybrid Optimization by Genetic Algorithm (i-HOGA) results. The obtained results show that the IMC provides high performance in torque and flux at different conditions and while minimization the Total Harmonic Distortion (THD) in the input current compared by the conventional DMC. Since the apparition of matrix converters, numerous published papers were increasingly carried [8], which substantiates their importance and their benefits that provide. Their integration in renewable energies systems provides interesting advantages. The elimination of the DClink capacitor for energy storage offers a small structure and improves reliability [10]. The authors [11] have proposed an application of direct matrix converter in a wind turbine associated with a flywheel energy storage system. A three level sparse topology has been used in wind generation in [12], derived from the indirect matrix converter with a reduced number of switches.

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III. Proposed System:

The AC and DC sources consist of wind generator based on a permanent magnet synchronous generator (PMSG) and PV generator respectively. The model of generator used is given while that of PV generator is that given in DIZIMC for med with ultra-sparse rectifier stage which converts the AC voltage source to DC voltage. To balance the resulting DC voltage and that of PV generator, two Z-sources are inserted. In order to connect these two DC voltage sources simultaneously or individually to the

two-level inverter stage, an ISS based on power switches is added to DC link voltage. An LCL filter is inserted between the grid and the two-level inverter stage.

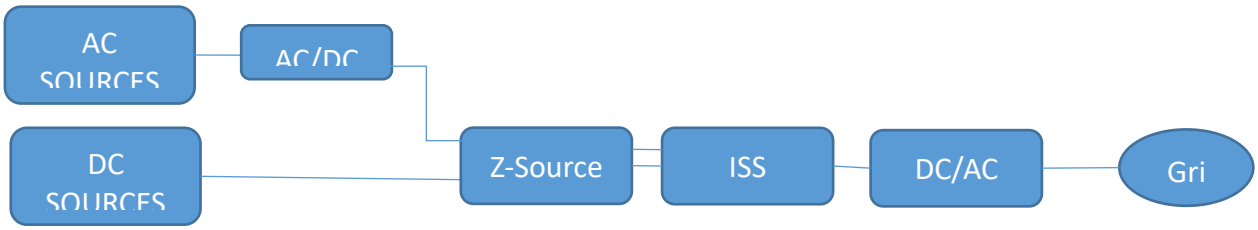

Figure 1 Dual Input Z source Indirect Matrix Converter

Wind turbine generation system based on the Z-source inverter with maximum boost control. The proposed system can boost and generate the desired output voltage efficiently when the low voltage of the generator is introduced according to the low wind speed. Moreover, when the wind speed is high, providing higher voltage, the system can also work like the traditional inverter without the boost condition. The proposed system has high performance, minimal component count, increased efficiency and reduced cost. These outstanding performance attributes make the proposed system suitable for the wind turbine distributed generation systems connected with DC-micro grid through an AC/DC converter and DC/DC converter type boost converter to feed a load. Wind turbine model has been utilized for generation a 10 KW, and the MPPT technique has been utilized here for more efficiency. The modelling and the simulation of WECS under mat lab environment has been effectuated and the result are obtained. Z-source Converter/Inverter the Z-source converter employs a unique impedance circuit to couple the converter main circuit to the power source, thus providing unique features that cannot be obtained in the traditional voltage source and current-source converters where a capacitor and inductor are used, respectively.

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IV. Conclusion:

The Z-source converter overcomes the conceptual and theoretical barriers and limitations of the traditional voltage-source converter and current-source converter and provides a novel power. Shows the general Z-source converter structure. It employs an impedance circuit to couple the converter main circuit to the power source, load, or another converter, for providing unique features.

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