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CERTIFICATE

The Solar PV SINUSOIDAL PUMP CONTROLLER WITH MPPT (SPCM) designed and manufactured by M/s KISAN SOLAR of Ahmedabad has been tested thoroughly by GERMI at the Solar Research and Development Centre, Pandit Deendayal Petroleum University, Gandhinagar.

The SPCM is a 3rd generation advanced solar water pump controller technology that results into substantially higher water discharge, up to 60% higher in some cases, over 2nd generation Variable Frequency Drive (VFD) technology. This relative water discharge increases with increasing heads, and is up to 60% higher at a head of 20 m.

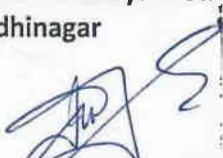
The substantially higher water discharge of the SPCM over VFD is explained by the difference in their MPPT efficiencies. MPPT efficiency of the SPCM is nearly ideal at 99.5% and above at all water heads tested. This can be compared with typical MPPT efficiencies of conventionally available VFD-based systems, which were recorded at around 70% at higher radiations during the major part of the day. [Note that while many VFD-based solar water pumping systems indicate >99% MPPT efficiency, this efficiency may decrease at higher radiations resulting into lower water discharge.]

The output power quality of SPCM is pure sine wave with Total Harmonic Distortion (THD) less than 2.5% and no effective voltage spikes or ringing was observed, which ensures high pump reliability. In contrast, the output power quality of VFD measured higher percentage of THD and voltage spikes, which is detrimental to the life of motor/ pump set.

SPCM technology is equipped with SD card based Data Logger and GSM based Remote Monitoring and Control. Data Logger provides data base to ascertain total energy generation and utilization per day. The SD card in SPCM has enough memory to store data for more than six years. Remote Monitoring feature allows the administrator to ascertain daily water output, energy utilization as well as Up/ Down time of the solar pumping system.

GERMI highly recommends the KISAN SOLAR SPCM owing to its high performance standards, safety and (power) quality standards, and above all, the indigenous development and manufacturing in India.

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Pandit Deendayal Petroleum University,
Gandhinagar**


Prof. Indrajit Mukhopadhyay
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**For Gujarat Energy Research and Management
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