

(54) Title of the invention : SINUSOIDAL PUMP CONTROLLER WITH A MAXIMUM POWER POINT TRACKER (MPPT) FOR EFFICIENT WATER PUMPING.

(51) International classification	:H02J 3/00 H02M 3/00	(71)Name of Applicant : <b>1)KINETICA SOLAR PRIVATE LIMITED</b> Address of Applicant :A/2, ATULYA BHAVAN, NEAR CERC, S-G HIGHWAY, THALTEJ, AHMEDABAD-380 054, GUJARAT, INDIA. Gujarat India
(31) Priority Document No	:NA	(72)Name of Inventor :
(32) Priority Date	:NA	<b>1)BHATT, APOORVA</b>
(33) Name of priority country	:NA	<b>2)SHETH, NIMESH</b>
(86) International Application No	:NA	<b>3)WANDHARE RUPESH</b>
Filing Date	:NA	<b>4)JOTWANI, NARESH</b>
(87) International Publication No	: NA	
(61) Patent of Addition to Application Number	:NA	
Filing Date	:NA	
(62) Divisional to Application Number	:NA	
Filing Date	:NA	

## (57) Abstract :

Disclosed is a sinusoidal pump controller with MPPT (SPCM) integrated with a solar PV power conditioning unit of a motor-pump set for efficient water pumping. The sinusoidal pump controller includes a two-stage power converter topology. An adaptive control strategy for two-stage power converter topology is based on five-states and three control loops. The motor-pump set for solar water pumping is allowed to smoothly accelerate from standstill state and reach MPPT control. During the standstill state, it operates with the inner inductor current control loop, outer PV voltage loop control, and outermost MPPT control loop. In DC link voltage control state, the motor pump-set operates without MPPT during the conditions of no-load, under-load and high PV power input. In this state, the present SPCM operates with inner current control loop and outer DC link voltage control loop.

No. of Pages : 45 No. of Claims : 14