Liquid Sun is a collaboration between MAC3and Fototherm, two innovative Italian companies. Thirty years experience of MAC3in the plumbing industry supported by the strong FOTOTHERM experience in the renewable energy sector.
We can achieve the best solution in using renewable energy of the sun into liquid movement.
Our slogan is "Sun become water" from which the name LiquidSun derives. Our technological solutions enable us to transfer all the solar energy directly into liquid movement.

Inverters (VFD) pumping systems using Solar Modules

HydroController Solar VFD allows one to drive three phase pumps with asynchronous motor through solar panels. The VFD uses an advanced software that guarantees the maximum water flow rate depending on solar energy available.

HydroController SOLAR

Solar Hydro controller

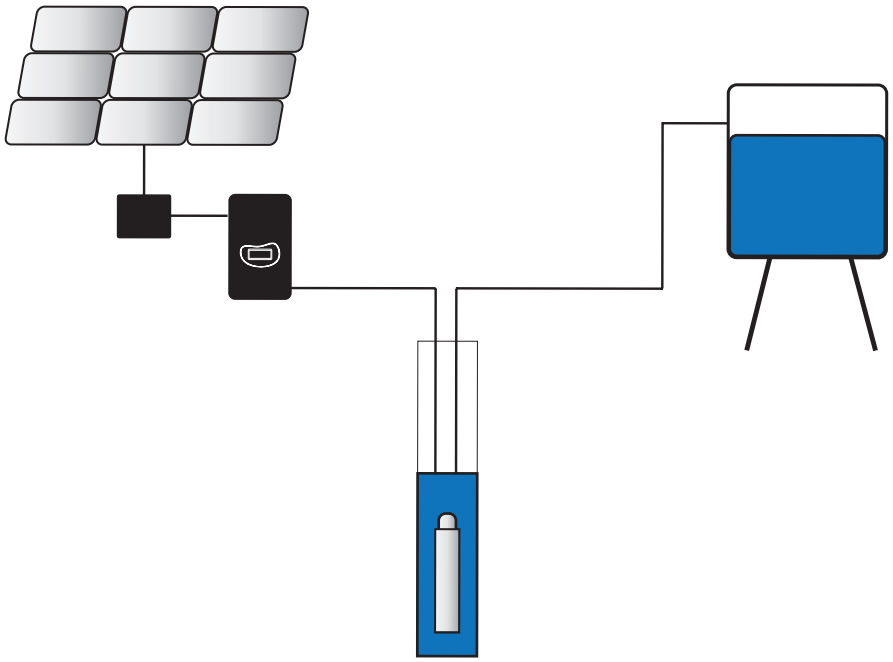
Application: Irrigation system with submersible borehole pumps through the use of renewable energy.
Advantages: Particular attention is given to the design of the inverter in order to maximize the transfer of solar energy into the production of water. Extremely easy to install and a user-friendly interface.
Benefits: Possibility to drive traditional three-phase pumps with an asynchronous motor through the use of solar modules.

Cooling	AIR
Mounting position	vertical
Display	LCD 2x16
Protection rating	IP65
T operating	40°C
Output Frequency	0-100hz
Electrical Safety	EN60730
Electromagnetic Compatibility	EN61000
Protection	Dry Running. Low/High Power supply, Short-circuit, Over-current, Over Heating, Insufficient Pressure, Pressure Sensor malfunction , Water hammer
Dimensions	HCW 35x19x17cm HCA (3-5.5hp) 35x24x17cm HCA (7.5-12hp) 39x25x19cm
Weight	HCW 2,5kg (4kg mod TT) HCA 5,6Kg (8kg mod TT 7,5-12Hp)

A wide range of models suitable for all submersible borehole pumps

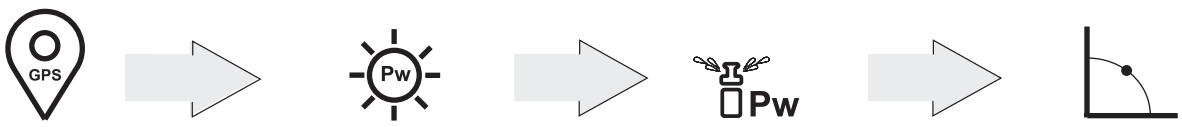
MAC3has 10 years of experience in the production of inverters/VFD for pump controllers. Using the models in production we can drive pumps through solar energy.
The heart of the solution is found in the firmware: in addition to the MPPT, algorithms have been developed to optimize the transferal of energy towards the production of water. These wide range of models are composed of Hydrocontroller HCA mounted on walls, cooled by air, for three-phase pumps 230V/380V app to 11Kw (25A)

	HCA TT06	HCA TT11	HCA TT15	HCA TT18	HCA TT25
Vout (VAC)	3x230 - 3x400	3x230 - 3x400	3x230 - 3x400	3x230 - 3x400	3x230 - 3x400
Current	6	11	15	18	25
Vin (VDC)	min 250 - Max800	min 250 - Max800	min 250 - Max800	min 250 - Max800	min 250 - Max800



System Sizing

Thanks to a sophisticated program of computer software and keeping in mind the special demands of the irrigation system, it is possible to identify the best kind of installation and minimize the initial economical investment.



Identify the geographical area of the system

From that GPS position, calculate the amount of solar energy available

Hydraulic needs: depth of well, water demand

Sizing of the pump and calculation of the amount of solar modules necessary