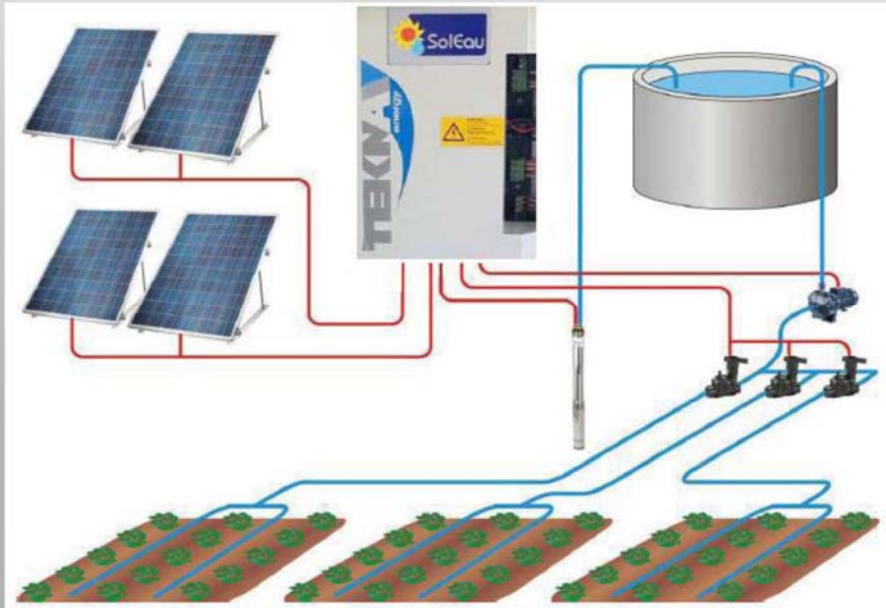




**IRRIGATION SYSTEMS
WITH PHOTOVOLTAIC PANELS**



enterprise specialized in the design and construction of integrated systems for
the production of electricity from renewable sources

IRRIGATION SYSTEM WITH PHOTOVOLTAIC PANELS

The irrigation of rural areas where there is no electricity network is now performed using pumping systems that use diesel or natural gas for the production of the electricity necessary to drive the electric pumps, with a great deal of money and dangerousness for fuel use in rural areas. Photovoltaic panels use to produce energy, from inexhaustible and free solar energy, is now possible thanks to the technology that allows us to convert sun energy into electricity. The produced energy is directly used for water pumping, from the early morning hours to sunset.

Soleau inverter, specifically designed for solar pumping, provides for the automatic management of the entire irrigation process, from water extraction from the river or from the well, to submerged or emerged at different flow rates pump driving, up to mobile sprinkler driving, ensuring the required pressure for its correct work.

To allow the irrigation of remote rural areas where it is not possible to install fixed plants, photovoltaic panels can be mounted on a towable mobile cart board



PHOTOVOLTAIC PANELS CART

For energy production we have used some photovoltaic panels installed on a towed cart board.

The use of a cart allows us to easily move the photovoltaic field next to the agricultural area to be irrigated

Technical features

length	6 meters
width	2.1 meters
weight	1500 kg
photovoltaic installed panels	12 max
Maximum installed power	3.6 kWp



SOLEAU INVERTER AND PUMP

Soleau inverter, specially designed for energy production in rural areas where the electricity network is not available, provides for the conversion of electrical energy coming from photovoltaic panels into electrical energy suitable for irrigation pumps driving. Photovoltaic plant and inverter dimensioning is closely related to the amount of required water



MOBILE SPRINKLERS

To irrigate areas where there isn't a fixed dropwise plant, mobile sprinklers allow to irrigate large areas thanks to their automatic devices that allow tube recovery while they are irrigating, adjustable speed rewind, water automatic shutter at the irrigation end and work at 1.5 bar minimum pressures. These sprinklers allow to irrigate in an one-step areas of width of 40 meters and length of 150 meters. At the end the operator simply has to move the irrigator of 40 meters before starting the irrigation of the next land

PLANT SIZING TABLES

LOADING WATER IN BASIN						
Depth well	Quantity of required water		Time irrigation	Power pump	Power photovoltaic plant	Inverter
	Meter	l/min				
50	140	50	6,5	2,2	3,75	SolEau.10
100	140	50	6,0	7,5	6.75	SolEau.10
150	140	50	6,0	9,2	9.75	SolEau.20
200	140	50	6,0	9,2	14.25	SolEau.20
250	140	50	6,0	11	18.25	SolEau.35
300	140	50	6,0	18,5	23.75	SolEau.35
50	210	100	8,0	5,5	5.25	SolEau.10
100	210	100	8,0	9,2	10.25	SolEau.20
150	200	100	8,0	15	14.75	SolEau.20
200	210	100	7,5	15	22.25	SolEau.35
250	210	100	7,5	18,5	30.25	SolEau.35
300	200	100	8,0	18,5	40.75	SolEau.50
50	320	150	7,5	5,5	8.75	SolEau.10
100	320	150	7,5	13	14.75	SolEau.20
150	320	150	7,5	18,5	21.75	SolEau.35
200	350	150	7,0	37	33.75	SolEau.50
250	350	150	7,0	45	42.75	SolEau.50
50	410	200	8,0	13	10.25	SolEau.20
100	370	200	9,0	13	21.75	SolEau.35
150	400	200	8,0	26	31.25	SolEau.35
200	410	200	8,0	37	43.75	SolEau.50

DROPWISE IRRIGATION FROM WELL						
Depth well	Quantity of required water		Time irrigation	Power pump	Power photovoltaic plant	Inverter
	Metri	l/min				
50	130	50	6,0	4	4.75	SolEau.10
100	130	50	6,0	9.2	7.75	SolEau.10
150	130	50	6,0	11	11.25	SolEau.20
200	160	50	5,5	15	16.75	SolEau.20
250	140	50	6,0	11	20.25	SolEau.35
300	140	50	6,0	18.5	25.75	SolEau.35
50	210	100	8,0	7.5	7.25	SolEau.10
100	200	100	8,0	11	12.25	SolEau.20
150	210	100	8,0	15	18.25	SolEau.35
200	210	100	7,5	15	24.75	SolEau.35
250	200	100	8,0	18.5	33.75	SolEau.50
50	320	150	7,5	9.2	10.25	SolEau.20
100	320	150	7,5	15	17.75	SolEau.20
150	320	150	7,5	18,5	26.25	SolEau.35
200	350	150	7,0	37	36.75	SolEau.50
50	410	200	8,0	18.5	14.25	SolEau.20
100	380	200	8,5	26	26.25	SolEau.35
150	380	200	8,5	37	37.25	SolEau.50

IRRIGATION WITH MOBILE SPRINKLERS

Length of the tube	Tube	Mouthpiece	Pressure		Flow rate	Range	Band Width		Speed					Pump Power	Photovoltaic Plant Power	Irrigation Time	Inverter	Cart Size	
			Stain	Sprinkler			Calm air	Advised	15	20	25	30	40						
									Winding Hours Length										
m	Ø mm	mm	bar	bar	l/min	mc/h	m	m	m	mm/H2O	kW	kWp	hour						
130	40 1"1/4	10	2,9	1,5	76	4,56	17	34	28,9	10,5	7,9	6,3	5,3	3,9	1.5	3,6	6,0	SolEau.10	7x2.1
170	50 1"1/3	10	3,0	2	88	5,28	18	34	30,6	11,5	8,6	6,9	5,8	4,3	3,0	4,8	6,5	SolEau.10	7x2.1

The data in the tables are indicative because closely relative to the place of installation, the time of the year and to the technical characteristics of the used pumps, equal to the same installed power.



SP 115 Km 1,200
71122 Foggia (FG)
Italy
Tel. +39 0881 750549
Fax +39 0881 750552
www.teknaenergy.net
teknaenergy@teknaenergy.net

Tekna Energy operates in the renewable energy sector, supplying PRODUCTS, functions and services for the production of electricity and energy saving. The experience in the field, allows Tekna Energy to be the ideal partner to transform homes, factories and farms in electrical energy production plant using inexhaustible and renewable nature sources as solar, wind and biomass.



SP 115 Km 1,200
71122 Foggia (FG)
Italy
Tel. +39 0881 750570
Fax +39 0881 750552
www.teknautomazione.com
tekna@teknautomazione.com

TEKNA Automazione e Controllo srl operates in the electronics and industrial automation field supplying products, systems and services for the automation and control of the production lines, extrusion lines and equipment for digital and analog in automation and control.

The application experiences acquired in automation and supervision process, in the variable speed systems for direct current and alternating motors, in the use of programmable logic controllers and automation and supervision systems software development allow TEKNA Automazione e Controllo to design, produce and install complete systems for machines and production lines automation