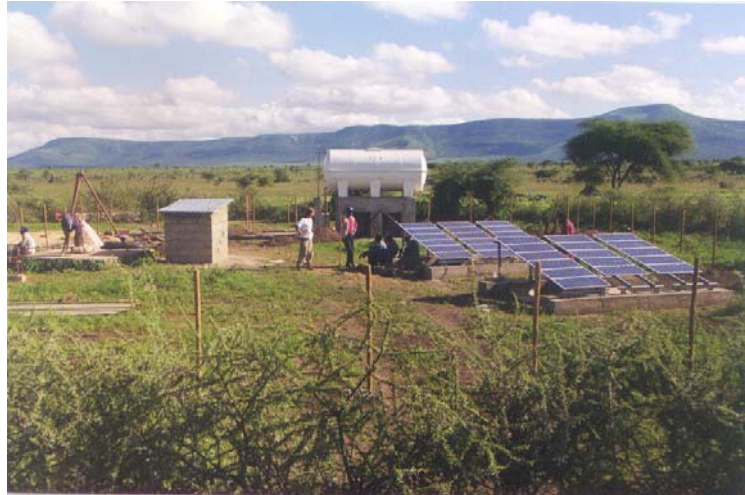


“SWP2K” SERIES: PHOTOVOLTAIC KITS FOR WATER PUMPING

The use of pumps supplied directly through photovoltaic systems properly studied and dimensioned has begun to spread widely both in the developing countries and in some parts of Southern Europe.

To face the continuous requests, ENERECO srl has developed a second series of pumping KITS called SWP2K, with different performances, with which we can satisfy the most particular requests.



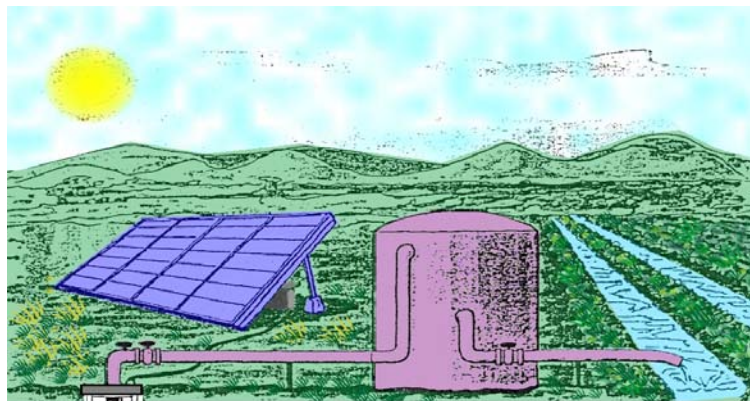
SWP2K SERIES KITS

SWP2K Series uses centrifugal submersible pumps of multistage type compared to SWP200 Series, which uses pumps with helicoidal impeller. SWP2K pumps are spread all over the world, in the developing countries too (Africa, India, ext.) They have a very low maintenance and they are easy to find in case of substitution.

In this series too the pump is supplied directly by the photovoltaic array (without batteries) thanks to the use of MPPT converters properly studied and realised, of different powers according to the pump motor.



Multistage submersible pumps



COMPOSITION OF SWP2K SERIES KIT

As the drawing shows, the pumping kit type SWP2K is very simple and composed by few units, easy to be installed:

- Photovoltaic array: placed on ground structures fixed on cement plinths. The tilt and azimuth of the photovoltaic array depend on the latitude of the installation site;
- Junction box: for connecting the pv rows in parallel, it is generally fixed to the pv modules supporting structure.
- Inverter: it is fixed behind the pv modules supporting structures to grant the shading and therefore the cooling during the functioning;
- Submersible pump: of a diameter proper to the well (generally 4 or 6 inches);
- Storage tank: of dimensions proper to the quantity of water per day to be pumped;
- Accessories kit: cables for pv modules/inverter/pump, brackets, steel rope for the suspension of the pump, ext.

DATA OF THE PUMPING SYSTEM					HOURLY FLOW RATE OF THE PUMP: m ³ /h																								
SYSTEM	PV - kWp	Inverter	Pump - kW	Pipe fittings**	0,15	0,3	0,6	0,9	1,2	1,5	1,8	2,1	2,4	2,7	3	3,5	4,2	4,8	5,4	6	6,3	7,2	8,4	9,6	10,8	12	15	18	21,3
SWP2K/1	0,8	SD2kW	0,37	1 1/4	73	71	65	58	48	36	24																		
SWP2K/2	0,8	SD2kW	0,37	1 1/4		49	47	45	42	38	34	29	23	17	11														
SWP2K/3	0,8	SD2kW	0,37	1 1/4			30	29	29	28	27	27	26	24	23	20	17	13											
SWP2K/4	0,8	SD2kW	0,37	1 1/4				25	25	24	23	22	22	21	20	18	16	13	10	7	4								
SWP2K/5	1	SD2kW	0,55	1 1/4	112	108	99	88	74	56	36																		
SWP2K/6	1	SD2kW	0,55	1 1/4		74	71	67	63	58	51	43	35	26	18														
SWP2K/7	1	SD2kW	0,55	1 1/4			42	41	40	39	38	37	36	34	33	29	24	18											
SWP2K/8	1	SD2kW	0,55	1 1/4				36	36	35	35	34	33	32	31	29	25	20	16	12	8								
SWP2K/9	1	SD2kW	0,55	2					32	31	31	30	30	29	29	27	26	24	22	20	16	15	9						
SWP2K/10	1,5	SD2kW	0,75	1 1/4	151	145	133	118	99	75	49																		
SWP2K/11	1,5	SD2kW	0,75	1 1/4		98	94	90	84	77	68	58	47	35	22														
SWP2K/12	1,5	SD2kW	0,75	1 1/4			59	58	57	55	54	53	51	49	47	41	34	26											
SWP2K/13	1,5	SD2kW	0,75	1 1/4				55	54	53	52	51	50	48	46	42	37	31	22	17	11								
SWP2K/14	1,5	SD2kW	0,75	2					44	43	43	42	42	41	40	38	36	34	32	28	26	21	12						
SWP2K/15	1,5	SD2kW	0,75	2						27	27	27	26	26	26	25	24	24	23	23	21	20	18	17	12	8			
SWP2K/16	2	SD4KW	1,1	1 1/4	233	224	205	183	153	115	75																		
SWP2K/17	2	SD4KW	1,1	1 1/4		147	141	134	126	115	102	86	80	52	33														
SWP2K/18	2	SD4KW	1,1	1 1/4			89	87	86	84	82	80	77	73	70	62	51	39											
SWP2K/19	2	SD4KW	1,1	2					57	56	56	55	54	53	52	49	47	44	40	37	34	28	16						
SWP2K/20	2	SD4KW	1,1	2						40	40	40	39	39	39	38	37	36	35	34	33	31	27	25	18	12			
SWP2K/21	3	SD4KW	1,5	1 1/4		216	207	197	184	169	149	127	103	76	48														
SWP2K/22	3	SD4KW	1,5	1 1/4			119	116	115	112	109	106	102	97	94	82	68	51											
SWP2K/23	3	SD4KW	1,5	1 1/4				103	102	101	99	97	94	91	88	79	69	57	44	30	23								
SWP2K/24	3	SD4KW	1,5	2					83	81	80	79	78	78	75	71	67	63	56	55	53	40	23						
SWP2K/25	3	SD4KW	1,5	2						54	54	54	53	53	52	51	49	48	47	45	44	41	36	34	25	16			
SWP2K/26	3	SD4KW	1,5	2											33	33	32	32	31	31	30	30	29	28	26	24	19	14	8
SWP2K/27	4,5	SD4KW	2,2	1 1/4		294	283	269	251	230	203	173	140	104	66														
SWP2K/28	4,5	SD4KW	2,2	1 1/4			179	174	172	168	164	160	154	145	140	123	102	77											
SWP2K/29	4,5	SD4KW	2,2	1 1/4				158	156	153	150	145	141	136	131	120	107	90	69	45	34								
SWP2K/30	4,5	SD4KW	2,2	2					121	119	117	115	114	112	109	104	99	93	85	77	72	58	34						
SWP2K/31	4,5	SD4KW	2,2	2						81	81	80	79	79	78	76	74	72	70	67	66	61	54	51	37	25			
SWP2K/32	4,5	SD4KW	2,2	2											50	49	49	48	47	47	46	45	43	42	38	36	29	21	13
Daily flow rate in sites with solar radiation = 7kWh/m ² /day and fixed pv modules supporting structure	m ³ /day	1,05	2,1	4,2	6,3	8,4	10,5	12,6	14,7	16,8	18,9	21	24,5	29,4	33,6	37,8	42	44,1	50,4	58,8	67,2	75,6	84	105	126	149,1			
Daily flow rate in sites with solar radiation = 7kWh/m ² /day and pv modules supporting structure with tracker X - Y	m ³ /day	1,365	2,73	5,46	8,19	10,92	13,65	16,38	19,11	21,84	24,57	27,3	31,85	38,22	43,68	49,14	54,6	57,33	65,52	76,44	87,36	98,28	109,2	136,5	163,8	193,8			
Daily flow rate in sites with solar radiation = 4kWh/m ² /day and fixed pv modules supporting structure	m ³ /day	0,6	1,2	2,4	3,6	4,8	6	7,2	8,4	9,6	10,8	12	14	16,8	19,2	21,6	24	25,2	28,8	33,6	38,4	43,2	48	60	72	85,2			
Daily flow rate in sites with solar radiation = 4kWh/m ² /day and pv modules supporting structure with tracker X - Y	m ³ /day	0,78	1,56	3,12	4,68	6,24	7,8	9,36	10,92	12,48	14,04	15,6	18,2	21,84	24,96	28,08	31,2	32,76	37,44	43,68	49,92	56,16	62,4	78	93,6	110,8			