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Technical File

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Eco Solar Pool Heater

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LONDRINA
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Summary

1. Introduction

ECO VIBEA solar heaters were designed to extend the pool season using solar energy for that. **ECO VIBEA** solar collectors are responsible for capturing solar energy and transforming it into thermal energy, transferring this thermal energy to the pool water carrying out heating. The pool solar collector is a product developed 100% in polypropylene with additives that guarantee durability, resistance and total use of a renewable and non-polluting energy source.

This manual contains basic information about solar collectors and their accessories, as well as important installation instructions and tips, according to our standards.

ECO VIBEA 3X1 Collector Image

2. Solar collector

The **ECO VIBEA** pool solar collectors have been developed to heat large volumes of water with maximum savings. The solar collector is manufactured with reliable, efficient products and preserving the environment, either by saving energy or using clean materials and processes that are not aggressive to the environment and people. The solar collector is manufactured with **ECOLOGICAL** raw material and has unique characteristics that are:

- Easy to install due to the use of joint at the ends;
- Resistant to working pressure up to 40 M.C.A (4.0 bar);
- Resistant to weather and chemicals contained in the pool water;
- Nontoxic raw materials;
- Large absorption area;
- No risk of corrosion.

ECO VIBEA solar heating collectors can be installed directly on a mounting surface or on a raised device, and can be installed on the roof or on the floor, also considering changes in inclination angles.

The operation of the collector is simple, through an electronic controller (not supplied by **VIBEA**) the pump system is activated when there is sufficient accumulated thermal energy, once this is done, the heating process starts up to the chosen temperature. After reaching the temperature, the pool will remain the same until there is no more energy to do so.

3. Technical characteristics

		MODEL		
FEATURE	**UNITY**	**ECO VIBEA 2X1**	**ECO VIBEA 3X1**	**ECO VIBEA 4X1**
MATERIAL	-	ECO POLYPROPYLENE		
COLOR	-	BLACK		
LENGTH	mm	2000	3000	4000
WIDTH	mm	945		
HEIGHT	mm	9		
AREA	m^2	1,95	2,80	3,78
TUBE NUMBERS	-	83		
CONNECTOR OUTER DIAMETER	mm	32		
WORKING PRESSURE	M.C.A (bar)	40 {4,0}		
EMPTY WEIGHT	Kg	5,038	6,794	9,380
WEIGHT FULL WITH WATER	Kg	11,788	15,574	20,070

4. Observation points

The panels must be located as close as possible to the pool and its engine room, in order to reduce heat losses and costs with interconnecting pipes.

Inclined collectors produce more energy during periods of mild temperatures, in addition to promoting the flow of water inside.

The installation must be done avoiding shaded areas. Observe if the installation site of the collectors supports the dimensioned quantity and the weight of these collectors filled with water. Leave enough space for the maintenance of the collectors.

4.1. Inclination angle

Ideally, the angle of inclination varies from the latitude of the place to latitude + 15 degrees, in most cases, in Brazil, 17 degrees is enough.

The direction of the collectors should be towards the geographical north. In case it is not possible, there will be a need to make a correction in the calculation of their quantity.

Up to 15º deviation to the east or west there is no need for correction. Otherwise, use the guidelines, as shown in the table below:

VARIATION IN RELATION TO THE GEOGRAPHIC NORTH (EAST OR WEST)	NECESSARY CORRECTION (%)
Up to 15º	0
Up to 16º to 20º	5
Up to 21º to 25º	10
Up to 26º to 30º	15
Up to 31º to 35º	20

5. Dimensioning Plates Quantity

For correct dimensioning of the required number of plates, the recommended temperature must be taken into account for each type of pool use, according to the temperatures recommended in the table below.

PLATE SIZING	
POOL	**TEMPERATURE**
Residences, clubs and gyms	28º a 32º
Training and competition venues	28º
Physiotherapy clinics	32º a 34º

For vinyl pools, check with the vinyl manufacturer for the ideal temperature.

The following table indicates the recommended multiplication factor for calculating the collector area required for the pool to be heated to the same temperature in hot and cold climates.

TEMPERATURE	HOT CLIMATE	COLD CLIMATE
28º to 32º	1,0	1,2
30º to 34º	1,2	1,5

Example: For a pool 6.00 m X 3.00 m = 18 m² of water depth. In hot climates, 6 ECO VIBEA 3x1 plates or 9 ECO VIBEA plates are installed.

Important points!

Always consider in case of swimming pools of gyms / physiotherapy clinics or even clubs, you should use an auxiliary heater. Always consult the factory in situations of large pools so that it can assist in a more adequate dimensioning.

6. Sizing of the Pump

Knowing the size of your pool in square meters (m²) it is possible to dimension the motor pump and the hydraulic network pipe to be used.

Disclaimer:

Use an independent motor pump to install your solar collector.

To carry out the sizing of the motor pump and the proper piping for installation, it must be taken into account that the collector needs to have an excellent functioning, for this it is necessary to have a flow of 250 liters of water per m² of solar collector per hour, that is, , an example is an 18 m² swimming pool, 4,500 liters of water are needed per hour considering that the collector is fixed on the roof, with these data pass your motor pump supplier the data below so that it analyzes the ideal pump and your pipe.

Tips!

- Keep the distance from the machine room to the roof where the solar collector will be.
- Have the height of the roof in relation to the engine room.

- Always consider the correct piping to be installed for each system, as shown in the table below.

DI METRO (MM)	FLOW (M^3 X HORA)
32	5,8
40	9,0
50	14,4
60	17,3

7. Equipment Installation and Fixation

The **ECO VIBEA** collector has a great advantage, which is to have a plate approximately 1 meter wide and not have the need to use o-rings and locks, since the collector was designed with joints in all its inputs and outputs, thus facilitating and optimizing their assembly time.

Make sure the roof is facing north so that the collectors receive the sun most of the day and have a better use.

An important factor in the installation of **ECO VIBEA** solar collectors is related to the number of plates per battery, the best thing is not to exceed 21 m^2 of plate per battery, while taking into account the flow of the pump, as the distance to be taken must be considered from the engine room to the roof where the collectors will be installed. The number of plates per battery

is specified in the table below. In the case of large swimming pools, we ask that you contact the factory to assist in dimensioning. We recommend that the installer leave the plates level, so that the sealing of the joints is the best possible, remembering that all plates are tested at the factory with water.

BATTERY PLATE SIZING	
MODEL	**QUANTITY OF PLATES**
ECO VIBEA 2X1	10
ECO VIBEA 3X1	7
ECO VIBEA 4X1	5

The use of thermal cover over the pool is essential for optimal functioning. Always check the ideal pressure for each installation to avoid insufficiency or excess flow.

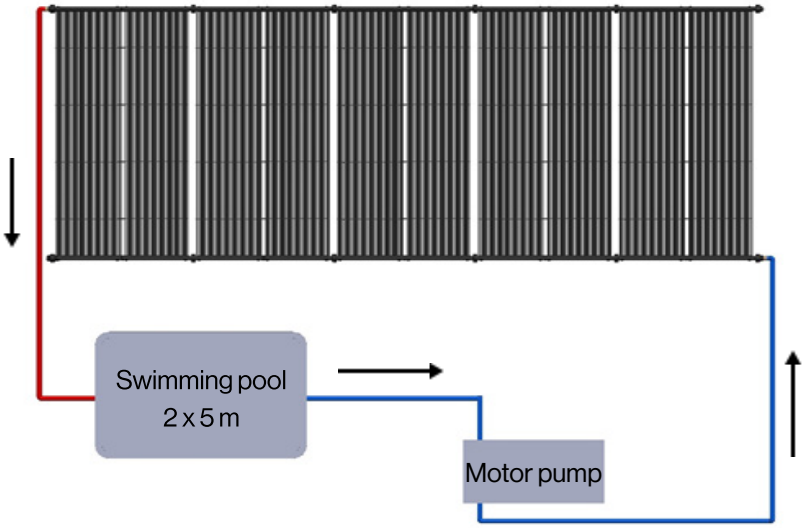
Check if the collectors are properly fixed, because in case of strong wind or storm, there may be detachment, generating possible leaks in the pipe joints, or even the complete detachment of the roof or support.

The collector piping is resistant to degradation by the action of products used in pool maintenance, such as chlorine. In the table below, the plate sizes for the most common pool measurements are presented.

POOLS		SWIMMING	
DIMENSIONS (M)	AREA (M^2)	MODEL	BATTERY
2 x 5	10	ECO VIBEA 2X1	1 with 5 plates
3 x 6	18	ECO VIBEA 3X1	1 with 6 plates
4 x 8	32	ECO VIBEA 4X1	2 with 4 plates

7.1. Standard Installation System

The following is an example of the scheme for installing the entire pool heating set, using a 2 x 5 m pool as a standard model, totaling an area of 10 m^2, where the use of a battery with 5 (five) is indicated **ECO VIBEA** 2 X 1 collectors.



For the union of the collectors it is not necessary to use any welding process, glues or other materials, the fitting is done through male / female threaded connections, it is enough to fit one collector to the other or a collector to the system piping.

The collectors must be installed on a flat surface, favoring the proper union between them and avoiding leaks.

During transportation and handling, excess weight on the collectors must be avoided in order to avoid possible damage to the equipment.

7.2. Tests and Verifications

Before running water through the system:

1. Check that all connectors are locked and tight.
2. Check that all supports are attached to the roof and aligned.
3. Check that all piping is supported or secured.

Test the system:

1. With water in the filter / pool tubing, open the collector supply and return valves.
2. Activate the controller, the solar heating system pump, operating in “manual” mode.
3. Check for any leaks by checking all connections, including between the collectors, and that the piping has remained secure and firm.

8. Maintenance

This section will allow you to identify some of the most common causes of operating problems.

8.1. Solutions Framework

PROBLEM	CHECKING	PROBABLE CAUSE	SOLUTION
VERY HOT WATER	Temperature sensor	Improper calibration	Check and replace
	Dimensioning	Oversized system	Check dimensioning
	Control panel	Final temperature setting	Decrease temperature
WATER COMES OUT FROM THE ROOF	Collector piping	Defective piping	Repair or replace
EXCESSIVE USE OF THE SUPPORT SYSTEM	Hot water distribution pipe	Leak	Repair or replace
LACK OF HOT WATER	Collectors	Damaged collectors	Replace
	Records	Pool records closed or damaged	Open or replace
	Distribution piping	Leak	Locate the leak and repair
	Hydraulic pump	Damaged pump	Repair or replace
	Thermal cover	No use of thermal cover when the pool is not operating	Use of thermal cover

9. Product Warranty

The warranty covers only manufacturing defects of the collectors and parts. **ECO VIBEA** solar collectors have a 3 (three) year warranty against manufacturing defects.

The warranty does not cover:

- Damage arising from transport, when it is not carried out by **VIBEA**;
- Damage or damage caused by incorrect or improper use of the product;
- Damage or damage caused by weather conditions;
- Damage caused by pressure above the recommended;
- Damage caused by incorrect storage by the customer;
- Damage caused during installation, such as bumps, drops of plumbing, bends in the pipes, dirt between connections, or joints damaged by incorrect handling and transportation to the roof;
- Damage caused by the use of the equipment for any purpose other than heating water for swimming pools;
- Damage caused by ruptures of the solar collector due to negative temperature, when the digital controller is not installed, which must be turned on in “automatic” even during winter.
- All expenses resulting from the removal, reinstallation and return shipping of the product to **VIBEA**, when it is found that the defect did not originate in the manufacturing process;
- System failure due to not using a thermal cover.
- When there are changes in the physical characteristics of the product, made by the installer or user;
- When the basic requirements for electrical and hydraulic installation contained in the manual are not complied with.

10. Customer service

For any questions or technical queries, please contact us:

Phone: **(43) 3315-7900**

Email: **comercial@vibea.com.br**

Website: **www.vibea.com.br**

Service Desk:

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