



EIE-06-256 REEPRO



# **Promotion of the Efficient Use of Renewable Energies in Developing Countries**

**Training equipment data sheet**

**Data sheet No.: 8**

## **Authors**

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<b>Type of Equipment:</b> (tick off the type)	PV	Solar Thermal (Hot Water)	Biomass to Energy		
		✓			
<b>Name:</b>	<b>Solar Hot water</b>				
<b>Location of the equipment:</b>	Fix for training show which is installed at ITC, Department GEE				
<b>Year of purchasing:</b>	2009				
<b>Operator:</b> (Name and address)	ITC staff working at laboratory ITC at Electrical and Energy Engineering.				
<b>Planner:</b> (Name and address)	ITC, Pochentong Blvd, Toul kok district, Phnom Penh				
<b>Detailed description of the installation:</b> (technology, function, benefit for training, etc. max 150 words)	<p>A solar hot water system was installed at ITC. This system consists of absorber, tube, and water tank with storage capacity of 150l. The store tank that is used for storing hot water. The absorber is used to absorb the heat from the sun to exchange the heat inside the storage tank</p> <p>It is a glazed flat plate absorber that consists of a plastic absorber in a flat rectangular housing. The collector is provided with a transparent cover on the upper surface. Two pipe connections for the supply and return of the heat transfer medium are fitted, usually to the side of the collector.</p> <p>On one side of the absorber pipe is connected to cool water at the lower of strange tank and other side is connected to upper. The hot water circulates in the absorber and exchange the heat in the storage tank.</p> <p>This is the first time that ITC has built solar hot water by using black plastic absorber. The heat exchanger is also good enough to do the experiments. Next step, we would like to make the absorber from metal because metal can exchange the heat faster than plastic.</p>				
<b>Generated Energy service:</b> (tick off the energy type)	electricity	heat	gas	light	
		✓			
<b>Power output of installation: (kWel, m<sup>3</sup> biogas, kW th, etc.)</b>	150L				
<b>Financing*</b> (tick off the financing type)	private investment	loan	donation	grant	
			✓		
<b>Investment costs in US\$*</b>	500US\$				
<b>Maintanance costs in US\$*</b>	NA				
<b>Savings*</b>	NA				
<b>Energy sale income in US\$*</b>	NA				
<b>Comments</b>	This equipment is use for student experiment only				

**Pictures and grafics**

Solar absorber, from front size



At the back of Solar absorber



On the top of Solar absorber



The storage tank with capacity of 150L




**\*Only when the equipment is used permanently**

**Possible practical exercises with Solar Hot Water**

**Level 1 and Level 2 – Solar Hot Water**

1. Purpose of this exercise  
 Measurement of temperature in the storage tank by using thermostat



**Storage tank**

2. Performance  
 The student measure water temperature every hour from 9:00h to 16:00h

The student measure water temperature every hour from 9:00h to 16:00h and list it down in the table

Time	9:00	10:00	.....	16:00
150L				
130L				
100L				

3. Results  
 They can draw the curve of Temperature Vs Time

