



EIE-06-256 REEPRO



Promotion of the Efficient Use of Renewable Energies in Developing Countries

Training equipment data sheet

Data sheet No.: 6

Authors

DGS

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Type of Equipment: (tick off the type)	PV	Solar Thermal	Biomass to Energy	
	✓			
Name:	LeXsolar-Experiment kit (REEPRO Set)			
Location of the equipment:	Mobile for training			
Year of purchasing:	2008			
Operator: (Name and address)	REEPRO project team operates 20 LeXsolar-Experiment kits, NUOL: 10, COMPED: 5, ITC 5			
Planner: (Name and address)	NUOL REEPRO project Team, Vientiane Cap., Lao PDR. ITC, Pochentong Blvd, Toul kok district, Phnom Penh COMPED, Dangkor district, Phnom Penh			
Detailed description of the installation: (technology, function, benefit for training, etc. max 150 words)	<p>The LeXsolar-experiment kit offers the possibility to learn the functionality and get an understanding of solar energy systems. Several trainings showed that LeXsolar-experiment kit lead to better understanding by the participants than learning theoretically.</p> <p>The basis of LeXsolar-experiment system is the LeXsolar main board, onto which up to three solar LeXsolar plug-in modules can be plugged simultaneously. Depending on how the modules are plugged in, it is possible to create a parallel or a series connection. Components of the LeXsolar-experiment kit are 1 main board, 1 connection circuit plate, 4 solar plug-in modules, 4 banana plug cables, 5 multimeter, 1 resistor and 1 diode module and a loud speaker (see at the end of the data sheet).</p> <p>These several modules in the training kit enable different experiments: (1) Series/parallel connection, (2) dependence of power on solar cells surface, (3) dependence of power on light, (4) diode's character, (5) shadowing on series connectors, (6) shadowing on parallel connectors, (7) Solar cell as transmittance measuring devices</p>			
Generated Energy service: (tick off the energy type)	electricity	heat	gas	light
	✓			
Power output of installation: (kWel, m³ biogas, kW th, etc.)	N/A			
Financing* (tick off the financing type)	private investment	loan	donation	grant
			✓	
Investment costs in €	About 200 EUR			
Maintenance costs in US\$*	N/A			
Savings*	N/A			
Energy sale income in US\$*	N/A			
Comments	The described system can be ordered from REEPRO or LexSolar GmbH			



Training mit dem LexSolar „Ready to go“



Der REEPRO LexSolar PV Koffer



Training mit dem REEPRO LexSolar Koffer



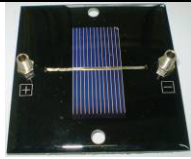
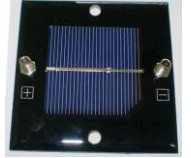







Training mit dem REEPRO LexSolar Koffer



Training mit dem REEPRO LexSolar Koffer



Training mit dem REEPRO LexSolar Koffer

No.	Component	Description	Quantity per set	Figure EXAMPLE
1	solar plug-in module	voltage 0,3 – 0,6V (cell size: 50x25mm)	3	
2	solar plug-in module	voltage 0,3 - 0,6V (cell size: 50x50mm)	1	
4	Banana plug cables	2 red and 2 black short cables, lengths: 15cm, 1 read and 1 black long cable, lengths: 30cm	6	
5	Multimeter	AC, DC, R, A (max 10A), temp.	1	
	Resistor module	100 Ω	1	
	Diode module		1	
	Loud speaker		1	
	LexSolar main board	290x150 cm	1	
	LexSolar connection circuit plate	290x150 cm	1	

Possible practical exercises with LeXsolar-Experiment kit

The REEPRO team developed 7 experiments for the use of LexSolar training kit. Basics were the LeXsolar company training materials. The equipment will be used for Level 1 and 2 trainings. For more information you can download the manual at [REEPRO webpage](#).

Experiment 1: Series and parallel connection of solar cells

Task: Determine the behaviour of the total voltage and amperage of series- and parallel connected solar cells!

Experiment 2: Dependence of the power on the surface of the solar cell

Task: Measure the voltage and amperage and determine the power of a solar cell with different active areas!

Experiment 3: The dependence of the power on the angle of incidence of the light

Task: Measure the $I_{s.c}$ and $U_{o.c}$ (and to calculate power) of the solar cell depending on the angle of incidence of the light!

Experiment 4: Diode's character of the solar cell - Reverse and forward direction with darkening and illumination

Task: Analyze diode nature of the solar cell!

Experiment 5: Shadowing of series-connected solar cells and influence of a the connection of cells to diodes

Task: How do the total voltage and amperage of three solar cells connected in series change when one of the cells is darkened? How do these values change if the solar cell with parallel-connected diode is darkened?

Experiment 6: Shadowing of parallel-connected solar cells

Task: How do the total voltage and amperage of three solar cells connected in parallel change when one of the cells is darkened?

Experiment 7: Solar cell as transmittance measuring devices

Task: Determine the degree of transmittance of different foils by mean of the solar cell!