



Solar Water Collectors: FPC or ETC?

Many wonder what is the difference between Flat plate solar water heaters (FPC) and Evacuated tube solar water heaters (ETC)? Well, one way of looking at the difference in performance is by comparing their efficiency.



Efficiency is defined as the useful heat produced divided by the solar energy received per unit area. Efficiency can be written in a form: $Eff = A - B(T_{in} - T_{ambient})/G$, where A and B are constants that depend on the detailed design of a collector and G is the incident solar radiation flux.

So efficiency is greatest when the collector fluid is at or close to the ambient temperature and therefore there are no heat losses. Efficiency generally drops with high temperatures. No two collectors have the same efficiency curve. In fact, FPC's and ETC's have curves that have different slopes and intercepts. ETC's start with a low efficiency but have a shallow slope thus retaining efficiency at higher temperatures.

It is clear that the best practice, most economical USAGE depends on the usage pattern anticipated. Thus, if a large temperature difference is needed such as in colder regions (or in some industrial usages), then an ETC may be better, On the other hand for normal home, water

Characteristic	FPC	ETC
Well proven and supported technology	x	x
Typically less expensive	x	
Collector orientation less important		x
More efficient at high temperatures		x
Shed snow more easily	x	
More efficient in cloudy weather		x
Amenable to drain back systems	x	

heating usages in relatively milder area, both ETC and FPC are nearly comparable. For swimming pool heating where only a small heating is needed, unglazed collectors suffice.

However, other consideration may need to be considered as well. Table shows a comparison of FPC and ETC.

Confused, and not able to decide, LSES can help you make the decision.

By Dr. Rida Nuwayhid



A Word from the President

Dear Colleagues

It is a pleasure to launch this electronic newsletter at this start of this year to be more and more in touch with you and to inform you about some of the technical and social activities of the society and share some of the events that took place or that are planned in the future.

2018 has been an active year for LSES including active participation in renewable energy event and organizing technical presentations and seminars for a wide spectrum of audience, from specialized engineers in IBEF to general engineering disciplines in OEA and especially to students in universities schools.

We are happy that 2018, despite the unfavorable geopolitics, was a year of growth for LSES, we had more active corporate and individual members joining us and more partners cooperating with us.

We look forward to an even more fruitful 2019 with the help of all esteemed colleagues.

Cheers

Youssef Gbantous





The Lebanese Solar Energy Society – LSES

News Letter

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LSES 2018 Annual Dinner



At the end of a year full of challenges, and critical economic conditions, The Lebanese Society of Solar Energy with the cooperation of all its members had arranged its annual dinner on the 20th of December, 2018, the Dinner was held at the Golden Tulip Galleria- Jnah, in the presence of its members, partners and guests.

During the event, Certificates of Appreciation had been distributed for Mr. Adnan Zein

and Mr. Serge Saad for their contribution in LSES,

And a trophy had been distributed for Mr. Edy Abdel hay for supporting LSES during his mandate as the president of the 4th branch “Mechanical Consultants” at the Orders of Engineers and Architects.

All attendants, exchanged best wishes for the new coming year, and discussed in friendly environment LSES future plans and projects.

LSES Activities

To list some of our miles stones of this year:

- Electing a new board in February 2018.
- Organizing a seminary in OEA in June titled “Building Integrated Solar Technologies”.
- Organizing a technical session in IBEF, titled “Latest Trends in the Digitalization of Solar Energy Systems”.
- Signing a Cooperation MOU with NDU in October.
- Participating in The Lebanon Green Built environment Conference and Expo organized by LGBC at Saïda.
- Partnering in Don Bosco Cultural Center- Green energy program in December.
- Organizing Eco Truck visits to various schools in cooperation with the Municipalities of Saïd, Kornet Chehwan and in Sour in cooperation with other NGOs
- Giving presentation about solar Energy for Students of AUB and NDU.
- Participating in the Solar Pumping Project led by Oxfam.
- LSES in collaboration with the OAE is planning to launch a “Building Integrated Solar Technology 2019” competition.

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 LSES-Lebanese Solar Energy Society