

Aidt Miljø A/S
Kongensbrovej
Aidt
DK-8881 Thorsø

Concerning the efficiency of the Summer House Package from Aidt Miljø A/S

The efficiency of the Summer House Package from Aidt Miljø A/S has been determined in the artificial sun at the Thermal Insulation Laboratory, Technical University of Denmark. The results from the measurements are fully documented in ref. [1] and briefly described in the following.

Efficiency of the solar air collector

The efficiency of the solar air collector has been determined using the standard approach normally applied at the Thermal Insulation Laboratory, Technical University of Denmark for testing solar air collectors for preheating of air.

Figure 1 shows the efficiency of the solar air collector dependent on the air flow rate through the collector.

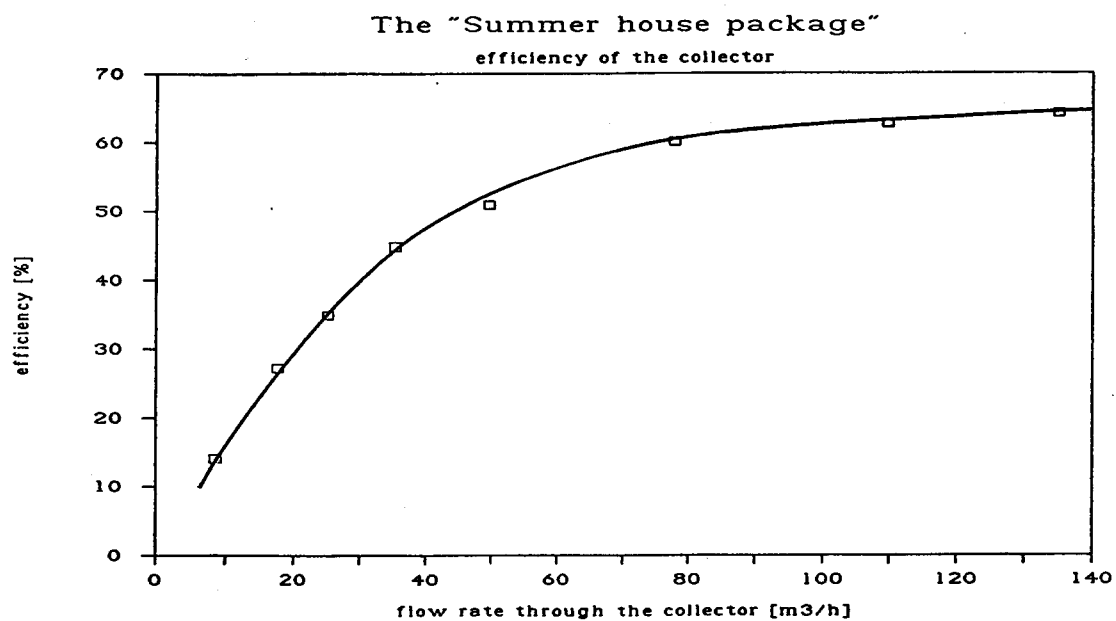


Figure 1. The efficiency of the solar air collector dependent on the air flow rate through the collector.

The pressure drop across the solar air collector dependent on the air flow rate through the collector is shown in figure 2.

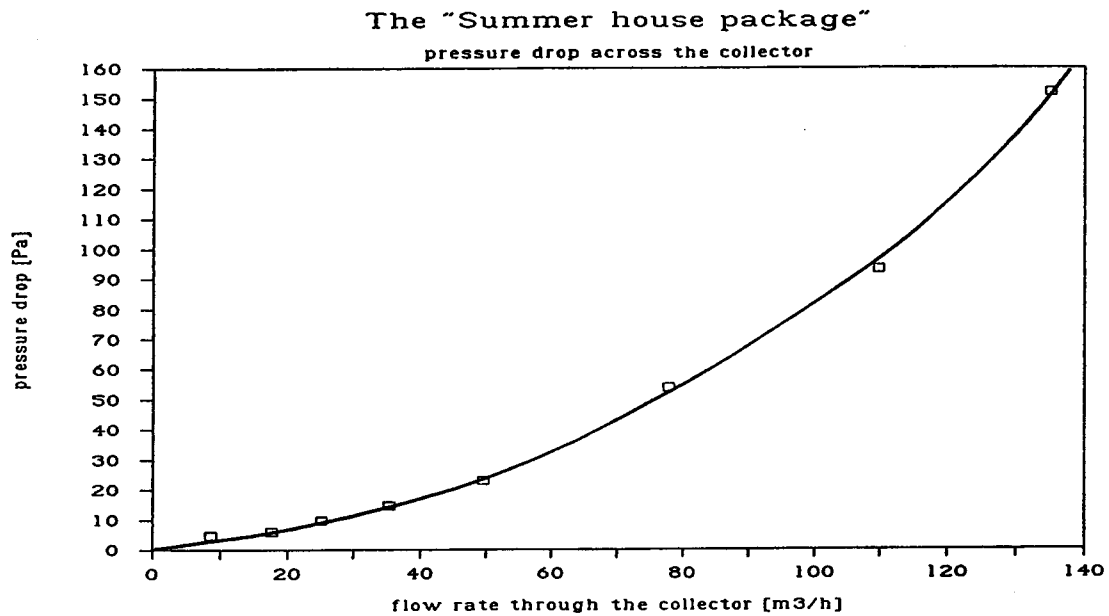


Figure 2. The pressure drop across the solar air collector dependent on the air flow rate through the collector.

The influence of the incidence angle has been measured for the cover of the air solar collector at the Thermal Insulation Laboratory earlier (ref. [2]). The influence of the incidence angle was found to be:

$$k_a = 1 - \tan^a(V/2) \quad (2)$$

where: a was found to be 2.91,
 V is the incidence angle of the solar radiation [rad].

k_a should be multiplied with the radiation on the air solar collector.

The efficiency of the solar cell panel + the fan

The efficiency of the solar cell panel + the fan ie the air flow rate through the solar air collector dependent on the solar radiation has been measured in the artificial sun at the Thermal Insulation Laboratory, Technical University of Denmark by successively reducing the radiation on the solar cell panel. The result from these measurements is shown in figure 3.

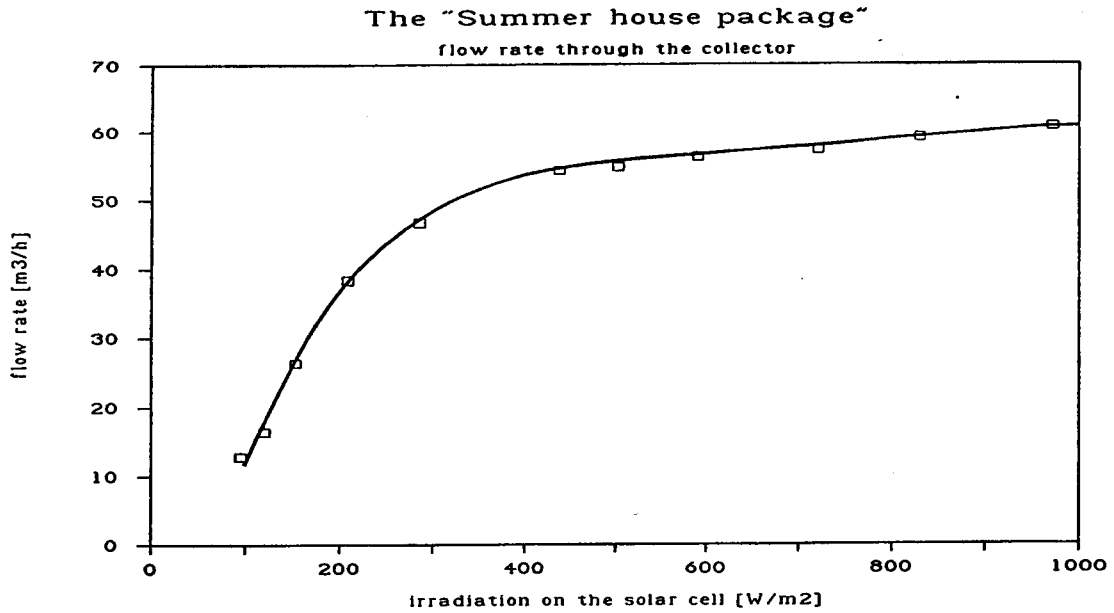


Figure 3. The flow rate through the solar air collector dependent on the radiation on the solar cell panel.

The influence of the incidence angle on the efficiency of the solar cell panel + fan has been measured outside with a special purpose rig for measuring the transmittance of transparent covers. The result of the measurements is shown in figure 4. The incidence angle modifier should be multiplied with the radiation hitting the solar cell panel.

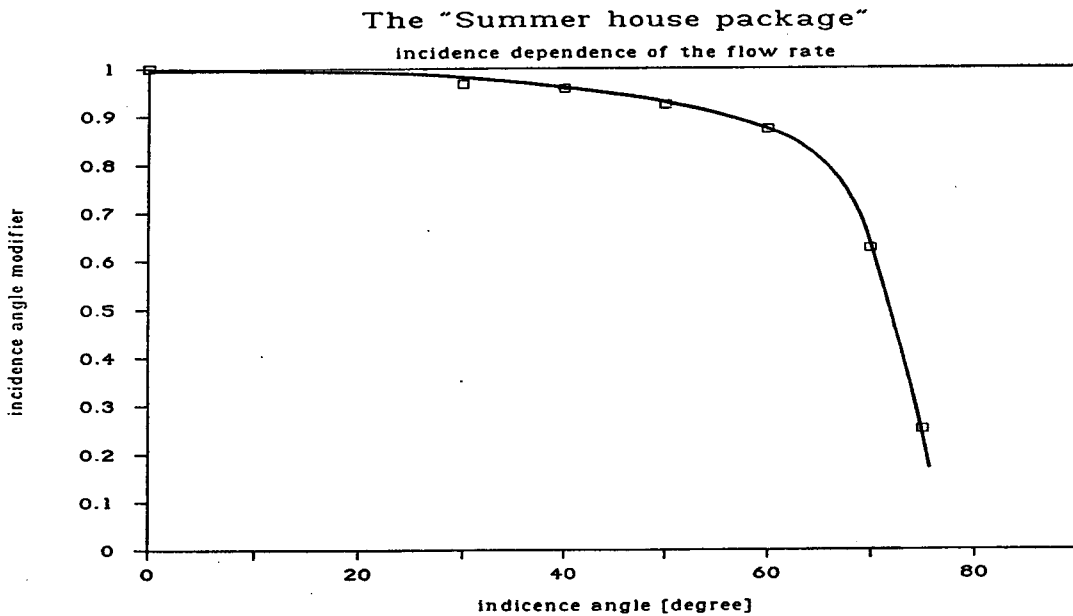


Figure 4. The influence of the incidence angle on the efficiency of the solar cell panel + fan. The incidence angle modifier is the flow rate at the actual incidence angle divided by the flow rate at an incidence angle of zero.

THERMAL INSULATION LABORATORY

References

- [1] Test of the Summer House Package from Aidt Miljø. Søren Østergaard Jensen. Thermal Insulation Laboratory, Technical University of Denmark. Report no. 94-1. January 1994.
- [2] Effektivitet ved forskellige indfaldsvinkler - målt ude og inde (Efficiencies at different incidence angles - measured outside and inside - In Danish). Finn Kristiansen. Thermal Insulation Laboratory, Technical University of Denmark. Report no. 93-7. February 1993.

Yours sincerely,



Søren Østergaard Jensen
Assistant Research Professor