

Subject:	Guarantee power output of large collector fields
Description:	Procedures to give power output guarantees for large collector fields and heat exchangers Procedures to check power output guarantees for large collector fields and heat exchangers.
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Intro

The performance guarantees described here relate to the power performance of a collector field and a heat exchanger under some restricted (“full load”) operating conditions. The procedures described here do not pretend to give and check a guarantee on the annual output of the system. For annual output guarantee, see IEA-SHC Fact Sheet 45.A.3.2 “Guaranteed annual output” (<http://task45.iea-shc.org/fact-sheets>).

Giving solar collector field power guarantee

The guarantee for the collector field power comes in the form of a guaranteed collector field efficiency equation related to the certified collector module efficiency parameters and some safety factors taking into account pipe losses, measurement uncertainty and others.

Restrictions in operating conditions (corresponding to “full load” operation) are set for when this guaranteed collector field equation is valid.

Checking solar collector field power guarantee

The summarized monitored energy output for all valid data points is compared with the corresponding energy calculated according to the guaranteed collector efficiency equation, using the actual monitored weather data and temperatures in collector loop. If this total monitored energy is equal to or greater than the total energy calculated using the guarantee equation and actual operations conditions, then the guarantee is fulfilled.

Give guarantee for heat exchanger performance

The performance guarantee for the heat exchanger in the solar collector loop can be given as a maximum logarithmic mean temperature difference across the heat exchanger for a given transferred heat power (and some other restricted conditions).

Checking heat exchanger performance guarantee

The performance guarantee of the heat exchanger can be checked by plotting the monitored logarithmic mean temperature difference across the heat exchanger against the transferred thermal power – and then compare this curve with the guaranteed value for the chosen conditions.

Get all details in the FACT SHEETS on Guaranteed power output: <http://task45.iea-shc.org/fact-sheets>