

Update on the performance of 14 Watt Phoenix Gold solar panels

Two issues back (*Solarnet* Volume 2, Number 2) we wrote an article on the performance of amorphous silicon PV modules in Kenya titled, *Amorphous Silicon PV Panels: Are they a good value for the money?*. At that time we promised a follow up article on the performance of Intersolar's 14 Watt Phoenix Gold modules. This article will provide that update.

Readers may remember that the power output levels of the Phoenix Gold modules that we tested in 1999 were quite low (the average power for a sample of 13 modules tested in Kenya was 7.7 Watts, or 55% of the rated power level of 14 Watts; see Table 1), and that the modules also appeared to suffer from serious failure problems due in large part to water leakage into the modules. However, when we wrote the article for *Solarnet* in August of 2000 we also noted that the Intersolar



Mr. Arne Jacobson (centre) with Mr. Henry Watitwa (left) and Mr. Maina Mumbi testing the performance of the module using a carefully designed and accurate outdoor method

Table 1: Recent Test Results for Intersolar's 14 Watt Phoenix Gold Modules

Phoenix Gold (PG) Panel Batch	Average Maximum Power (Watts)	Per Cent of Rated Power	Number of Modules Tested
PG panels tested in 1999	7.7	55%	13
Improved Batch #1	8.9	64%	4
Improved Batch #2	10.3	74%	4

company had made significant investments in improving the modules since we had conducted the tests in 1999, and they seemed to have made important progress in fixing the water leakage problems. As we will show in this article, they have also made some moderate progress in improving power output levels from their Phoenix Gold solar modules, but more improvements are needed to achieve the advertised 14 Watt rated power level.

Over the past 18 months our group has been testing two different batches of four Phoenix Gold modules each that the Intersolar company sent to us. The first batch (labelled improved batch #1 in Table 1), which we began testing in January of 2000, represents initial improvements made by Intersolar on the Phoenix Gold modules over the 1999 performance levels. The second batch (improved batch #2 in Table 1), which we began testing in September of 2000, shows additional improvements.

This second batch is more likely to

be representative of the performance of the Phoenix Gold solar modules sold in Kenya today, although Intersolar may have made still more improvements since last September (they tell us they have, but we need to conduct more tests to confirm this). The reader should note that because amorphous silicon PV panels take a few months of sun exposure to stabilize, we can only report results for panels that are at least six months old; see our previous article in *Solarnet* (Volume 2, Number 2) for more details on our PV module testing methods.

The results of our most recent tests of modules from these two batches (completed on June 19, 2001 here at the University of California, Berkeley, USA) are presented in Table 1. For the more technically minded reader, these levels represent the stabilised performance of the modules (that is, the Staebler-Wronski degradation process has been completed; see our previous article in *Solarnet* (Vol.2, No.2).

The results in Table 1 indicate ongoing improvements in the performance of the Phoenix Gold PV modules over their power output levels from our first tests in 1999. We commend Intersolar for their efforts in making these improvements. At the same time, we believe that the average power output level of 10.3 Watts (74% of rated power) for the most recent batch is still too low to be acceptable for consumers in the Kenyan solar market. We urge Intersolar to either make more improvements to increase the power output of the modules to achieve their advertised levels of 14 Watts or to decrease the power rating of their modules to match the actual performance. ✱

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