



## African Solar Success Series

### Glotek Makes a Plan



Street lighting has been the bane of the Nigerian solar industry for the last decade. Somehow street lights became a popular way for state governments and federal departments to show they were both green and responsive to constituents needs. Unfortunately, things almost always go awry in the actual implementation. Tender processes usually result in the wrong companies winning the job – wrong in the sense that they are politically savvy but technically incompetent. Those winners then either try (ineptly) to implement the job or they hand it over to real solar companies at such a painful

discount that it cannot possibly be done right. Bad designs and dodgy equipment result in very public failures that erode public confidence in solar solutions for Nigeria.

Enter Mankat Dewa on the scene. In 2009, he started his own information technology company in Jos, Nigeria and won a project to install electronic libraries in rural schools around Plateau state. The installations were successful, yet the project nearly failed for lack of power – there was no electricity at the schools to run the computers! Since the libraries were mostly used during the daytime, it seemed obvious that solar power would be part of the solution, and Mankat went to work learning all he could about the technology. He was referred to Yves Gatepaille, a French national, solar aficionado, and long-time resident of Jos who became his mentor and introduced him to African Energy.



Working with these resources, Mankat designed a street light solution that would stand the test of time.

He found several problems with the traditional solar street light design that puts the battery, solar module, controller and light at the top of the pole. Heat and corrosion destroy the batteries and wiring, and the size of pole required to hold adequate solar modules add much to the cost. Why not use



standard AC wiring and lights and drive them from small solar farms located every few kilometers along the roadway? His first “solar bunker” design was installed in March 2013 to supply 2.6 km of roadway in Plateau state. 18 kW of solar array feed Deka gel batteries and Outback inverters, which light 61 LED street light fixtures, for 12 hours per day. The total load is about 5kW and the system has been running for 4.5



years now without a failure. Battery capacity is starting to reduce slightly, resulting in shorter run times, as the batteries have recorded over 1,600 cycles at about 50% depth of discharge.

Improvements to the original design include high efficiency DC air conditioners to counteract the heat thrown off by the inverters. DC fans and passive cooling features will be included in future builds.

Mankat's success with his initial project led to a larger one for the Plateau State Government House campus, which includes 14 km of roadway lighting. This one featured the ultra- long life Deka 2v, 950ah gel cells and 50 kW of Suntech modules. The peak load of 45 kW is carried by Outback inverters, now a standard in all of his designs.

Mankat and I caught up again at this year's African Energy training in Abuja. His confidence in his own ability to provide solutions is now high – in part because he lives with his own work. His off-grid home has an 8 kW array, and some of those Deka 2v gel batteries. He runs his air conditioners, a borehole pump, and all normal Nigerian loads from his Schneider XW+ inverters. After three years of enjoying the system he says, "Living it was a test for me – I hardly have to do any maintenance and the power is steady".



Is the future bright for Mankat? "Gone are the days when we had failed projects", he says. He predicts more AC coupling and PV solutions for daytime loads, because the cost is so affordable now. He is excited about more lighting opportunities, but his enthusiasm increases as he talks about rural electrification using solar. Perhaps he is remembering those rural school libraries and their students that brought him to this business in the first place...