



African Energy Product Series

A Hybrid for Any Size

By Lincoln Dahl

We were proud to distribute the Imeon inverter years ago, when they were the first true hybrid inverter. Africa has since understood the advantages of a hybrid inverter and the number of hybrid suppliers has mushroomed. I still say that the best advantage of a hybrid is the simplicity of installation and programming. Our best traditional inverter/chargers and charge controllers can perform all of the same functions of today's hybrids, but with some programming and installation expertise required. And strictly speaking, using separate components might still be the most efficient and durable system design. But for speed and ease, it is hard to beat a hybrid's single set of inputs and outputs and single programming screen.

About half of the African solar industry sells private labelled hybrids with various tweaks from one well-known manufacturer. You can find that unit with a number of names and labels around

Africa with slight modifications. We decided not to use a private label and this year we have started carrying the Growatt line of hybrid inverters. Growatt is becoming well-known as a PV inverter manufacturer and is now climbing the ranks in the European market. A few years ago, they began building battery-based hybrid inverters, in both



transformer and transformer-less designs. We liked their experience at building bankable inverters for the most rigorous markets in the world and were pleased with the field experience we saw with their battery-based units.

They offer a very accessible transformer-less line from 2kw to 5kw for residential applications. It is not a match for the Schneider XW or Outback FX in terms of durability and features, but it is very affordable and surprisingly capable. The 5kW unit provides a true 5 kilowatts and includes an integrated 80 amp MPPT controller, with an optional VOC range up to 400v. In most cases this means a single series string of modules with no combiner boxes or cutting of module cables. All units have a mobile Android app for monitoring worldwide. The units are small and light, which makes handling easy, but also makes the wiring box a bit tight. The graphics on the screen indicate whether power is flowing from the array, battery or grid, which helps an end-user understand what is happening. The units we carry are not certified to inject into the grid at this point, but that is certainly a feature that Growatt understands very well and it can be added as African grids began to accept rooftop inputs. Again, these units are suitable and well-priced for the residential market where conditions are not very difficult.

Growatt's transformer-type inverter line starts at 5kW and goes to 12kW. The MPPT capacity generally matches the capacity of the inverter in these hybrids, but in the larger units, they have recently increased the charge controller capacity to 120 amps. Again, the prices are very affordable and the capacities are large, but judging from the components, the life span will not be the same as our traditional inverters like Schneider or Outback.

At a true 12 kW, these inverters provide an affordable way to provide a transformer-type inverter for large conductive loads and still have all of the convenience of a hybrid. Again, don't expect this unit to survive the abuse that our traditional inverters can take.



Perhaps the most interesting product is made by a Growatt subsidiary called ATESS. They make hybrid units from 30kW to 150kW with high voltage battery banks and 600v VOC MPPT units. These are simple alternatives to

AC coupling without the challenges of balancing and programming two different inverters. The MPPT matches the inverter capacity, so you may find yourself buying a bigger inverter than needed in order to handle enough PV. The prices on these are very competitive with AC coupled systems and the 400v battery bus means you could even install these systems with the humble 200ah, 12v batteries that we normally have on hand. For requirements above 150kW, they manufacture the PPC line of separate components that can handle battery-based systems up to 650kW. Again, this is a simpler and more cost-effective way to do large systems, including those that sell back excess energy to the grid.

Not wanting to miss the hybrid craze, Outback has entered the game with hybrids of their own. They private label a unit from a manufacturer that serves about half of the industry as mentioned above. But they also build an interesting transformer-type unit called "Alino" with an integrated automatic voltage regulator. This means that the AC passing through from the generator or grid is always regulated and you save the cost of an external AVR. And the transformer-type design means better stability and a higher surge capability. One huge advantage with the Alino is the spacious wiring box that includes a DIN

rail that can be used as a combiner or a load center. There is also an included AC breaker in the box. This makes the Alino much easier to install than any hybrid on the market. The interface and programming options are not as sophisticated as the FX line, but improvements are planned in the next year. These units are robust and the component selection is what you would expect from Outback. The price is not as low as the Growatt units, but you are selling a more rugged machine with the Outback name.

These are exciting times to be in the solar business. New hybrid inverters are making our job easier and lowering the training burden. The wiring, programming and installation is becoming easier. African Energy will continue qualifying units for every budget, so that we can have the best brands in each class on hand for you.

