



The Atkins Family

Jason, Emily, Savannah,
Nathaniel, and Miriam

Serving in Guinea-Bissau with



West African
Vocational Schools

August 2019

Check out the latest machine designed and custom-built for the drinking water filter factory.

All Aboard The Atkins Express *by Emily*

During August we spent time in Michigan, Virginia, and South Carolina. It was fun catching up with many of our closest friends at Simpson Park Camp, visiting both of Jason's sisters (and meeting our almost 1 year old nephew for the first time), and splashing around in this side of the Atlantic ocean.



Jason and I are so grateful to have this time in the US not only to reconnect with people we love and encourage the church, but also to pray, seek wise counsel, dream big, and do the hard work of mapping out and preparing for the next two years of ministry in Guinea-Bissau.



Double Barrel Screening *by Jason*

The drinking water filter factory is moving into its second phase, where we begin to ramp production up. We have proven our filter production techniques, tested filter output, and know that we're making filters that work to remove bacteria from drinking water. Now, we're moving on to the phase where we work to produce filters much more quickly, which is important not only to getting filters into more homes, but also for the financial self-sustainability of the factory project. It's a lot harder to recoup overhead costs spread over the sale of only a handful of filters each month rather than the hundreds we expect to become capable of monthly.

To make that happen, we're in the process of identifying and fixing the things that are slowing us down. The next bottleneck to tackle is the process of screening sawdust. The filters are made of clay and sawdust. The sawdust is burned out in the firing process, but leaves voids in the clay filter wall. These voids have to be just the right size to let water molecules pass through, but not be big enough to allow bacteria through. The way we achieve this delicate balance is to first pass the sawdust through a course screen, removing all of the big chunks that would leave holes that are too big in the finished filter wall. After that, the remaining sawdust is passed through a very fine screen and we discard the super-fine particles that would leave voids that would weaken the filter but not contribute to letting water through.



Nathaniel came in to the shop with me for an afternoon to help "organize" the fasteners for the project.

Double Barrel Screening (cont'd) by Jason

I think I've come up with a great solution to the problem, though it's been more than a year in the making. We are replacing a 2-step process with a double-drummed trommel. Rather than doing the coarse screening operation and then transferring the sawdust to a second, fine filter, we built a rotary trommel whose inner drum traps the coarse pieces, passing through the just-right particles and the too-fine ones. Then, the outer, fine ring of mesh allows the too-fines to fall to the ground, dumping the just-right sawdust out the opposite end. As an added bonus, the machine is built ready to be powered by an electric motor to further speed up production, once the factory is ready for a generator!

The project involved scavenging the central tube and spoke material from the scrap yard, our former housemate Jenna's heroic sisters bringing a 30 pound, 4 foot long roll of stainless steel mesh in their airline luggage, and a lot of thinking and hard work! I'm endlessly thankful for all of the generosity and hard work that have allowed us to have enough equipment in the shop to be able to custom-build something like this in a place like Guinea-Bissau.

I was desperately hoping to have the machine operational when we left in June. Unfortunately, despite working feverishly up to (literally) the day before I flew back to the U.S., the machine is installed at the factory and *almost* operating. I'm looking forward to returning in December to finish the last few guards it lacks and be able to commission it to begin years of fast, efficient filter material preparation!

One more step toward the ultimate goal of ending waterborne disease in Guinea-Bissau!

The central shaft was made from scrap yard metal that was cut, turned, and welded into stubs which were inserted in the ends of the heavy tube. (Left pics)

Once the shaft was on stands and spinning, we made spokes and supports, rolled reinforcing hoops, and cut the stainless mesh. After building it in the shop, we broke it down, packed it into the truck, and took it to the factory to install.



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