

JANICKI BIOENERGY NEWSLETTER

We are thrilled to bring you the first edition of the Janicki Bioenergy Newsletter! Much has taken place this past year to propel our technology forward and bring the Omni Processor to more of the world. Now, we bring you an inside look at what we're up to and where we're headed. Enjoy!

—The Janicki Bioenergy Team

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Dakar OP Pilot



Progress in Dakar, Senegal

On a sandy knoll in the desert city of Dakar, the space-age machine looks out of place with its chrome pipes and the occasional puff of steam. Look closer, however, and you'll see that it's just this kind of innovation which is required to break the cycle of implementing water and sanitation solutions that are ultimately decommissioned due to their high operational costs, making this new plant a welcomed sight in the eyes of the community and public officials.



Dakar OP pilot plant

The arrival and implementation of the Omni Processor in Senegal marks the first time this transformative technology has been deployed in the field, thanks to the ongoing funding of the Gates Foundation. With this unprecedented feat comes unanticipated challenges, but also huge opportunities. Testing and commissioning of this premier installation is serving as the perfect platform to understand what it takes to make this cutting edge technology work in a developing country.



Senegalese worker performing maintenance tasks on the OP

Working together with ONAS, Senegal's National Office of Sanitation, we have made big strides forward. Remote monitoring capabilities are allowing our engineers at home to help the Senegalese operators run the plant and troubleshoot anytime an issue arises. Our team keeps a log of all of these challenges, however minor, and determines what adjustments need to be made to the technology or training plan to prevent those issues from resurfacing—it's a means

of battle-hardening the technology to make it reliable under any conditions.

All we've been learning about the local area, its customs and how the operation of the OP fits into that picture, are invaluable lessons for future plant installations in West Africa and beyond. After months of testing, the pilot project in Dakar is



Pump trucks dumping sludge at the adjacent fecal sludge treatment plant that now operates in conjunction with the OP

making us more confident than ever that the Omni Processor will make a major global impact and treat waste in an economically and environmentally sustainable way, as never done before. [BACK TO TOP](#)

40,000 kg

That's approximately how much sludge the Dakar OP Pilot has consumed since June, 2015. This number is expected to go up to around 80,000 kg per month once the machine is running 24 hours per day, 5 days per week.

IN THE MEDIA

We were excited to see the final cut of the GatesNotes.com update on the Dakar OP Pilot. It's a must see for any fan of the OP technology and its impact on the world!

CHECK IT OUT:



Don't miss the companion slideshow, *Sanitizing in Senegal...*

WATCH SLIDESHOW HERE:

GatesNotes.com | Sanitizing-in-Senegal



Omni Processor S200

A product of the rigorous data-driven analysis of our engineering team, this next generation Omni Processor has just undergone the first stage of testing and upgrades at our Sedro-Woolley, WA facilities, and is now in the second wave of testing and redesigns to fully confirm all expected performance parameters.

It's a high-tech piece of machinery, and is built to get the job done. The OP S200 provides much more than top notch sanitation. This is our first commercially available model—pre-orders are now being accepted from qualified buyers—and we've designed it to meet the waste management demands of varied industries and differing business approaches.

Solid waste streams of paper and plastic are now able to be processed with this model simultaneously with sludge if desired. Our multi-stage sludge drying system allows the plant to process higher volumes of waste than our pilot model. The water treatment system is more sophisticated, and now addresses the elimination of ammonia—present in sludge which has been sitting in an anaerobic state for some time. For a steam powered plant, the engine is a critical component, and we've upped the game there, too, delivering double the performance of our pilot plant. Top to bottom, this is a fully upgraded version of the Omni Processor technology.



The new Omni Processor at night

Considerations for shipping have also been made, as reflected in the S200's modular design. Each section of the OP has been dimensioned to fit within a standard shipping container, allowing for greater ease in transportation and less monetary outlay for logistics on atypical cargo. The

modularity also lends itself to easy connection of the modules to one another during assembly. Additionally, this modularly constructed system creates opportunity for up-front configuration of the OP for specific applications. Components can be added or removed depending on the intended usage.

What's more, the software that drives the complex operations of the whole apparatus is packed with powerful automation. It takes fool-proof to a whole new level when it comes to the day-to-day tasks of running the processor, thereby minimizing staffing requirements.



Boiler and baghouse side of the S200

Yes, the OP is loaded with new and improved features and there is no dependency on outside municipal infrastructure. Factor that in with the minimal site prep required to integrate this new machine, and you have a system predisposed to generate income. With the right business model in play, the OP S200 is more than capable of taking the operation to net positive.

You can tell we are keyed up about the immense impact a product with such extensible applications will have in markets the world over—and we're not stopping there. There is ample tech left to realize in this sector. Scale up with the megawattage of a power plant. Shimmy down to capture and process waste at the point of use; when and where it's generated. Our R&D team is hard at work to transfer many of the benefits achieved in the Omni Processor to other product lines on the horizon. We won't disappoint. [BACK TO TOP](#)

COMING TOGETHER

A peek behind the scenes of the OP S200 assembly...



Setting 2nd level floor grating



Constructing one of the boiler control panels



Mounting the steam distribution control panel



Fitting and installing pipe spoils



Welding the sludge vapor filters



Connecting cables to the pump sled control panel

The Backstory



How YOUR Business Became OUR Business

Let's rewind the clock and take a look at the fortuitous series of events that brought us a whole new perspective on waste. Namely, how not to waste it. Flushing it just doesn't work for everyone.

Who better to take on the challenge than Janicki Industries, in Sedro-Woolley, WA? Founded over twenty years ago, Peter Janicki built an engineering centric company focused on automation, mechanical design, and manufacturing of advanced composite materials. Space, aerospace, marine, transportation and alternative energy—these industries all call on Janicki for delivery on tough projects



A Janicki Industries 5-axis mill

every day. Never been done before? Janicki Industries' research and development teams coupled with the company's high end fabrication

capabilities rise to the challenge, turning out solid products in ways that defy established modalities.



Emptying of pit latrines in Africa

When the Bill & Melinda Gates Foundation approached us looking for ideas to improve the handling and disposal of fecal waste from pit latrines in the developing world, we assembled a team to address the problem. If you want nonconventional solutions, one must search in nonconventional places. As far as the world of sanitation is concerned, Janicki Industries was such a place. After many meaningful field visits to South Africa, Kenya, West Africa and India, the team had a better understanding of the constraints surrounding the dilemma, and a deeper resolve to find a way to help.

The wheels began to turn, and in 2012, the concept for the Omni Processor was born. How can we economically incentivize the world to deal with the sanitation crisis? For

starters, how can you kill pathogens in sludge and how can you eliminate the volume of waste? Addition of chemicals or heat are both affordable ways to kill pathogens, but is the purchase of chemicals a sustainable solution? No. And does the addition of chemicals reduce the volume of waste? No. So, why not just boil the sludge which creates sanitized water and dry fuel—both of which have economic value? The water could be provided back to the community, and the dry fuel could be used to run a steam-power cycle. And rather than completely reinventing the wheel, how could we couple existing industrial processes in a unique way to be as energy efficient as possible? To keep things affordable, we could redesign the head of a diesel engine to run on steam in order to power the plant.



Steam from the Omni Processor (S200)

While we're at it, let's automate the electronic systems and provide remote monitoring and operation, eliminating the need for highly trained onsite personnel.

CONTINUED BELOW

This sort of outside-the-box thinking ultimately led to the Omni Processor technology, which operates on the fact that there is enough thermal energy in waste to both sterilize itself and eliminate the contaminated waste streams, and still have plenty of energy left over to use or sell as electricity and/or heat and steam for other processes. But there was even more to it than that. All that steam being generated as a byproduct could then be filtered, condensed, and filtered some more to produce potable water—another big need in most areas that find the OP useful for sanitation! Great, but what's left to dump? Nothing. All the byproducts are valuable, pathogen-free resources. There is no secondary waste stream!



Excited African kids

Now we have something: A product that could change sanitation and livelihoods for the better around the world. In the summer of 2014, Janicki Bioenergy was established to further develop, manufacture and market this and other technologies, and we continue to partner with the Bill and Melinda Gates Foundation to make this a reality.

Throughout history, the systems we've contrived to deal with waste have come at a significant and ongoing expense to society. The Omni Processor transforms the processing of this waste into a profitable business with greatly improved social and environmental impact as a byproduct. With the Omni Processor, we not only improve quality of life, we have designed a way to no longer waste our waste. ■ [BACK TO TOP](#)

TIMELINE

- 1994
Janicki Industries' inception
- 
- 2011
Janicki builds team to work on projects for the Bill & Melinda Gates Foundation
- 2012
The Omni Processor concept is inspired
OMNI PROCESSOR
Mechanical design of the OP begins
- 2013
OP Pilot is manufactured and assembled
- 2014
OP Pilot undergoes testing & modifications
Janicki Bioenergy is founded
JANICKI BIOENERGY
OP S200 design phase starts
OP S200
The OP Pilot plant produces potable water
- 2015
GatesNotes.com features Bill Gates drinking Omni Processor water
Senegalese are trained on machine maintenance
Dakar OP Pilot plant ships to Senegal