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Medical Green Machine

TrinovaMed sells solution for disposing materials

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After three decades in the medical industry, Thomas Bang is hoping to fix a problem he says he helped create, albeit unwittingly.

Bang is the new CEO of TrinovaMed, the Corona-based start-up that makes the "Green Machine" - an environmentally friendly, efficient alternative to mainstream medical waste treatment technology.

"Thirty years ago I started in the healthcare industry when we were promoting disposable products and selling them to hospitals - and for good reason, to control infections," says Bang. "I had no concept or thought about what happens to this stuff after it gets used. Thirty years later I get to step up to the bat and correct some of my naive sins."



Paul Alvarez/Contributing Photographer

Steve Barberi and his company in Corona build the TrinovaMed Monarch Green Machine, shown in the background, which reduces waste in biohazardous medical supplies by 80 percent.

This "stuff" is the millions of tons of biohazardous refuse that U.S. hospitals generate each year, much of it comprising the disposable products that helped modernize the industry.

For Bang, bringing the Green Machine to the market means bringing "a solution to the problem that we didn't know was a problem - and that we didn't know we'd created."

A greener solution

The brainchild of aerospace manufacturing veterans, the Green Machine is billed as a revolutionary response to the constellation of environmental issues generated by current medical waste treatment technologies.

According to Norma Arceo, a spokesperson for the California Department of Public Health, the state agency charged with approving alternative medical waste treatment technologies like TrinovaMed's, the design is unique in that it is the first large-scale application of chlorine dioxide for medical waste treatment.

With approval from CDPH and the EPA, TrinovaMed is entering a market otherwise dominated by the "autoclave," a steam sterilization technology.

"The original model for hospital waste sterilization was the incinerator," explains Alice Jacobsohn, director of the Healthcare Waste Institute. And while she says it offered the advantage of burning everything and leaving no solid waste behind, incinerators have been largely phased out due to EPA clean air regulations.

"With the autoclave, you're left with the fluff at the end; the paper, plastic, the solid waste component. So you'll bale it up, squeeze out as much water as you can and send it to solid waste disposal," says Jacobsohn, adding that other chemical processes have been introduced but were not proven to thoroughly sterilize.

By contrast, says Bang, TrinovaMed's technology meets the requirements for decontamination - "and we can also demonstrate it is purified," he says.

And where Bang estimates the cycle time of a sterilizer is an hour or more, he says the Green Machine processes waste on a constant basis - "and probably takes five minutes from the time it's entered to the time it comes out as benign, processed confetti."

The volume of this end product is also reduced by 80-90 percent, and TrinovaMed is looking into the possibility of recycling it into an aggregate for asphalt or concrete.

As far as price, Bang says TrinovaMed's machine is on par with autoclave technologies - "but when you consider all economics involved in decontaminating and disposing it's actually less. We've reduced the volume so the expense to transport is significantly reduced."

The objective is to show hospitals this long-term value so they make the investment - one machine currently retails for about half-a-million dollars - and allow the technology to gain traction in the mainstream market.

Entering the market

As with the introduction of any new technology, says Bang, "we'll need to educate the hospital and waste management marketplace on this total green solution, but it's got such a great and proven green theme to it, so the market timing is actually very, very good for us."

With only three current employees plus their Corona-based manufacturing contractor, the company is looking to build sales capacity and seeking "channel partners to help with the market presence," which Bang describes as companies that have a national footprint and relationships with buyers.

Arceo points out that the market is relatively small, while Jacobsohn says it's quite competitive due to the fact that every hospital and healthcare facility has to dispose of medical waste - "and if you add in processes that can be used overseas then there can be quite a business for it."

While Jacobsohn doesn't see the status quo moving away from the autoclave just yet, she reasons that the extinction of the incinerator opens the door to new technologies. The question, she says, "is whether you can make these things commercially viable to handle the volumes of materials that are managed in healthcare."

Bang describes his competition as "highly fragmented," and seems confident that TrinovaMed will have a real advantage once they establish their footing.

"There have been other entrances into the marketplace that used chemical decontamination, but we think we've applied the technology and 'secret sauce' that give us a significant leadership position in the marketplace," he says.

So far, they've had two orders, the first placed at Eisenhower hospital in Rancho Mirage, which Bang notes has already processed around 4 million pounds of raw medical waste.

Seeking wider approval

Focusing on California first, he says they will then move to "states where we're approved and that offer the largest potential marketplace."

Jacobsohn points out that, while there is some overlap in requirements, approval is required from each individual state, and can be a time-consuming process when the public input period is factored in.

Bang is optimistic that things will go smoothly: "We are EPA approved, and all states to some extent look for EPA approval. And some will accept it outright so the regulatory process is not extensive," he says, adding that their ability to prove decontamination will help with regulatory hurdles.

They are currently approved in 11 states, and expect to add another six within the next 90 days, he says.

Funded by the original founders, TrinovaMed will also be looking for additional angel investors.

"We think the timing is right," says Bang. "We've proven the technology so now we can attract more money having to do with our green story ... And we would reach out if needed to institutional investors - but we're not sure that's needed right now given our track record and our sales pipeline."

While they work on penetration in the domestic market, Bang says they're also talking to potential channel partners overseas, where he notes the need for green alternatives is at least as big as in the U.S., if not greater.