WATCH NOW: Richmond startup Grenova has developed high-tech equipment to help labs rethink waste and cost

At the office and manufacturing site for Grenova Inc. in South Richmond, a steadily growing number of employees are tackling solutions for a couple of big problems created by the coronavirus pandemic.

First, the startup company has been ramping up production of its patented equipment that enables clinical laboratories around the world to clean and sterilize some of their essential tools — mainly the billions of tiny, plastic pipette tips, a common tool that lab technicians use to transfer liquids and conduct tests.

“The supply chain has been disrupted” for pipette tips and other plastic consumables, said Ali Safavi, Grenova’s founder and CEO. “The volume of samples that everybody has to run worldwide for these COVID tests was not something that was planned for.”

Without a steady supply of plastic consumables such as pipettes, labs are unable to keep up with the demand for COVID-19 tests. The New York Times reported in July that a Swiss company that supplies pipette tips to U.S. laboratories has seen such a surge in demand that it has had to dip into its emergency supplies.
The result is that Grenova, too, has seen more demand for its equipment at laboratories, and the company has shifted it sales and marketing to labs that do COVID-19 tests, while also continuing to support other labs such as academic, research or agricultural science facilities.

“We have to keep up with the demand,” Safavi said. “We have been hiring more, and our production has rapidly increased.”

The pandemic also has created an opportunity for Grenova to tackle a second big problem — the very problem that prompted Safavi to start the company as a small operation in 2014 after he had worked for seven years for a laboratory automation company in North Carolina.

The problem that Safavi noticed was that laboratories typically discard massive amounts of plastic consumable items such as pipette tips after just one use. All that plastic ends up in landfills, said Safavi, who started Grenova — short for Green Innovation — with the goal of reducing that waste.

“My goal is to not throw away any plastics in the industry,” Safavi said. “Why use them once and discard them?”

Safavi’s goal from the start was to introduce environmentally sustainable practices in the laboratory industry.

The equipment that Grenova manufactures at its 10,000-square-foot office and assembly plant in South Richmond are box-like devices sold under the TipNovus brand name. Laboratories can integrate the machines into their operations to clean hundreds or thousands of pipette tips per hour.

Grenova also makes a device called the TipLumis that can store pipette tips in a temperature-controlled, UV light environment, keeping them sterile for future use.

“With our systems, they [labs] can safely wash and reuse as many times as they want,” Safavi said. “They never have to worry about a disruption in the supply chain or shortages.”

A single COVID-19 test can require a lab to use six to 10 pipette tips, Safavi said. With such a large volume of materials being used, the cost savings for laboratories that recycle pipette tips can be enormous over time, he said.

The company is selling a COVID-19 “package” of washing devices to labs that includes its TipNovus and TipLumis machines, which enable a lab to wash and reuse about 1,920 pipette tips per hour.

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One local laboratory company that uses the Grenova equipment is Genetworx, a Henrico County-based molecular diagnostic testing lab that opened in 2013 to do testing for cancer, respiratory illness, genetics and other lab work.

With the pandemic, Genetworx started doing COVID-19 tests, too. To meet the rising demand for those tests, the company announced in July that it was expanding and planning to hire 400 employees.

Another issue with COVID-19 tests is maintaining supplies.

“A huge limitation to running COVID-19 testing as a high throughput operation is obtaining adequate supply line materials to sustain the enormous demand for sample testing,” said Matthew J. Beckman, Genetworx’s director of laboratory services for molecular diagnostics.

So the company looked to Grenova for a solution.

Grenova provided a custom method for washing pipette tips that allowed for multiple reuses, Beckman said.

“This saves on waste of countless numbers of tips by allowing us to reuse the extraction tips several times before recycling to new tips,” he said.

Genetworx bought three of Grenova’s TipNovus washing stations, giving the company the capacity to wash 100,000 tips per day, which Beckman said “prevents shortages of supplies that would otherwise decrease our COVID-19 testing.”

So far, Genetworx has tested about 1.2 million patients for COVID-19.

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Grenova is supplying about 100 labs worldwide right now, and the company estimates that more than 110 million pipette tips have been washed and reused, saving the labs about $9 million.

The company also estimates that its devices so far have prevented about 325,000 pounds of plastic from going into the waste stream.

From the time that he started the company, Safavi said he has faced one big challenge in marketing the company’s equipment: changing the culture and ingrained procedures at laboratories.

“What happened was when we introduced this product to the market, it was a totally new culture and a new mindset,” he said.

The crisis created by the pandemic has opened the door to changing that, he said.
“COVID has expedited and forced the industry to be more proactive and look at alternative solutions much faster,” he said.

“The thing I pointed out from the beginning was the practice or the model that labs were executing was not sustainable — it was a linear practice,” Safavi said. “To me, Grenova is all about creating a circular practice in the industry. You get the plastic consumables, use them but do not throw them away. Wash, clean and reuse them, and you never run out of pipette tips and supplies.”

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Grenova has essentially doubled its production and staff since the start of the coronavirus pandemic and now employs 35 people, most of whom work at its assembly operation in the Clopton Siteworks, an array of former tobacco warehouses in South Richmond that has been redeveloped to house various businesses.

The company is adding to its research and development staff to work on several variations of its equipment that can clean and sterilize other types of plastic consumables used in labs.

Safavi expects the company will employ 50 people by early next year, and he is looking for local talent to fill jobs.

“One thing I am trying to create here as we scale up is to bring in new, young talent from the local schools, but also to bring in mature, experienced talent from local manufacturing,” Safavi said.

Grenova is planning to expand its floor space and capacity by moving into a 32,000-square-foot space in Scott’s Addition in about a year.

During the pandemic, “the biggest challenge right now is when we scale up — until our new place is ready — how do we scale up and maintain more social distancing,” Safavi said. “We need more people, but we cannot pack them all into one place.”

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Recent recruits to the company include Doward Scott, a Petersburg resident who studied industrial technology at Virginia State University and previously worked at the Qimonda computer chip plant in Henrico, and most recently at the Rolls-Royce aircraft components factory in Prince George County.

However, the Rolls-Royce factory laid off 120 employees in June and plans to close the plant by mid-next year, putting an additional 280 people out of work, because of a collapse in global air travel.
So Scott landed a job with Grenova, and he is now doing the skilled work of making electronic components for the company’s machines.

“It is kind of bread and butter for me, getting back to my roots in electronics,” Scott said. “It is a growing company and something I find very important, especially during COVID. It is something I think is very beneficial.”

Taylor Anderson, who studied mechanical engineering at the University of Virginia, joined Grenova in 2014 when the company was just starting operations.

He now leads engineering, including working on a robotics system that can automatically load trays of pipette tips into the company’s cleaning machines.

“That is one of my projects — getting the automation to go out to some of our customers,” Anderson said. “It is never the same every day. There is always some new challenge every day.”

By John Reid Blackwell