Morgantown

Mechanical Concrete

Sam Bonasso is a civil engineer, consultant, and inventor with five U.S. patents under his belt. He is also an adjunct professor of civil engineering at West Virginia University and the former WV Secretary of Transportation. He owns Mechanical Concrete, a reinforced aggregates company in Morgantown that is drawing national attention. Mechanical Concrete provides geo-cylinder confinement systems derived from scrap tires, which can be used in a myriad of construction projects—from rural coal roads to earthquake resistant structures to military construction. His geo-cylinders can be found in roads and structures in five states. Unlike conventional road building, geo-cylinders directly confront two major concerns in the world of construction—waste and longevity—by not only reusing materials, but also by cutting down on maintenance, labor, and energy costs.

WVL – What is Mechanical Concrete?

Sam Bonasso – It’s very simple. When you fill the tire with a particular gradation of stones, the stones quit acting like loose material. The tire has the capability of holding the stones together, and when a load goes on top, it solidifies. That confinement is enough to hold a fully loaded coal truck.

WVL – How did you come up with such a simple solution to a worldwide problem?

SB – It started when the highway department was given the responsibility of getting rid of a bunch of scrap tires while I was secretary of transportation. I asked, “Well, why can’t we just bury them in the road?” They said you couldn’t bury the whole tire because of the curved sidewalls. It leaves soft spots and holds water. I spent the next five years trying to figure out how to solve those two problems. One night in 2004, I was out walking after dinner, thinking up a new machine to do just that, and I thought, “Why don’t I just cut the sidewalls off?” And voilà, there it was.

WVL – You’ve said your product can reduce potholes, ruts, drainage, erosion, and other maintenance, while tripling the load capacity of roads. Why isn’t mechanical concrete used in all new road construction?

SB – Because it’s new. It’s only been in existence for six or eight years. They’ve been building roads the same way for more than 2,000 years. Like any new idea, it has to go through a validation process. Who do you get to validate this technology? We realized that the best validation of new technology often comes from heavy industry. When the coal industry decided they wanted to use this in their roads, I knew it was a win-win.

WVL – What is “green” about Mechanical Concrete?

SB – It’s faster, less expensive, and requires less material. The green component I haven’t emphasized as much because I don’t usually sell it that way. I sell it based on its technical and economic feasibility. People can build this without any equipment. If you have a lot of laborers, you can put anything in it. You can just send them the cylinders and they fill them with sand—it will still work.

WVL – What makes a product truly sustainable?

SB – Everybody talks about sustainability, but in order for it to become more than just a slogan, the product in question has to meet certain criteria. It has to be environmentally friendly—reducing and reusing materials, labor, and energy; technically feasible—effective, simple, fast, and rugged; socially supportive—preserving scarce resources and improving worker productivity; and economically viable—reducing initial costs, maintenance, and extending the useful life of the product. That makes it holistically sustainable.

WVL – What advice would you give to entrepreneurs looking into green businesses?

SB – If you’re not efficient enough to make money, you can’t sustain yourself. You’re not economically sustainable. That’s why a lot of green businesses don’t succeed, because they don’t meet those criteria. You might be wrapping yourself in a feel-good idea, but you have to have the longevity to make it in the market.

mechanicalconcrete.com
Recycled Roads
The U.S. produces nearly 300 million tires annually. Sixty percent of waste tires are burnt as fuel. Twenty percent are recycled into rubberized products. And 20 percent—about 60 million tires—end up in landfills every year.

- SAM BONASSO