

# Causing Waves with Hydro Dynamics, Inc.



Dr. Doug Mancosky, Vice President of Research and Development at Hydro Dynamics, Inc. uses a strobe light to show the cavitation in the ShockWave Power Reactor.

Rome-based Hydro Dynamics, Inc. is mixing up the way biofuels, chemicals, petroleum and even beer are being made globally, and it is causing quite a few waves across the state.

The innovative business, located at 8 Redmond Court, — known internationally for developing the patented ShockWave Power Reactor (SPR) technology — was recently recognized by Governor Nathan Deal and the Georgia Department of Economic Development as a 2016 Georgia Launching Opportunities By Exporting (GLOBE) Award recipient for expanding into the international market of Costa Rica in 2015. Just the year before, the crew at Hydro Dynamics, Inc. was recognized as a 2015 GLOBE Award winner for moving into global markets in Argentina and China.

Hydro Dynamics, Inc. Vice President of Research and Development Dr. Doug Mancosky believes the stir caused over their products stems from the multifunctional way their technologies can harness the energy of cavitation shockwaves.

“Every year, a larger percentage of our business is coming from international export,” said Dr. Mancosky. “The international market is equally as hungry, if not more so, for many of the unique process solutions we offer with our ShockWave Power Reactor technology.”

So, why shockwaves? Dr. Mancosky explains that Hydro Dynamics, Inc.’s ShockWave Power Reactor technology is extraordinary because it creates controlled cavitation, or the formation of bubbles in a liquid that collapse and release energy in a shockwave. These shockwaves can create several benefits for almost any company processing liquids.

“Most of the time, when people think of

shockwaves, they think destruction,” said Dr. Mancosky. “With our process, the cavitation is controlled, so that it actually creates a perfect environment for mixing, heating, and extraction from fluids. Inside the ShockWave Power Reactor, a rotor spins, creating millions of cavitation bubbles. As these bubbles expand and collapse, shockwaves are formed. The cavitation process creates a more intimate mixing, heating and extraction on a molecular level than that of traditional methods.”

Dr. Mancosky said when it comes to mixing, there is a cavitation process seen in the SPR that can push together elements that normally wouldn’t mix completely together. This type of mixing is far superior to conventional methods. Additionally, the SPR creates process intensification, which can heat or mix liquids with other liquids, solids and even gases while simultaneously adding energy in the process.

“These processes mean savings for companies whose products, like biofuels or chemicals, are often mixed,” said Dr. Mancosky. “The superior process intensification process means less waste since more of the products are being mixed together, so manufacturers of chemicals or biofuels can use less to get more,” he added.

Mostly, the cavitation process of Hydro Dynamics, Inc.’s ShockWave Power Reactor has been extremely beneficial to brewing industries for extraction purposes.

Dr. Mancosky said several craft breweries, such as the Witch’s Hat Brewing Company, and distillers, like White River Distillers, have adopted the SPR to help with the extraction of ingredients to make beer or spirits.

For example, the extraction of hops for beer making has allowed for brewers to pull out more of the hops flavor by extracting



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more of the hops oil, said Dr. Mancosky. “As this type of cavitation happens, there is a push-pull motion that allows for more oils to be extracted from the hops. Normally, with traditional hops extraction processes, a lot of the flavor stays trapped, and only 30 percent of the flavors are extracted. However, with the SPR process, brewers can pull out up to 80 or more percent of the hops flavors. That’s substantial. They don’t have to use as much hops to create their products, and since the price of hops has been increasing, that could be a huge cost production savings.”

But the SPR doesn’t just stop at beer. Dr. Mancosky believes the possibilities for use of the ShockWave Process Reactor technology are endless. Research has recently shown the SPR technology can also be used to extract flavors out of citrus rinds, coffee beans and more.

“Almost any liquid that needs mixing, heating or extracting can benefit from this process,” Dr. Mancosky added. “We’re always finding new ways, new products and new companies that SPR can positively impact. Really, the possibilities are endless.”

