

Hydro Dynamics, Inc.

Harnessing the Power of Cavitation



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Contact: Doug Mancosky
dmancosky@hydrodynamics.com
www.hydrodynamics.com

Contact: Michael Lake
info@liquidlignin.com
www.liquidlignin.com

For Immediate Release

Hydro Dynamics Assisting Liquid Lignin Company in Development of Their Revolutionary Pulp and Paper Black Liquor Technology

Hydro Dynamics, Inc. (HDI) is assisting Liquid Lignin Company (LLC) of Clemson, SC <http://www.liquidlignin.com> in development of an environmentally-friendly process to more efficiently and profitably utilize components from the black liquor stream within the kraft pulping process. LLC's technology, known as the Sequential Liquid-Lignin Recovery and Purification (SLRP) process, precipitates and purifies the organic lignin from black liquor. Lignin with 99+% purity then can be sold as a binder for fuel pellets or as a chemical feedstock for products such as bioplastics. Currently in the conventional kraft recovery process, more than 50 million tons/yr of this lignin is burned in the US as a relatively low-value use, especially as natural-gas prices have fallen.

In the LLC technology, HDI's ShockWave Power Reactor (SPR) is used to oxidize and remove dangerous hydrogen sulfide as well as other foul-smelling sulfur compounds that negatively affect the value of the applications incorporating lignin. HDI's ability to oxidize black liquor has been known for years. HDI scientists were given an award for best conference paper in 2003 by TAPPI, a pulp and paper technical organization, related to black liquor oxidation.

LLC is located in Clemson, SC, where their pilot unit is located. They are the recipient of Small Business Innovation Research grants from the DOE and EPA. LLC seeks to form the appropriate relationships and partnerships to place their first commercial SLRP facility. CEO Michael Lake is establishing a formidable team while further refining the technology to increase the efficiency, yield, and diversity of co-products from the SLRP process

The ShockWave Power Reactor (SPR) technology has been harnessed for use in several other uses in pulp and paper in addition to the HDI developed technologies related to black liquor. The SPR can also be used for white liquor oxidation, oxygen delignification, ozone bleaching, peroxide bleaching, chemical additive mixing and deinking. HDI is also very excited about future developments similar to the LLC process focusing on pulp and paper plants as bio-refineries capable of many additional products such as chemicals and advanced biofuels.

8 Redmond Court, Rome, Georgia 30165 · 706-234-4111
info-hdi@hydrodynamics.com · www.hydrodynamics.com

About Hydro Dynamics

Hydro Dynamics is the developer of a patented cavitation process intensification technology called the ShockWave Power Reactor (SPR), enabling customers to solve critical mixing and heating problems. SPR's operate worldwide in applications as diverse as increasing biogas yields to mixing petroleum drilling mud to more efficient homogenization and pasteurization of liquid eggs. The SPR allows customers to significantly decrease costs and increase profits, often with environmental and safety benefits. Find out more at <http://www.hydrodynamics.com>.

About Liquid Lignin

The mission of Liquid Lignin Company is to develop and commercialize new lignin-based technologies. We are experienced technological innovators, and we form partnerships to enable rapid commercialization. Our objectives are commercializing new green-chemistry products and environmentally-friendly processes that result in sustainable US businesses with well-paying jobs. Find out more at <http://www.liquidlignin.com>.



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