



## NEWS RELEASE

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*FOR IMMEDIATE RELEASE*

# VIRENT AND HCL CLEANTECH RECEIVE GRANT TO DEMONSTRATE CELLULOSIC SUGARS AS FEEDSTOCKS FOR 'DROP-IN' BIOFUELS AND BIOPRODUCTS

*BIRD Energy grant will support Virent's conversion of HCL CleanTech's pine tree sugars into hydrocarbon fuels and products that can be sustainable, cost-effective, and compatible with existing infrastructure.*

**January 4<sup>th</sup>, 2011** – Virent Energy Systems Inc. and HCL CleanTech announced today that they have been awarded a \$900,000 grant from BIRD Energy, a program for U.S. - Israel joint renewable energy development funded by the U.S. Department of Energy, the Israeli Ministry of National Infrastructures, and the BIRD Foundation. The grant supports almost half of the \$2.1 million total project cost.

The project's objective is to address the key hurdles limiting the market acceptance of biofuels and bioproducts made from cellulosic feedstocks: price, performance, and infrastructure compatibility.

The project combines HCL CleanTech's proprietary lignocellulosic conversion technologies that produce cost-effective non-food sugars with Virent's innovative BioForming® technology that converts plant sugars into hydrocarbon molecules like those now refined from petroleum. HCL CleanTech's pioneering technology builds on a proven industrial process, significantly improving the economics of converting lignocellulosic biomass into refined sugars, de-acidified lignin and tall oils. The process chemistry works at low temperature and atmospheric pressure, resulting in very few degradation products and significantly lower energy and water consumption. These sugars can be utilized by Virent's process to make fungible hydrocarbons that can be used as chemicals or seamlessly blended to make premium 'drop in' fuels for car, truck, train, and air transportation. Virent's fuel products can readily enter the market using existing pipelines to power today's vehicles at high blend rates.

"Economically converting plentiful cellulosic biomass into renewable, fungible hydrocarbon fuels and products will enable broad market acceptance and is the most realistic alternative to displace petroleum and create a clean energy transportation sector in the coming years," said Lee Edwards, Virent CEO. "Virent has proven it can transform cellulosic, non-food sugars into environmentally superior hydrocarbon fuels with the same energy content and performance as petroleum fuels. Utilizing HCL CleanTech's cost-effective biomass hydrolysis

technology to provide inexpensive cellulosic sugar feedstocks may be a key component of a complete and sustainable biofuels solution.”

Sugars processed at HCL CleanTech’s demonstration plant operating at Southern Research Institute in Durham, North Carolina will be sent to Virent’s facility in Madison, Wisconsin for conversion into biofuels and biochemicals. As part of the BIRD project, HCL CleanTech will also provide pine sugars to a leading biopolymer producer for evaluating fermentations into hydrocolloids that historically are produced from cane or corn sugars for use in a broad range of personal care, food and beverage applications.

“We expect to have the sugars ready for Virent and CP Kelco before the New Year and are confident the integration with Virent and CP Kelco will create new opportunities in the bio-fuels and bio-products space” said Eran Baniel CEO of HCL CleanTech. Bob Jansen, Head of HCL CleanTech Engineering added: “we built the demo unit operations at a size that will allow us to scale up directly to a small commercial facility, which we plan to integrate into a paper mill by the end of 2012”.

#### ***ABOUT VIRENT ENERGY SYSTEMS***

Virent’s BioForming® process is a leading technology for the production of sustainable advanced biofuels, including biogasoline, diesel, and jet fuel, and many chemicals. Virent currently produces its renewable hydrocarbon products using feedstocks as diverse as sugar cane, sugar beets, woody biomass, switchgrass, bagasse, or corn stover. The process has won numerous technology and innovation awards including the U.S. Environmental Protection Agency’s Presidential Green Chemistry Challenge and the World Economic Forum’s Technology Pioneer awards. Virent has 95 employees and a state of the art catalytic biorefining development facility located in Madison, Wisconsin. Virent counts premier, global companies Cargill, Shell, and Honda, among its investors. The BioForming technology is based on the patented Aqueous Phase Reforming process. To learn more, visit: [www.virent.com](http://www.virent.com).

#### ***ABOUT HCL CLEANTECH***

HCL CleanTech Ltd is commercializing innovative biomass hydrolysis and extraction technologies that dramatically improve the economics of accessing lignocellulosic sugars for conversion into biofuels and bioproducts. The technology generates sugar yields of up to 98 percent of the theoretical sugars from any lignocellulosic material. High sugar concentrations are refined and have been successfully converted into a number of biofuels and bio-products. HCL CleanTech has developed a process to de-acidify the lignin using a proprietary washing system which uses no water, recovers the hydrochloric acid at high concentrations, and produces unadulterated lignin as dry flakes with low chloride content. During the process the tall oils are separated and can be used for the production of bio-diesel and other products. HCL CleanTech is venture funded by Burrill & Company, Khosla Ventures, and a group of investors led by Zohar Gilon. For more information, visit: [www.hclcleantech.com](http://www.hclcleantech.com).

#### ***ABOUT THE BIRD FOUNDATION***

The mission of the BIRD (Binational Industrial Research and Development) Foundation is to stimulate, promote and support industrial R&D of mutual benefit to the U.S. and Israel. The BIRD Foundation approves funding for approximately 20 projects each year. During its 33 years, the BIRD Foundation has invested in more than 800 projects, which have yielded revenues of about \$8 billion. “BIRD Energy” is a program specifically for U.S. - Israel joint renewable energy and energy efficiency developments, funded by the U.S. Department of Energy (DOE) and the Israeli Ministry of National Infrastructures. The program aims to select projects that have significant commercial potential and project outcomes that lead to commercialization. Companies apply jointly and must demonstrate the combined capabilities and infrastructure to define, develop, manufacture, sell and support an innovative product based on industrial R&D. For more information, please visit: [www.birdf.com](http://www.birdf.com).

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