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**Aries Clean Energy Is Solving Major Sustainability Problems, Advancing Innovation with R&D Team**

*Formerly PHG Energy, Aries Clean Energy has evolved its biomass gasification focus to take on a greater innovation role in the clean tech energy industry*

**Contacts:**

Allie Rapkowicz, 865-329-0553, [Allison@piper-communications.com](mailto:Allison@piper-communications.com)  
Nancy Cooper, Aries Clean Energy, 615-471-9093

NASHVILLE, Tenn. - Aries Clean Energy is aggressively embracing a greater innovation role in the clean tech sector, ramping up research and development to add more options to its already commercialized energy production technologies.

With eight patents already obtained in the biomass and biosolids gasification field, the company is evolving both its product line and focus to solve clean energy and sustainable waste disposal problems.

For example, Aries Clean Energy's R&D division recently developed and patented a solution for reducing the heavy tar content of biomass fuel. The process involves filtering synthetic fuel gas through high-carbon biochar and removing impurities using microwave-induced plasma fields. This effort has moved from laboratory to field-testing at one of Aries Clean Energy's R&D biomass facilities and is showing success in producing cleaner synthetic fuel gas, as well as lower capital and operations and management costs.

Formerly PHG Energy, the newly rebranded company built and commissioned the world's largest downdraft gasification facility in Lebanon, Tennessee in late 2016. The system has a throughput capacity of 64 tons per day, five times greater than previous installations. It will divert over 8,000 tons of material from landfills each year and produce 36,000 MW-hrs of electricity over 20 years.

"Our downdraft and fluidized bed gasification projects have proven themselves viable with over 50,000 hours of commercial production," Aries CEO Greg Bafalis said. "With more Fortune 100 and Fortune 500 companies committing to sustainability goals, we stand ready to help position corporate America for the global shift to renewable energy."

Aries Clean Energy is addressing some of the industry's greatest challenges with waste-to-energy. Its eight patents solve long-standing problems in feedstock diversification, cleaner synthetic fuel gas, and emission reductions.

Unlike older disposal systems that include a burning or incineration step, Aries Clean Energy's downdraft gasification process uses a sustainable thermo-chemical process to produce a synthetic fuel gas—from a mixture that could include wood, scrap tires, and wastewater sludge – that can

be used much like natural gas for thermal applications (e.g., boilers and kilns) and the production of electricity. The gasification process itself produces no emissions, ash, or odor.

“This [Lebanon] facility is going to be a model for waste-to-energy partnerships as well as the first stage in moving our city completely away from dumping waste into landfills,” said Philip Craighead, Mayor of Lebanon, Tennessee (2008-2016).

In its early years as PHG Energy, the company installed 12 gasifiers at brick manufacturing plants in the Southeast—providing synthetic gas from biomass sources for use in kilns. When the Great Recession hit the building industry in 2010, brick production halted and the price of natural gas plummeted. At that point, Aries Clean Energy began to look at deploying its technology with businesses and municipalities to reduce emissions and landfill waste, create green power, and seek new opportunities to spark its R&D efforts.

Aries Clean Energy first demonstrated its ability to produce renewable electric power in 2011, using its gasification technology to convert wood chips into synthetic gas that was further cleaned and used to run a 1-MW Caterpillar generator. The electricity was sold back to the grid as part of the Tennessee Valley Authority’s Generation Partners Program.

The company also collaborated with GE Power & Water to merge its downdraft gasification technology with GE’s Clean Cycle ORC (Organic Rankine Cycle) generator to create an integrated waste-to-energy technology that is operational at the current R&D plant in Covington, Tennessee.

“Putting these clean and sustainable energy innovations to work in more locations, and bringing some of our latest research and development efforts to the marketplace this year, are going to be exciting for our company and for the industry,” added Bafalis.

In addition to its gasification technology and R&D division, Aries Clean Energy also operates a solar design and installation division focusing on commercial and community scale projects. Formerly ARiES Energy, the solar division is now part of the Aries Clean Energy brand.

### **About Aries Clean Energy**

Aries Clean Energy, LLC, based in Nashville, Tennessee, designs and builds innovative bio-based downdraft and fluidized bed gasification systems using its eight patents granted to date. Its projects provide for the sustainable disposal of waste, reduction of carbon emissions, and the production of clean thermal and electrical energy. The company’s ongoing R&D efforts are focused on cleaning syngas produced from waste for use in internal combustion engines. A solar division designs and implements commercial and community scale photovoltaic facilities.

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Contact: Nancy Cooper, [Nancy.cooper@ariesenergy.com](mailto:Nancy.cooper@ariesenergy.com), 615-471-9093