

CNFbiofuel, Inc.

P.O. Box 1316, 5038 Salida Blvd. Salida, CA 95368 USA

Ph: 209-545-1663 Fax 209-545-3533 [info@CNFbiofuel.com](mailto:info@CNFbiofuel.com) [www.CNFbiofuel.com](http://www.CNFbiofuel.com)

Associate Company: Inventive Resources, Inc., Lic. # 902153 [www.iriproducts.com](http://www.iriproducts.com)

August 17, 2012

California Energy Commission

Dockets Office, MS-4

Re: Docket No. 12-EPIC-01

1516 Ninth Street

Sacramento, CA 95814-5512

RE: Written comments on development of the Energy Commission EPIC investment plan.

Submitted to: Docket number 12-EPIC-01

Comments emailed to: [docket@energy.ca.gov](mailto:docket@energy.ca.gov)

Submitted by: John A. Paoluccio PE, President of CNFbiofuel, Inc.

Thank you for the opportunity to add our comments to the discussion.

CNFbiofuel™ is a renewable energy fuel made from woody biomass by a new Torrefication processing technology. A U.S. Patent was just released last month on this new emerging technology. Like other developers of renewable energy fuels that can help California reduce its dependence on fossil fuels we encourage inclusion of all forms of pre-treatment of biomass and heat transfer fluids and oils. In our case we utilize a liquid immersion “conduction” heat treatment method in a reactor that produces “Enhanced Torrefied Wood Pellets.

This innovative new technology adds to the many renewable energy fuels and pollution reduction solutions that are needed globally..

The following is a General Letter on the technology.

Subject: GENERAL LETTER / Introducing - CNF™ torrefied wood

A new Patent No. 8,217,212 has been issued July 10, 2012 on a new method of turning waste biomass into a useful fuel. The name of the patent is SEQUENCING RETORT LIQUID PHASE TORREFICATION PROCESSING APPARATUS AND METHOD.

Torrefication is biomass that has been pre-conditioned to make it moisture free, hydrophobic, friable and with a higher heat content. Torrefied wood is being

aggressively pursued in Europe and great interest is now occurring in the USA for co-firing with coal.

The most practical renewable energy source to replace fossil fuels, on a large scale, is biomass (the sun's concentrated stored energy). Torrefied wood is far superior to raw wood due to its higher heat content and cleaner burning properties that allow it to be co-fired with coal without any equipment changes.

Torrefication technology can help solve our global energy and pollution problems by utilizing billions of tons of waste biomass that would otherwise simply decompose and generate methane and other GHG's while wasting the sun's stored energy. Torrefication of this biomass into a useful fuel can significantly reduce fossil fuel use for producing clean electric power. Many social and economic benefits then occur that include cleaner environment, jobs and new industries.

Many coal fired power plants are looking to co-fire biomass with coal. The large older power plants are faced with upcoming regulations that will require less polluting emissions. The choice they have is to upgrade equipment at very high cost and with long periods of downtime or start co-firing with torrefied wood without making the need for costly changes or down time. Biomass may only emit 1/10<sup>th</sup> the net carbon equivalents per kWh of electricity generated compared to coal.

Currently billions of tons of biomass are decomposing, creating methane and other greenhouse gasses, and wasting the sun's stored energy. This new technology will allow for full utilization of this natural resource to produce clean carbon neutral electric power and reduce the use of fossil fuels.

Compared to other, "gas convection heating" Torrefication systems this "liquid immersion conduction" technology puts over 1,000 times as many heat transfer molecules in contact with the wood surface. Features include:

- Pelletized before Torrefication processing.
- Liquid immersion results in faster processing with smaller processing equipment.
- Torrefication occurs with pellets immersed in heat transfer oil like liquid.
- Less energy use and Lower cost.
- Produces - Uniform Enhanced Torrefied Wood Pellets.
- Closed system - less air pollution
- Torrefied pellets are durable, dust free and safer with less fire danger.
- All processed biomass gas emissions pass through a condenser.
- Potential to reclaim, for example, Cedar oil with a high commercial value.
- The pellets contain a small amount of heat treatment oil for improved burning.
- Large systems can use part of pellet output for all processing energy needs.
- Equipment has minimum moving parts for a long trouble free life.
- Scalable from very small to very large systems over 60 tons per hour.
- Operate 24/7 with minimum downtime.
- Touch screen control – minimum manpower for production.

- Finished pellets can be considered for “Carbon Offsets”.
- Portable trailer mounted processing systems can treat at biomass site.

We are interested in working with others to bring this new emerging technology to the marketplace. This includes licensing or providing small scale demonstration or pilot projects that lead to commercial size processing equipment.

Several laboratory size processing units have been built and tested with promising results. The next step is to provide larger pilot and demonstration units. The pilot size processing equipment could be turn-key in a packaged unit that fits on a trailer. This size could accumulate torrefied wood for field testing and evaluation with commercial sizes to follow. Applications:

- Feedstock for solid fuel, co-firing, gasification systems & conversion to bio-diesel.
- Ideal for Combination Heat and Power CHP systems.
- Oil companies, Energy related companies and equipment manufacturers.
- Pellet Mills.
- Universities, government agencies, forest management, agricultural, and those that are seeking emerging technologies to produce clean electric power.

For more information contact: John A. Paoluccio PE, President

Email: [info@CNFbiofuel.com](mailto:info@CNFbiofuel.com) Web: [www.CNFbiofuel.com](http://www.CNFbiofuel.com)

©2012 CNFbiofuel™ / John A. Paoluccio PE, President