ATP's Patent-Pending Combined Remediation, Biomass & Bio-Product Production (CRBBP) Process

S-1041 Multistate Committee Annual Meeting

August 9, 2016 Presentation

By: Joseph J. James, President Agri-Tech Producers, LLC (ATP)

Phone: (803) 462-0153 - josephjjames@bellsouth.net

Problems & Opportunities!!!

Global Challenges: Soil, Water & Biomass Availability

- There is a need for remediation and stabilization of soils and water and to increase the availability of lower-cost biomass.

EPA's RE-Powering America's Lands Initiative:

- EPA encourages renewable energy activities on the roughly 490,000 contaminated sites, in the US, which total almost 15 million acres. See www.epa.gov/oswercpa/.

Industry & Consumer Demand:

- There is growing demand for non-fossil materials that are easier to convert, use, or process into superior bio-products.

Lowering Biomass Costs Will Increase Its Utilization:

- Using biomass allotments, multiple times, will effectively reduce costs and facilitate the greater use of bio-products.

ATP's Triple-Bottom-Line Approach

Agri-Tech Producers, LLC (ATP), will help its operating affiliates deploy cost-effective technologies and processes, to sustainably grow, use and convert plant, wood and other forms of biomass into a variety of bio-products, which will:

1. **Enhance the world's environment** and quality of life, and will locate operations in lower-income, rural communities, where possible, to also
2. **Improve economic conditions and create jobs** in deserving **rural communities**, while
3. **Making reasonable profits** for itself and its investors.

ATP's CRBBP Process Lowers Both Remediation & Bio-Product Costs

ATP's patent-pending **Combined Remediation Biomass and Bio-Product Production (CRBBP) Process**, uses biomass allotments multiple times, as follows, effectively reducing both remediation, stabilization and biomass production costs:

1. **Challenged sites** are cost-effectively **treated** by planting **bio-crops** in them, whose **roots** to **extract pollutants, anchor soils, create storm** and **fresh water solutions**; **then,**
2. **Once harvested**, the **bio-crops** are **shredded**, **de-watered** and their biomass is directly **used** and/or **converted** into a wide **variety of bio-products**, like **fillers** for plastics, **biochar**s, a **clean and renewable bio-coal, or bio-fuels.**

“Biomass Sorghum’s” “Super” Phytoremediation Powers

Standard Sorghum

“Biomass Sorghum”, by Chromatin

ATP's CRBBP Process Lowers Both Remediation & Bio-Product Costs

ATP's Patent-Pending Process, Simultaneously:

1. Cleans up **Polluted Sites & Spray Fields**
2. Soils: **Stops Erosion**, Helps **Productivity**
3. Helps Manage/Treat **Storm Water Flows**
4. Reduces **Feedstock/Bio-Product Costs**
5. Creates a **Cleaner** & **Safer** Environment
6. Saves an **Enormous** Amount of **Money**
7. Creates **Jobs** and Generates **Profits**

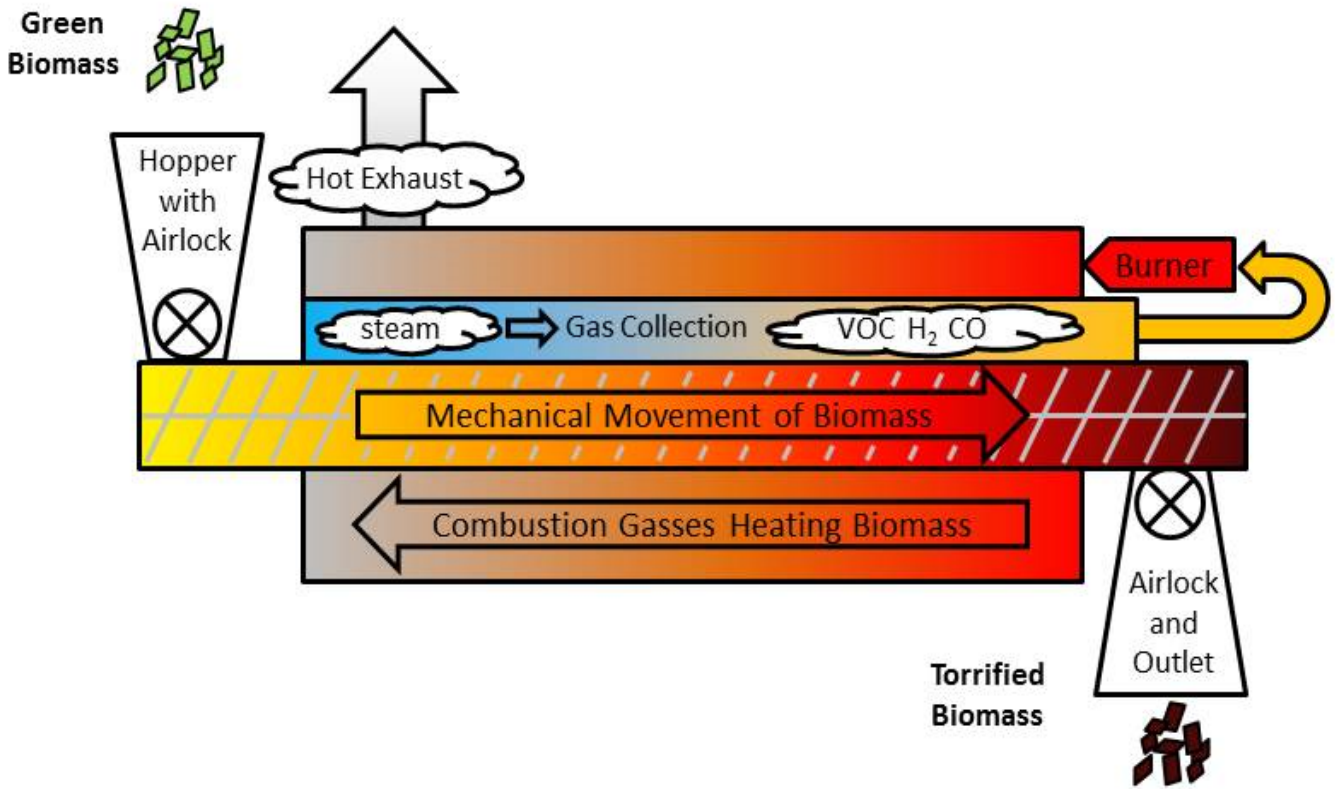
ATP's Torrefaction Process

- **Torrefaction** involves **Heating** animal, plant or wood material (**Biomass**), in a **low-oxygen** environment (**Pyrolysis**), which evaporates the material's water, Volatile Organic Compounds (VOC's), and some Hemicellulose (HC).

- In ATP's patented process, the VOC/HC gases are **Captured** and **Combusted** to cost-effectively and with minimal environmental impact, generate **Torrefaction** process heat.

- **Torrefied Biomass** can be used as a **Feedstock** from which to make a variety of **Bio-Products**, **e.g. Plastics, Biochars** and even **Bio-Coal**, which can be co-fired with or replace coal in power plants, to reduce carbon and chemical pollution, **without** expensive equipment upgrades.

Schematic of ATP's Torrefaction Machine



ATP's Demo Project Options

ATP's Operating Affiliates (OA's) are considering the following **CRBBP Process Demo Projects**:

1. Reduce phosphorus pollution in farm soils in the **Chesapeake Bay Watershed**;
2. In **SC,** treat coal ash deposits**,** wastewater treatment plant spray fields and EPA contaminated sites;
3. Treat salt and nutrient-impacted water and reduce toxic dust dispersion in/around **CA's Salton Sea**;
4. Stabilize eroded and increase productivity in **Haiti's** soils, while producing a plant-based cooking fuel.

Operating Affiliate Product Line

ATP's Operating Affiliates will **produce the following bio-products,** for domestic and world markets**:**

- **Enhanced Plastics Fillers:** Make stronger, lighter and heat/water-resistant plastics. **Value:** $300-$600/ton.
- **Biochar Soil Amendments:** Increase the productivity and water-efficiency of poor soils. **Value:** $250-$500/ton.
- **Plant-Based Charcoal:** Reduce Haiti's de-forestation and in-home air pollution ills. **Value:** $250-$400/ton.
- **Clean & Renewable Bio-Coal:** Reduce chemical and carbon pollution in existing, coal-fired plants with no de-rating or equipment upgrades. **Value:** $175-$250/ton.
- **CRBBP Process:** Cost-effectively remediates sites, while making the aforementioned products. **Value: Priceless**.

ATP's Patent-Pending Combined Remediation, Biomass & Bio-Product Production (CRBBP) Process

S-1041 Multistate Committee Annual Meeting

August 9, 2016 Presentation

By: Joseph J. James, President Agri-Tech Producers, LLC (ATP)

Phone: (803) 462-0153 - josephjjames@bellsouth.net