Nexus

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What is Nexus?
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- Biomass energy testing site (20’ × 30’ greenhouse)
- Comprehensive three phase project to stimulate local industry and create revenue
- Phase I: proof of concept testing (BV and AD)
- **Phase II: implement the Nexus system (ongoing)**
- Phase III: technology transfer
Objectives

To build and test various inexpensive and efficient biomass heat storage and delivery systems for a greenhouse, Nexus in order to research and demonstrate how to improve local crop productivity for farmers in Appalachia. The low-cost heating systems will help resource-limited farmers to extend their growing season:

1) increasing the income of local farmers;
2) enhancing the surrounding community’s access to fresh local produce;
3) conserving fossil-fuel; and
4) reducing greenhouse gas emissions associated with greenhouse heating and transportation of non-local produce.
Scope

- Biomass conversion
- Agricultural improvement
- Energy management
- Water management
- Waste management
- Community enrichment
- Education by the Nexus example
Companion Systems

- Bio-volatilization (BV)
- Anaerobic digestion (AD)
- Compost heating
- Solar thermal
- Thermal storage
- Solar PV
- Wind power
- Automated controlling system
- CNG making

- Aquaponics
- Hydroponics
- Greenhouse energy audit assessment tool
- Soil enrichment (biochar)
- Water collection
- Water filtration
- Food production
- Workshops
Bio-volatilization (BV)

(Proof of concept testing)
Bio-volatilization (BV)

(Constructed in Nexus)
Biochar

- Soil amendment
- Increased water retention
- Reduced nutrient leeching

- Carbon sequestration
- Water filtration
- Air filtration
Py-oil

- Refine into fuel
- Provides useful pharmaceutical ingredients
- Treat lumber
- Natural pesticide and herbicide
- Natural “liquid smoke” flavoring
Anaerobic Digestion (AD)
Solar Thermal
Wind Power
Thermal Storage
Automated Controlling System
Hydroponics
Compost Heating
Nexus System

- CNG
- Biogas
- Water Collection
- Agriculture
- Water filtration
- Compost heating
- Aquaponics
- Hydroponics
- Community
- Greenhouse heating (Automated controlling system)
- Waste
- Education
- Solar thermal
- Thermal storage
- Solar PV
- Wind

URL ➔ http://ok.tec.appstate.edu/biomass
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спасибо
ありがとうございました
감사합니다