

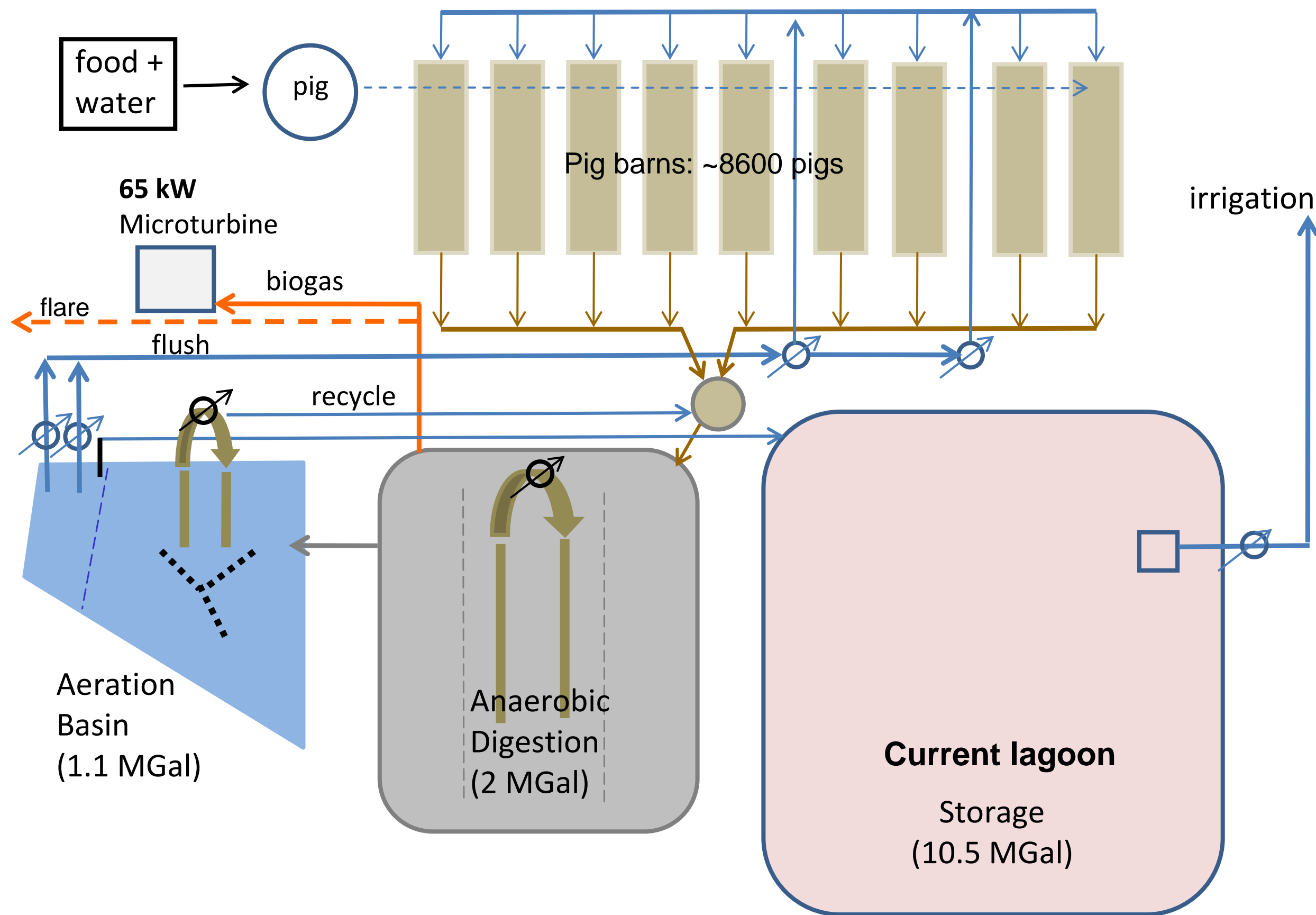


Installation and Evaluation of an Innovative Swine Waste-to-Energy Management System

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Anticipated Benefits

1. **Simple** yet comprehensive waste management **system**
2. **Renewable energy** production (~500 MWh; ~500 RECs per yr)
3. **GHG emission reductions** (~5000 tons CO₂e per yr)
4. **Nitrogen** loading/sprayfield reductions
5. **Secondary benefits** (barn air quality & animal health, odors, improved water quality)

System Performance Data

- **Microturbine run time**
 - August: 79%
 - September: 87%
- **Energy production**
 - September: 36,400 kWh or an average of 51 kW
- **Biogas analysis**
 - methane content: 60%

R&D wish list: The specific objectives are to:

1. **Evaluate, optimize and document the performance and multiple benefits** of the innovative waste-to-energy management system on the Loyd Ray Farms;
2. Conduct a **detailed economical assessment** of the system to support future deployment of the proposed technology and to **build a strategic plan for the widespread adoption** of innovative waste management alternatives, including systems that generate energy from waste; and
3. **Engage in technology transfer and outreach activities** to facilitate adoption of innovative systems and help others access emerging renewable energy and ecosystem service markets



Project Partners: Loyd Ray Farms, Duke University, Duke Energy, Google
Funding Support from: USDA NRCS and NC Lagoon Conversion Program
System Design: Cavanaugh & Assoc. **System Construction:** Romeo Guest

