



E³A: Anaerobic Digester Applications for the Farm or Ranch

Steps in the Anaerobic Digester Series

1. Understanding and Technical Feasibility
2. Estimate Potential
3. Economics
4. Selection
5. Maintenance

Exploring Energy Efficiency and Alternatives

This series explores the applications and benefits of on farm anaerobic digestion to convert animal waste to energy. It also helps you to decide if installation of an anaerobic digester is right for you! You will need to understand both the benefits and limitations of anaerobic digestion before you make the decision to install a system. You will be more satisfied with your decision to install an anaerobic digester if you know what to expect before installation.

Is On Farm Anaerobic Digestion Right for Me?

The following questions may help you decide if on farm anaerobic digestion will work for you.

1. **Are you willing to learn about anaerobic digestion?** Many companies exist that specialize in installation of anaerobic digesters. Some of these companies are new, and some have been around for more than 30 years. Recent technological improvements in anaerobic digesters have made them more successful on-farm, however anaerobic digestion is still a buyer-beware market. Be prepared to educate yourself about anaerobic digesters or hire a qualified consultant to guide you through the technology selection and installation process. You will also need to shop around for different financing options that might be available through banks or technology providers.

Yes
 No
 Uncertain
2. **Is the primary method of manure collection on concrete (i.e. not scraping on a dry lot)?** Anaerobic digestion requires a solids content less than 17 percent, and manure collected from dry lots in the arid west can have a solids content as high as 90 percent. Manure scraped or flushed from concrete typically has less than 17 percent solids and is therefore suitable for anaerobic digestion through conventional technology.

Yes
 No
 Uncertain
3. **Is the manure at your facility primarily free of rocks, sand, and/or soil after collection?** Rocks and soil particles cause major operational problems for anaerobic digesters and must be removed before the waste is processed. Sand in bedding can also be a problem for anaerobic digestion if it ends up in the waste material supplied to the system. Removal of rocks, soil, and sand typically involves addition of water to the waste and subsequent settling of the particles, thus adding complexity, capital cost, and additional maintenance for an AD system.

Yes
 No
 Uncertain
4. **Is there a nearby source of wastewater (municipal or food processing) that you may be able to combine with manure generated at your facility?** When solids content of waste is high, sometimes manure can be combined with nearby sources of wastewater. This is referred to as co-digestion and can improve digester operations and increase biogas production.

Yes
 No
 Uncertain

5. **Are you willing to perform additional maintenance for operation of an anaerobic digester?** Operation of an anaerobic digester will require more maintenance than other manure management practices such as composting or waste lagoon management. Installation of an anaerobic digester may require hiring 1-2 additional employees for routine maintenance, depending on the size of the operation. You should be prepared to meet additional maintenance requirements.
- Yes
 No
 Uncertain
6. **Do one or more of the following apply to you:**
- Average energy costs of at least \$5,000 per month?
 - Frequent and/or credible complaints about odor?
 - Poultry or swine operation?
 - Potential for co-digestion?
- Anaerobic digesters are a large financial investment. In order to justify the investment, you should be able to use the digester to offset other operational costs, like energy use or lawsuit mitigation. If one or more of these four criteria apply to you, the anaerobic digester might offset these costs, and prove to be an economically viable purchase. However, it is still prudent to conduct a detailed spreadsheet analysis of potential revenues and costs over the life of your digester.
- Yes
 No
 Uncertain

Consider Your Answers

- If you answered “yes” to most of these questions, you may be a good candidate for installation of an on-farm anaerobic digester. Please use the online decision tool for more guidance on technical feasibility.
- If you answered “no” to most of these questions, you may not be a good candidate for installation of an on-farm anaerobic digester. You may wish to speak with a consultant to determine how your feasibility may be improved. Please use the online decision tool for more guidance on technical feasibility.
- If you answered “uncertain” to most of these questions, you need to do more research before you can decide if on-farm anaerobic digestion is right for you.