

TABLE 3: COMPARATIVE OF BIOGAS PROCESSES OF NOPAL V/S MANURE OF PORK AND COW

	Nopal / cactus	Pork and cowg
Raw material	Nopal cultivated, nourished and developed for high production of biomass	Dung, waste product
Applications	As food for livestock, human, energy production	As an organic fertilizer, energy generator
Holding time	8 - 24 hours	15-20 days
Process temperature	37°C, temperature controlled	Environment 5 - 30 °C, no temperature control
Energy	5% energy consumption delivered in the process, the heat is delivered by hot water cooling system of electric generators,	The energy required may be greater than that generated by the system. The heat is delivered by hot water from the cooling system of electric generators,
Facilities	The production of 1 MW electric requires 1 reactor of 1300 m ³	The production of 1 MW electric requires the installation of 15 reactors of 1300 m ³
Heating	Electric generators generate more than 200% of the required process heat. Only one fraction is used for reactor heating	Heat is delivered by hot water from the cooling system of electric generators, but is insufficient to maintain a steady mesophyte temperature. It will require 15 times more hot water to heat 15 reactors and produce the same energy
Materials	Carbon steel is used, nopal produces no hydrogen sulfide, equipment using natural gas is suitable.	Stainless steel must be used throughout the process line in contact with biogas, biodigesters, blower purifiers, electric generator
Waste	Approximately 1% of the nopal is not processed, which contains lignin or fibers digestible by bacteria, 99% is water or biomass that is transformed into water with nitrogen, nutrients and Biogas usable. This effluent has no odor and is used in plantations, recycled	The material digested by the bacteria depends on the feeding of the animals and their composition.
Production capacity	The elastic process can be regulated from 10% to 100% of installed capacity. The production is adjusted by reactor feed, if more energy is required, more nopal is cut and feed reactors, no accumulation of material, the nopal remains in plantations until it needs to be cut.	The process is adjusted to the amount of animals and excreta that are generated daily, the accumulation of excreta generates environmental problems, so that everything produced must be processed. You can not increase or decrease the amount of animals daily. It is a more rigid process.
Digestor	They are specific for nopal considering their rheological characteristics and composition of biogas, bacterial catalysts and building materials	Usually they are designed for diverse manure of cow and pork are the most usual, there are multiple design according to the characteristics of the zones and especially process temperatures.