

EIP-AGRI practice abstract

Short title:

Technology for N recovery as liquid fertilizer starting from liquid manure or biogas digestate with plasma manure processing system

Summary:

N₂ plasma manure processing technology is used to treat manure on the farm and turn it into an environment-friendly organic fertilizer. The plasma unit uses only (preferably renewable) electricity to capture nitrogen from air and add it to manure. This eliminates the ammonia and methane loss both in storage and during field application and makes the otherwise lost nitrogen available for the plants. It creates an economic benefit and makes livestock production more sustainable by reducing ammonia and GHG emissions.

The plasma technology uses electricity to fix nitrogen from air forming nitrogen oxides. In the absorption system, the nitrogen oxides are absorbed to neutralize the liquid to a pH around 6. Combined with free ammonia the oxides react to form a stable ammonium nitrate fertilizer, doubling the mineral-N content from the input product.

The available capacity of the system is 3,000 to 4,000 t/year per unit.

The price for the product is under development.

The output product is a liquid fertilizer with a performance that matches chemical nitrogen fertilizer. The ammonium nitrate is immediately available for plant uptake and is best applied when the plant needs nitrogen most.

There are several benefits proven:

- Reduce ammonia and GHG emissions from manure storage and field application
- 30% increased crop yield compared to untreated
- Save cost by substitution of chemical nitrogen fertilizer
- Plasma treated product does not smell like manure

For more information: https://nutriman.net/farmer-platform/technology/id_276