



Technology Readiness Level: **4**
 Component and/or Breadboard Validation
 in Laboratory Environment
Source: United States DOE

Ammonia Sensor Helps Maximize Livestock Production

Benefits

- Lower operating costs
- Increased yield of ventilation systems
- Reliable, real-time analysis & rapid response
- Stable, durable; tolerates harsh environments

The CAFO industry is seeking a real-time ammonia monitor to enable optimal ventilation with respect to both temperature control and ammonia mitigation. Also, in March of 2000, the EPA enacted policy that requires reporting, and therefore monitoring of ammonia emissions from CAFO facilities.

Current ammonia monitoring solutions include labor-intensive manual test kits, electrochemical sensors, which have proven unreliable or intolerant to the harsh CAFO environment, and very expensive optical devices (~\$40K per unit).

Eltron's Solution

Eltron's ammonia monitor provides growers the data they need to properly manage their ventilation systems, enabling them to decrease costs by optimizing temperature and increase yield by minimizing ammonia exposure. The Eltron ammonia monitor employs a cost-efficient, LED-generated light projected through a proprietary sensing film which is optically analyzed by a photodetector to determine ambient ammonia concentrations in a continuous air stream. Analysis results can be automatically relayed to the ventilation system, which can then respond appropriately to create environmental conditions for optimal animal growth. This process provides time-efficient, automated testing that gives results in less than 1 minute. Eltron's sensor has also proven to be highly durable in harsh CAFO environments, more durable than electrochemical sensors.

Features include:

- 0-350 ppm range with accuracy of 1 ppm
- Real-time analysis – less than 1-minute lag
- Stable in dusty environments
- Not susceptible to failure at high ammonia concentrations
- Cost estimate: \$ 700 per unit.

Stage of Development

Eltron has developed a prototype device (see photograph above) and has begun testing in conditions simulating the humid, dusty, ammonia-laden CAFO environment. Eltron is looking for a partner for field testing and commercialization. The technologies described, and all related inventions, are owned by Eltron Research & Development Inc and protected by copyrights, trademarks, issued and pending patents, trade secrets, or other applicable intellectual property rights.



Front view Ammonia Sensor

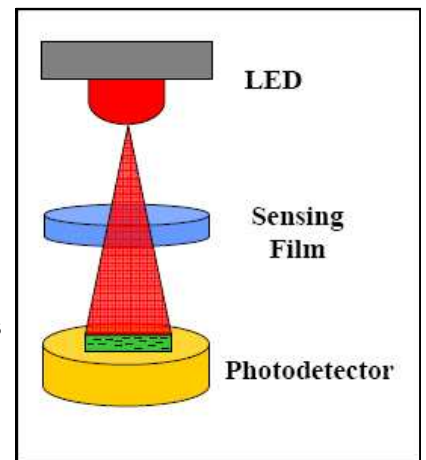


Illustration of the basic calorimetric transducer