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# Overview of Electrostatic Precipitation

Air Management Practices Assessment Tool (AMPAT)

Project Team:

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## Application

- Mitigation of particulate matter in ventilation air
  - May be applied as air leaves the building or within the animal room

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## Basic Operation

- A power supply generates -30 kV DC at a low current of 2 mA.
- Stainless steel electrodes create a corona discharge that induces a negative charge on particles.
- Dust particles stick to grounded surfaces.

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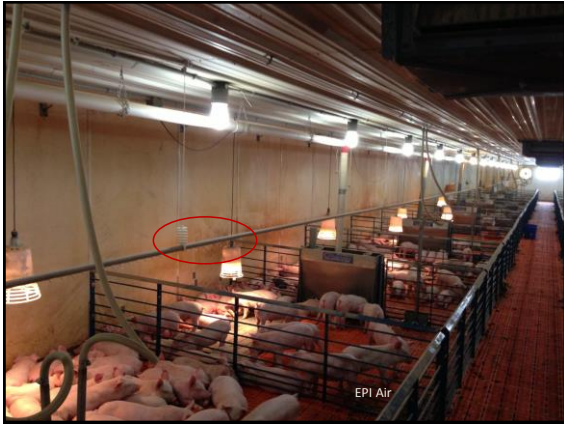
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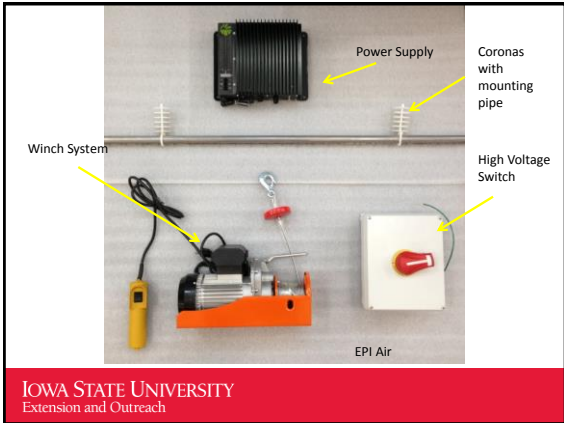
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### Electrostatic Precipitators - Pros

- Works within the building to clean air.
- Workers may benefit from clean air.
- Animals may exhibit improved productivity.

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### Electrostatic Precipitators - Cons

- Dust accumulation on surfaces requires periodic (weekly) cleaning.
- Potential for slight shock if the electrodes are touched. Not a dangerous level.
- Effectiveness may be influenced by relative humidity.

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### Effectiveness

Component	Reduction	Notes
NH3	-21 to 17%	Dust reduction may have increased NH3 in poultry
H2S	Unreported	
Odor	12%+	May reduce odor transmission potential
Particulate Matter	39 to 63% 49 to 57% 45 to 65%	Total Suspended Particles PM10 (2.5 to 10 microns) PM2.5 (<2.5 microns)
Volatile Organic Compounds (VOC)	5%	Methane
Cost	\$\$	Electric/materials/labor

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**For Further Information:**

- If you are an educator and wish to have copies of powerpoint files, contact Jay Harmon (jharmon@iastate.edu).

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