Thank you for participating in SowBridge 2011-12.

To start this presentation, advance one slide by pressing enter or the down or right arrow key.

Operation and Maintenance of Barn Filtration for Disease Control
Dr. Darwin Reicks
St. Peter, MN

Filtration
• Started with Boar Studs
  – Has been successful
  – Was the final step after all other biosecurity procedures were applied

Sow Farms
• Could it be done on sow farms
  – More people
  – More animal movements
  – More supplies in and out
  – …
  – More Things that could go WRONG

Sow Farms
• It has been done!

Results
• Database of filtered farms
  – Swine Vet Center
  – Pipestone Veterinary Clinic
    • Dr. Gordon Spronk
  – Fairmont Veterinary Clinic
    • Dr. Paul Ruen
Results
Farms > 6 months filtered

• Overall: 72 Farms Under Filtration > 6 mo.
  – 42 Sow Farms – 125,000 sows
  – 24 Boar studs
  – 2 Research Farms
  – 3 Finishing sites
  – 1 Isolation

Results

• Farms > 6 months under filtration
  – 72 farms
  – Before Filtration (5 yr) - 182 breaks
    • Break rate of 57% per year

Result

• Farms > 6 months under filtration
  – After Filtration (197 farm years)
    • 16 breaks total (8% per yr)

Result

• Farms > 6 months under filtration
  – 100% Filtration
    • Before Filtration 68% break rate per year
    • After Filtration (121 farm yrs)
      – 5.8% / year

Result

• Farms > 6 months under filtration
  – Partial Filtration / Bail out
    • Partial – with
      – 9.9% / year
    • Partial - without
      – 17% / year

Results Sow Farms

• Sow Farms > 6 months filtered
  – 100% Filtered Farms – 32 Farms
    • Before - 92% per year (141 breaks)
    • After - 13% per year (7 breaks)
    • 85% reduction in break rate
How to make filtration work
- How are things different on a filtered farm
- What NEEDS to be different
- What are the lessons learned…

In a nutshell
- Don’t let any unfiltered air in
  - Critical control points
    - People
    - Pigs
    - Air

Entering the Sow Farm
- Evacuate air of people entry
- Or add seals/jams to doors
  - Keep doors closed

Entering the Building
Entry pass through sealed before after
Locking sliding windows after

Evacuation / Filtration of Entry

Keep Doors Closed and have jams and seals on doors

Entering lunches, personal items double bag OR dry & downtime

Supply entry & garbage exit

Be aware of air leaks

- Back drafting
- External / fire escape doors
- Load outs
  - Weaned pigs
  - Deads
  - Culls
- Manure hauling
Back drafting Problem

Non operating Fans
• Need to be sealed
  – Inside
  – Outside

Back drafting
• Non – operating Fans
  – Seal
• Operating Fans
  – Wind sock
  – Double shutter

Back drafting Interventions
Testing at AP lab

<table>
<thead>
<tr>
<th>Test Number</th>
<th>Build Panel (Wrapped Shutter)</th>
<th>PVC Shutter</th>
<th>Back draft Damper (Old Style)</th>
<th>Back draft Damper (Old Style W/ Seal)</th>
<th>Wind Sock</th>
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<tbody>
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Fan Performance

• New back draft damper with plastic shutter compared to plastic shutter alone
  – 97.6% of airflow @0.05
  – 92.8% of airflow @0.25

Fan Performance

• Wind Sock
  – 65% of airflow at 0.05
  – 52% of airflow at 0.25
Leakage

- Back draft damper with plastic shutter
  - 3.8% @ 0.05
  - 1.5% @ 0.25
- Back draft damper with wind sock and shutter
  - 3.8% @ 0.05
  - 2.2% @ 0.25
- New Plastic shutter alone
  - 7.5% @ 0.05
  - 6.3% @ 0.25

Back drafting of operating fans

- Double louver
Pit Fans
Before After

Intrusion Alarm System

Doors and Windows - seal

External Doors – Seal
All staff need to monitor

Load out areas
- Weaned pigs
- Culls
- Deads
  - Ideally all in the same area
  - Double doors
  - Evacuate or positive pressure

Load out
Before
Load out
After

Load out
Can be positive or negative pressure

Often build new load out

Manure handling
Risky time of year
Before After

Weekly Farm Inspection
• Look for Air Leaks
  – Inside
    • External Doors
    • Windows
    • Supply entry and garbage exit
    • Weaned pig / cull load out
    • Dead exit area
    • Power washer exhaust
    • Fans
    • Etc.

Weekly Farm Inspection
• Look for Air Leaks
  – Outside
    • Pit fans
    • Fan covers
    • Etc.

… Pay Attention!
Filter Inspection
- Housing
- Pre-filters
- Filters

Wood Boxes
Inspect for:
- warping
- caulk separation
- nails screws backing out

Pre-filters

Filter damage - can be repaired

If find leaks…

Testing of Filters by SVC
Prefilters Tested on March 4th, 2011

<table>
<thead>
<tr>
<th></th>
<th>ft/min</th>
<th>sq. ft&lt;sup&gt;′&lt;/sup&gt;</th>
<th>% of New</th>
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<tr>
<td>New L6 and New Camfil Prefilter</td>
<td>225</td>
<td>900</td>
<td>100.0%</td>
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<tr>
<td>Breeding barn attic Middle West</td>
<td>207</td>
<td>828</td>
<td>92.0%</td>
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<tr>
<td>Breeding barn attic SE Corner</td>
<td>210</td>
<td>840</td>
<td>93.3%</td>
</tr>
<tr>
<td>South Farrowing Filter Bank #1</td>
<td>201</td>
<td>812</td>
<td>90.2%</td>
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<tr>
<td>South Farrowing Filter Bank #2</td>
<td>188</td>
<td>752</td>
<td>83.6%</td>
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<td>North Farrowing Filter Bank #1</td>
<td>193</td>
<td>768</td>
<td>85.3%</td>
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<tr>
<td>North Farrowing Filter Bank #2</td>
<td>185</td>
<td>740</td>
<td>82.2%</td>
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<tr>
<td>Gestation North End</td>
<td>203</td>
<td>812</td>
<td>90.2%</td>
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<tr>
<td>Gestation Middle</td>
<td>211</td>
<td>844</td>
<td>93.8%</td>
</tr>
<tr>
<td>Gestation South</td>
<td>212</td>
<td>848</td>
<td>94.2%</td>
</tr>
</tbody>
</table>

Summary

- What’s it like to work on a filtered sow farm?
- Filtration will stop PRRS from infecting your farm if you are constantly aware that…

All air comes through the filters!

Constant awareness of staff
Commitment to fix things right now
Regular inspection inside and out