

Emission Measurements in Pig Barns

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AGENDA

A large white barn with a red-roofed house in the background, set against a cloudy sky and green fields. The barn has several large windows and doors. The house has a prominent red roof and white walls. The foreground is a green field with some trees and bushes.

WHO IS SEGES
INNOVATION

PIG PRODUCTION IN
DENMARK

EMISSIONS FROM
PIGS

CASE

WHO IS SEGES INNOVATION?



CROPS



BIOGAS



DIGITAL



LIVESTOCK

SOME OF OUR WORK

SOME OF OUR WORK



Highly controlled Proof of concept test
(Research farm Grønhøj)

Large-scale on-farm test





PIG PRODUCTION IN DENMARK

Gestation unit

The unit where the sow is located from the insemination unit ~5 days before farrowing



Farrowing unit

Where the sows farrow and stays with the piglets for a minimum of 21 days



SEGES
INNOVATION

Finisher unit

The pigs are placed here when they are approximately 30 kg and stay there until ~105 kg



Weaner unit

Where the piglets/weaners are moved from the sow into. They stay here until they weigh approximately 25-30 kg.



SEGES
INNOVATION

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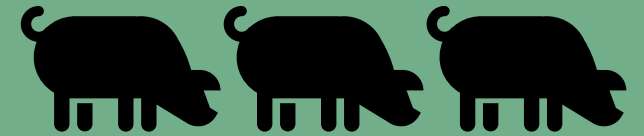
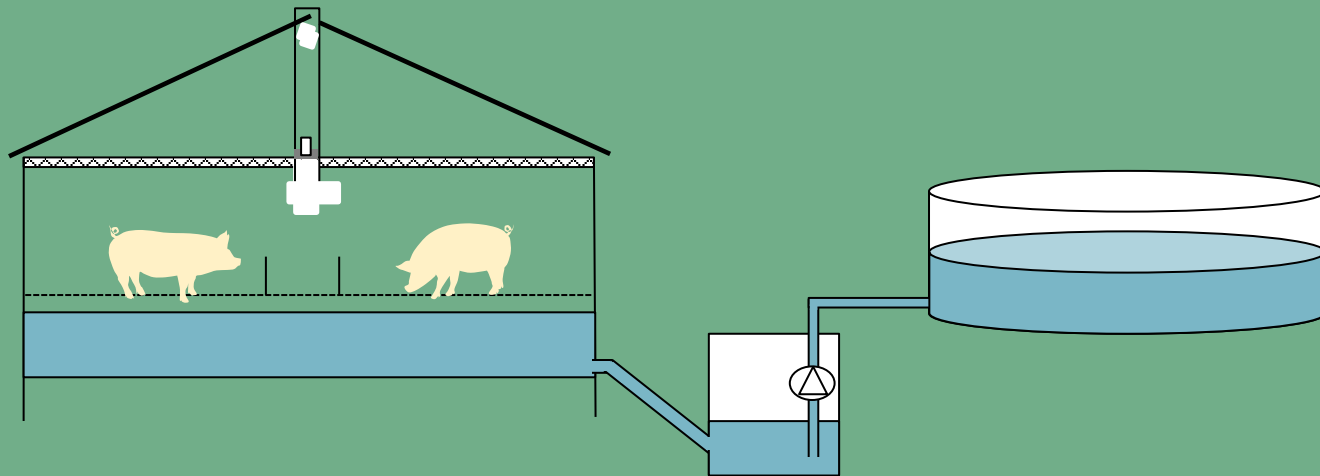
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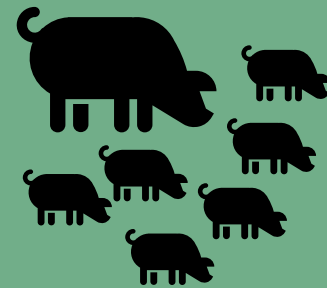


SLURRY MANAGEMENT IN PIG BARN

SLURRY MANAGEMENT IN PIG BARN



Finisher pigs – once a week



Farrowing pigs – every 5-6 weeks

EMISSION MEASUREMENTS

EMISSION MEASUREMENTS

g NH₃ /pig / hour

EMISSION MEASUREMENTS

$$g \text{ NH}_3 / \text{pig} / \text{hour} = \frac{M * C * V * P}{R * T * N * 1000 \text{ mg/g}}$$

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Molecular mass of Ammonia (points to M)

Pressure (1 atm) (points to P)

Gas constant (0,0821 atm mol⁻¹ k⁻¹) (points to R)

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Concentration (ppm) → *C*

Ventilation (m³/hour) → *V*

Temperature (kelvin) → *T*

Number of animals → *N*

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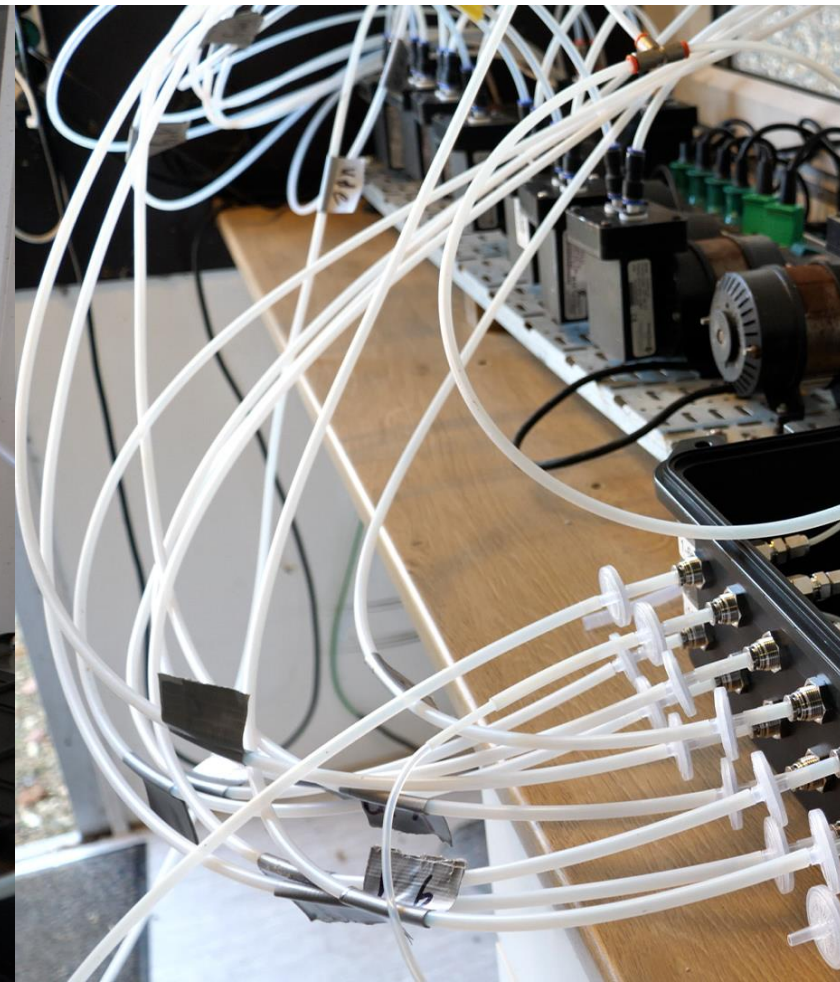
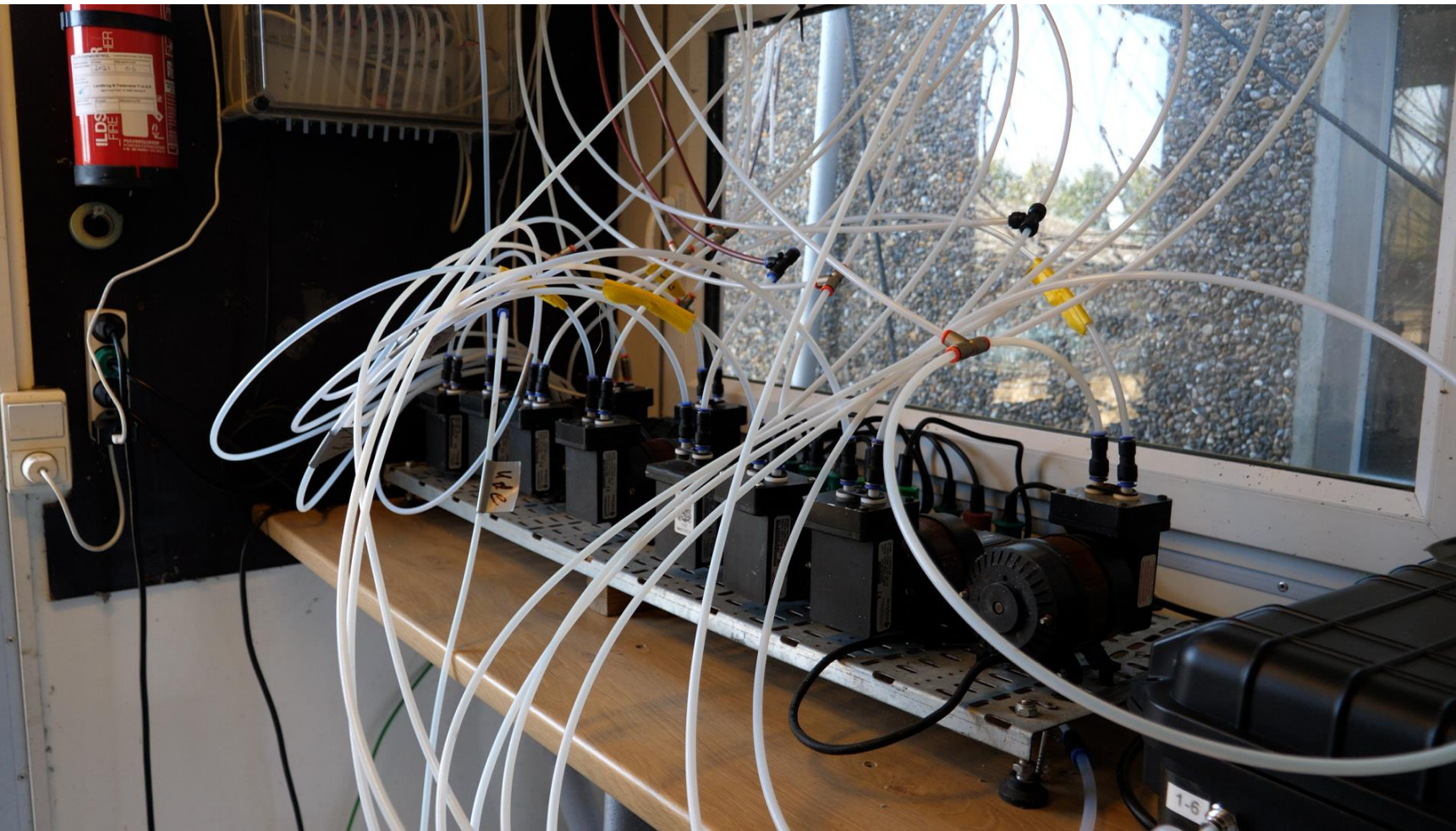
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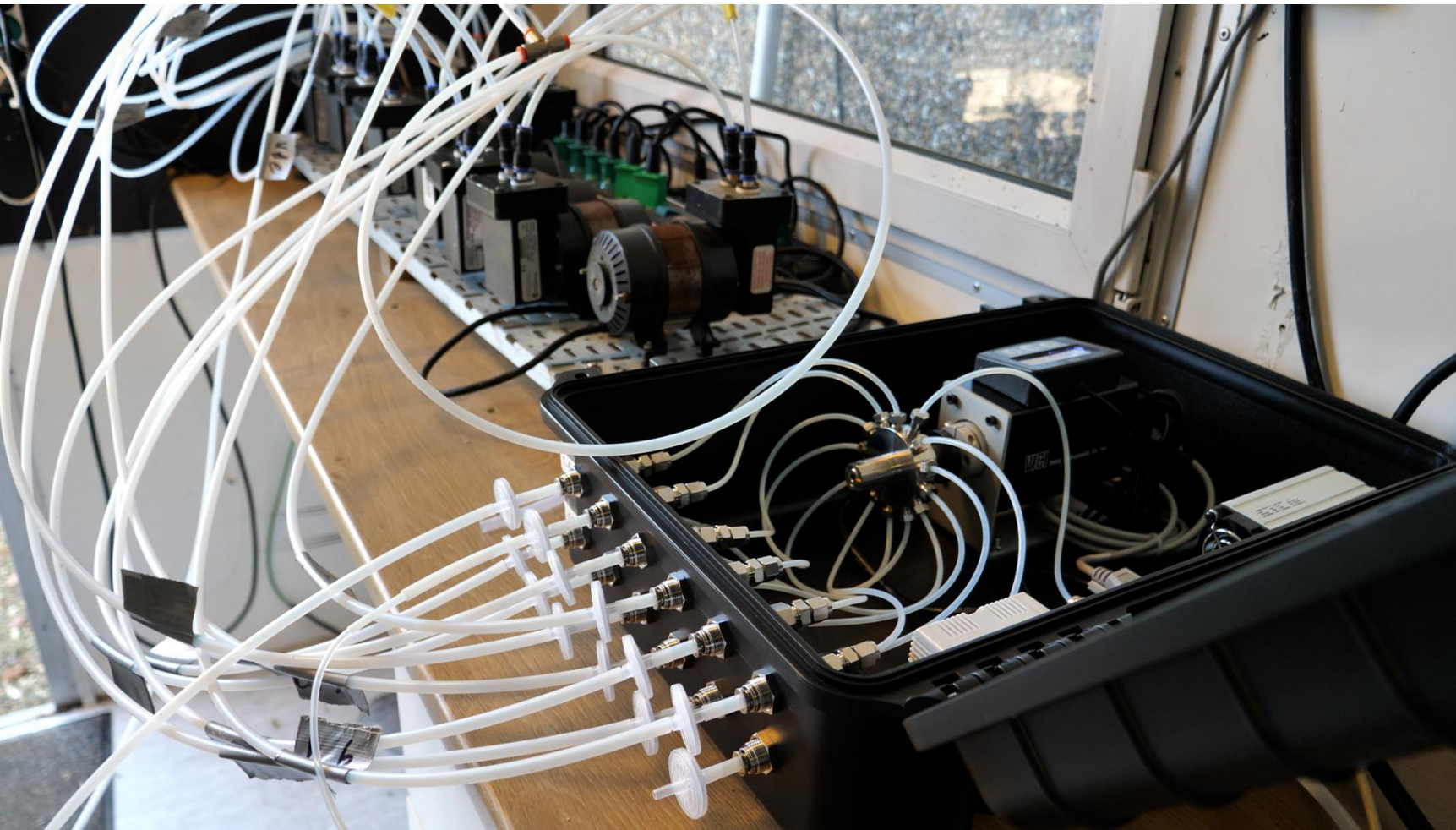
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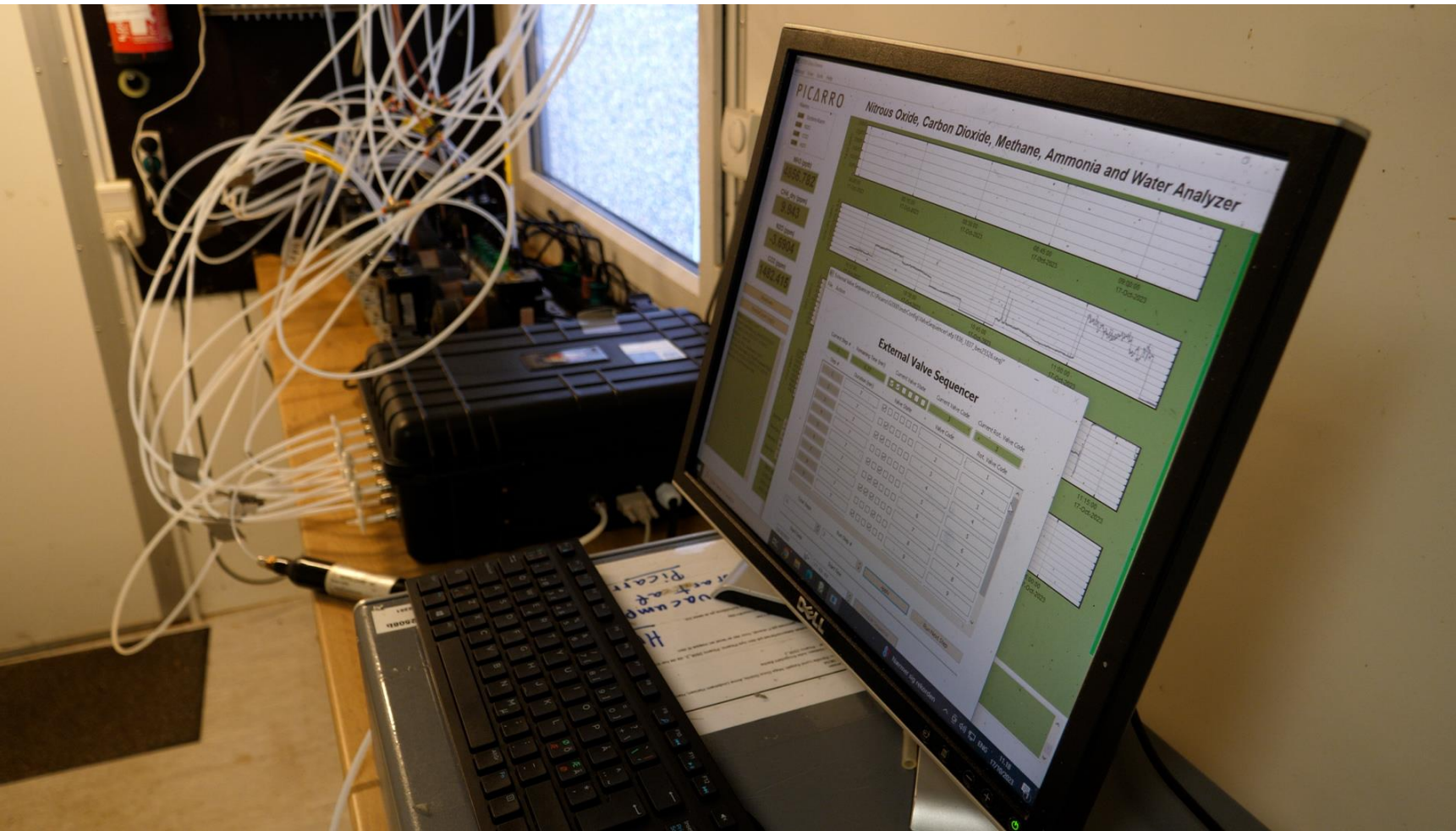
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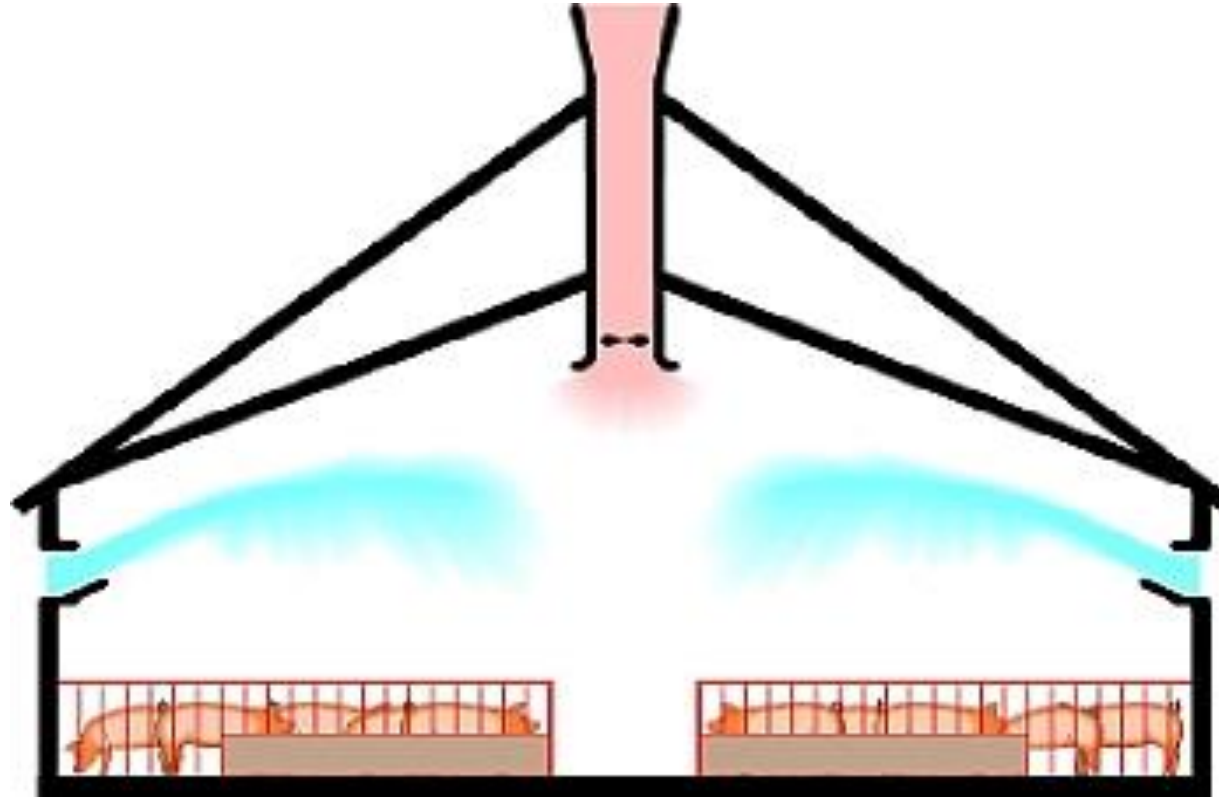
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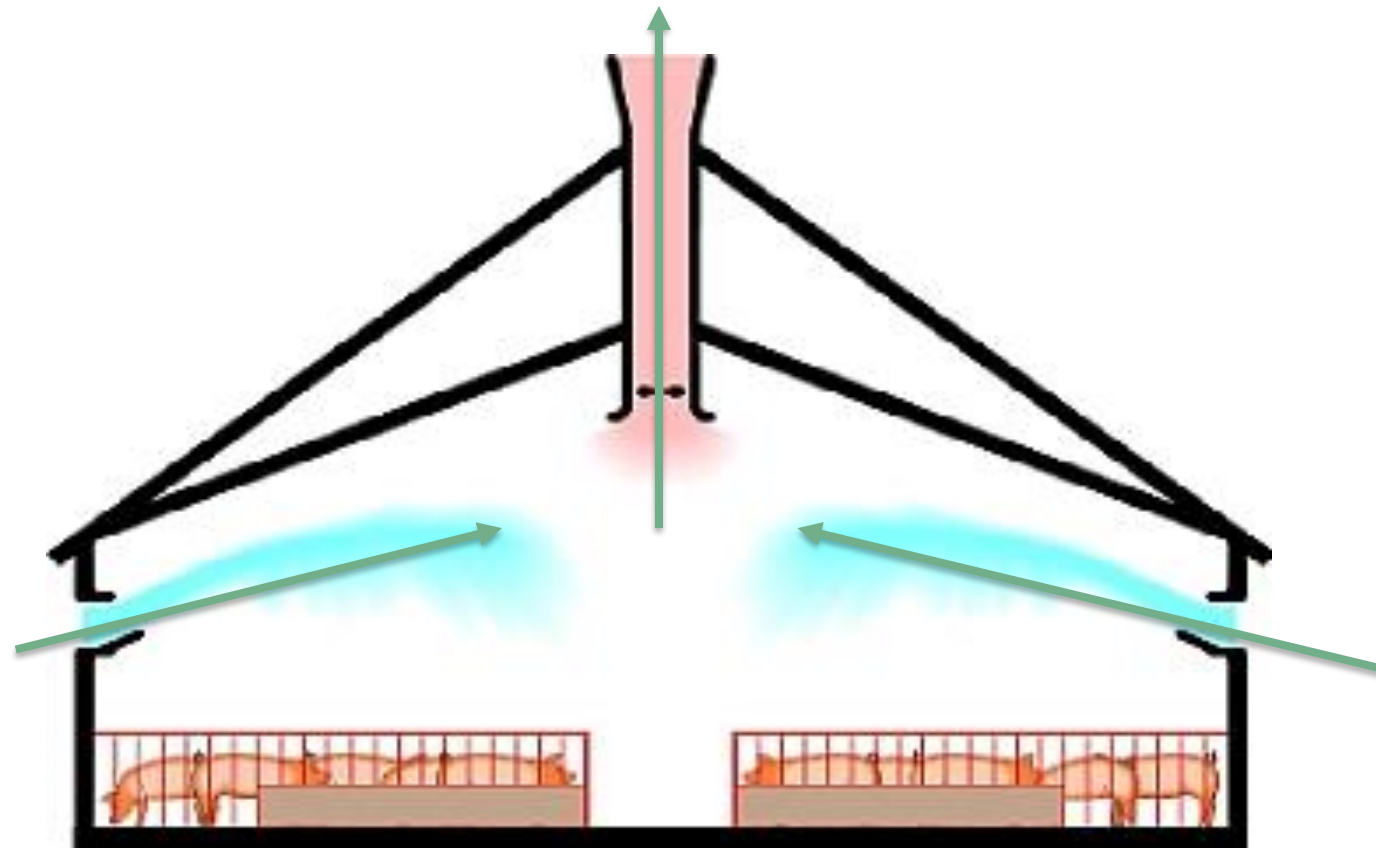
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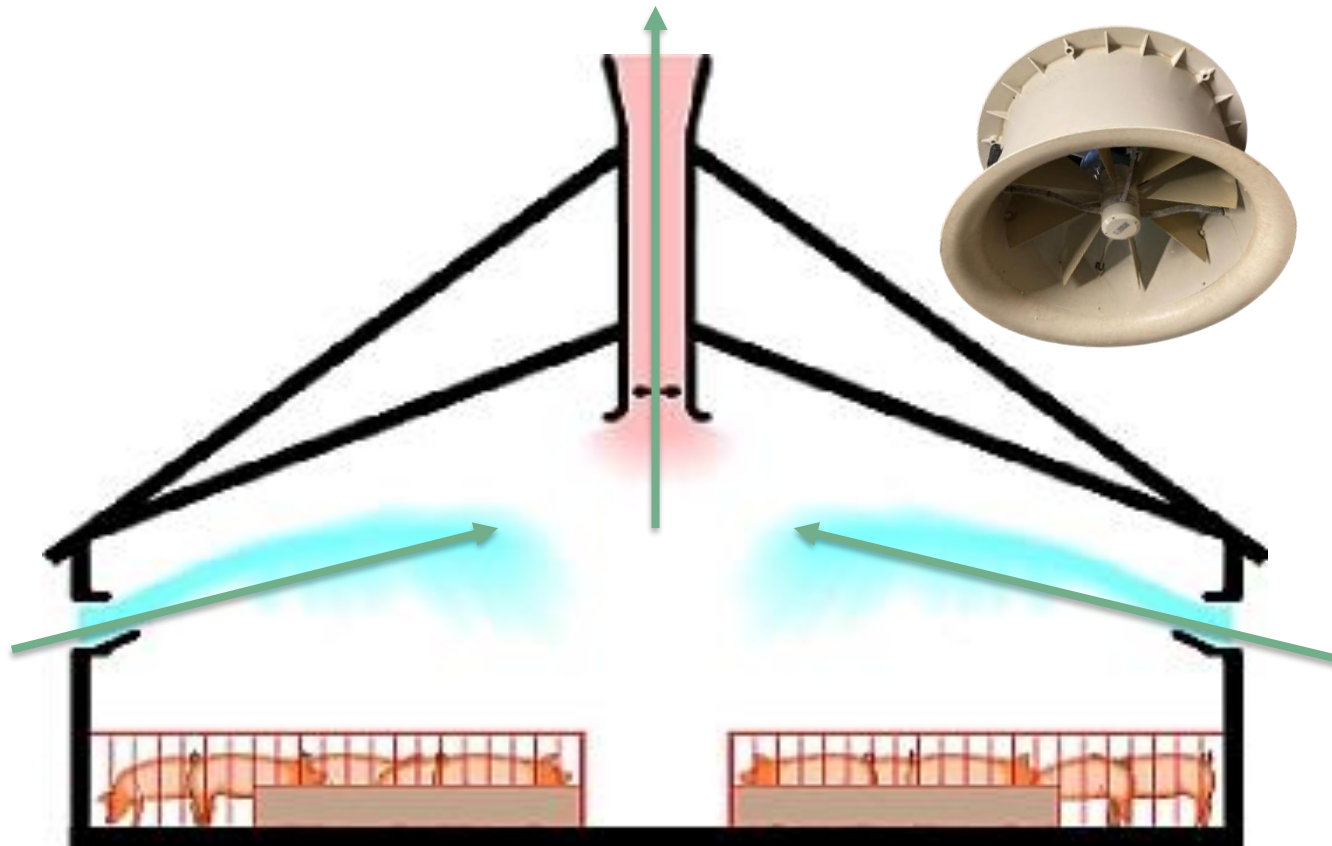
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Finisher

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|----|----|

Farrowing

| | | | | | |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|

Weaners

| | | | |
|---|---|---|---|
| 1 | 2 | 3 | 4 |
|---|---|---|---|

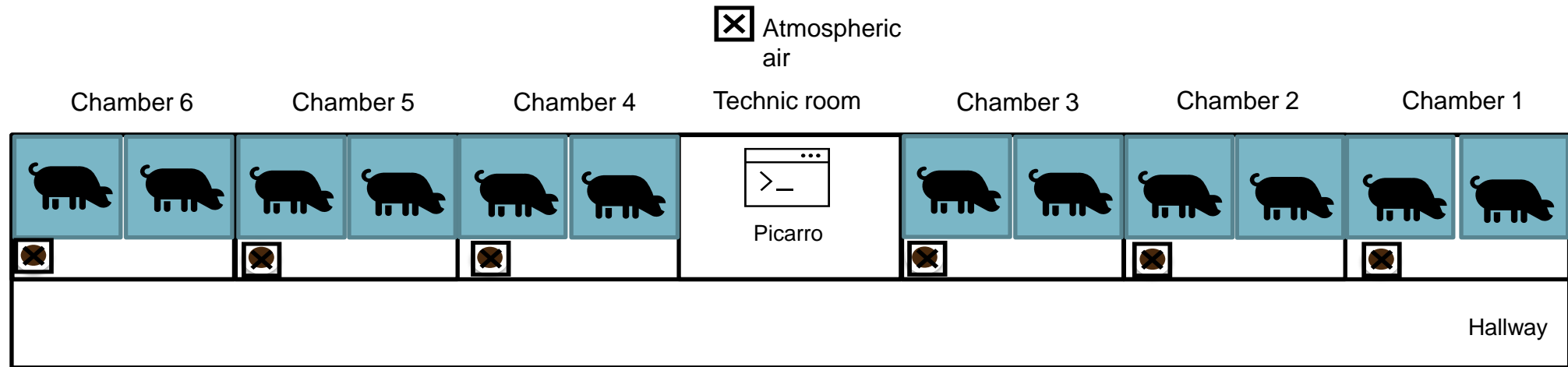
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CASE

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Sampling location

Ventilation shaft

CASE

Atmospheric air

Chamber 6

Chamber 5

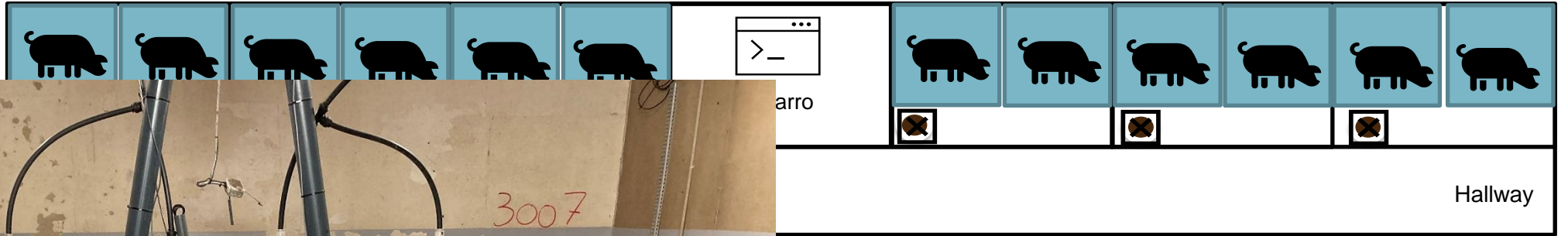
Chamber 4

Technic room

Chamber 3

Chamber 2

Chamber 1



CASE

Chamber 6

Chamber 5

Chamber 4

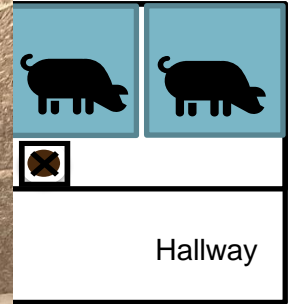
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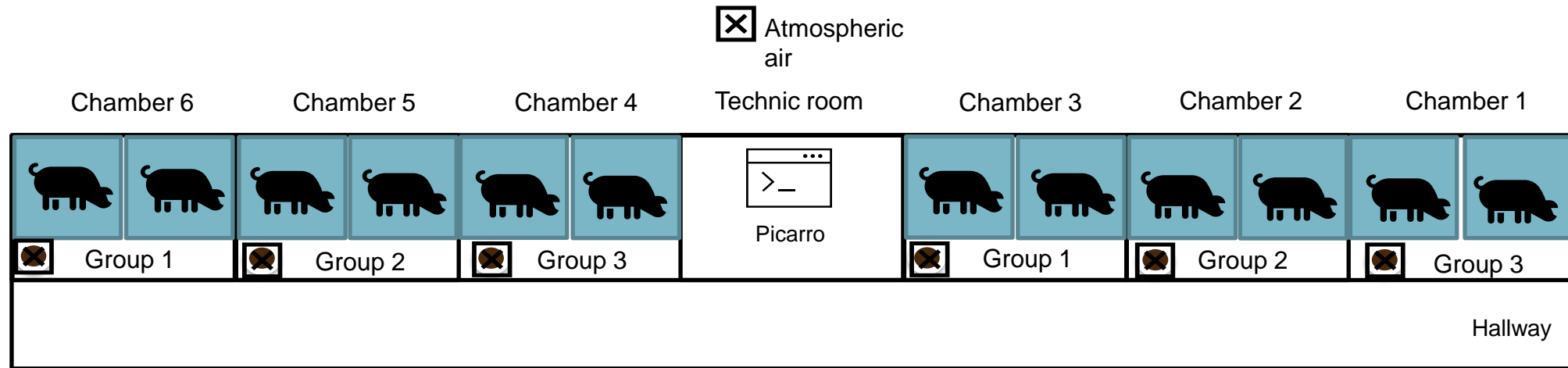
Chamber 3

Chamber 2

Chamber 1



CASE



CASE

SEGES
INNOVATION

NOTAT

A Novel Greenhouse Gas Mitigation Technology for Livestock Manure Slurry (NoGas)

Anne Lindstrøm Hansen

© SEGES Innovation P/S

Hovedkonklusion

Tannin tilsætning på 4,25 g tannin og 1 mM NaF pr. liter gylle gav en gennemsnitlig reduktion i metanemissionen i stalden på 57% - fratrukket enterisk metan bidrag fra grisene. Ammoniak blev reduceret med 19% i stalden (ikke signifikant). Metan emissionen i lagertankene blev reduceret med 70%.

SEGES
INNOVATION



Samp

Venti

QUESTION?