

Flooring with focus on emission

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New legislation on farrowing houses in Denmark

- New farrowing units
  - 6,5 m^2 per pen
  - 3 m^2 solid floor
  - Crates is allowed one day before expected farrowing until four days after farrowing

- Traditional crates allowed until 2041
- Existing free farrowing units have until 2050

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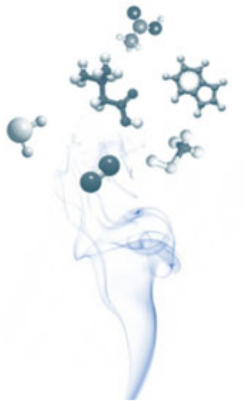
Environmental permits and carbon tax

Ammonia and odour

- Emission is regulated in the environmental permits
- Norms are based on old calculations and models – need for measure

Upcoming carbon tax

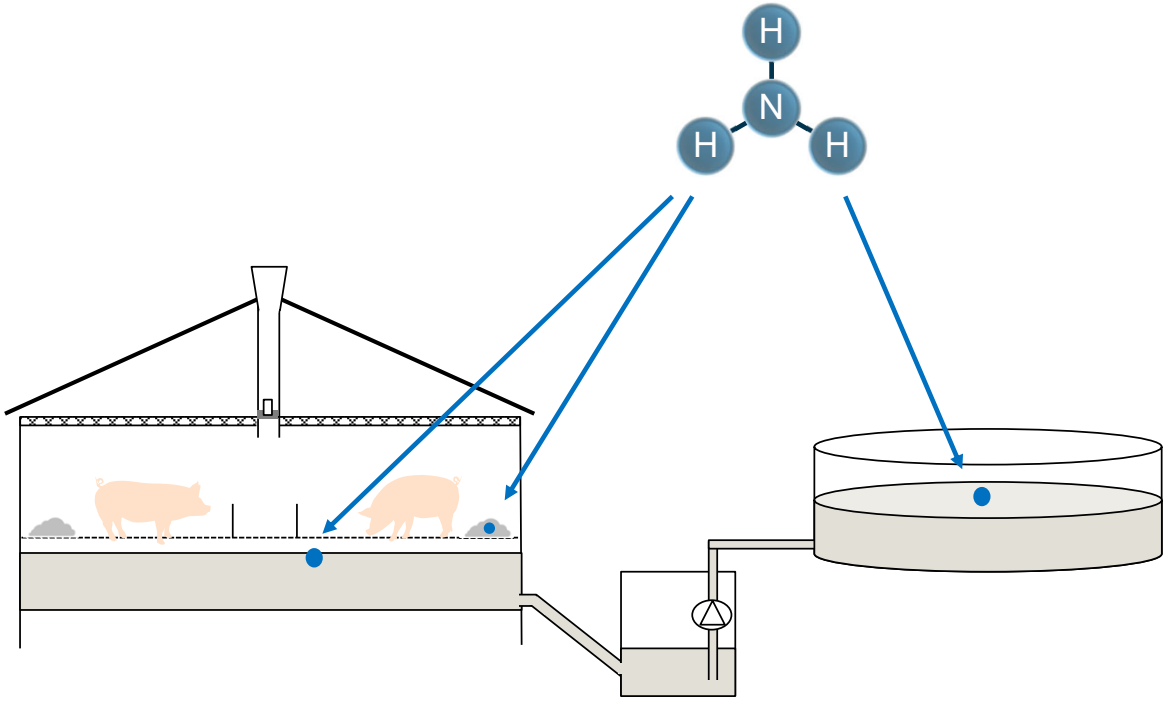
- Introduced in 2030
- Increased focus on methane
- Documentation and reduction of methane emission
- Focus on methane and not carbon dioxide





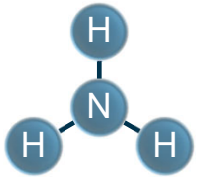
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Mechanisms of Ammonia and Methane Emissions



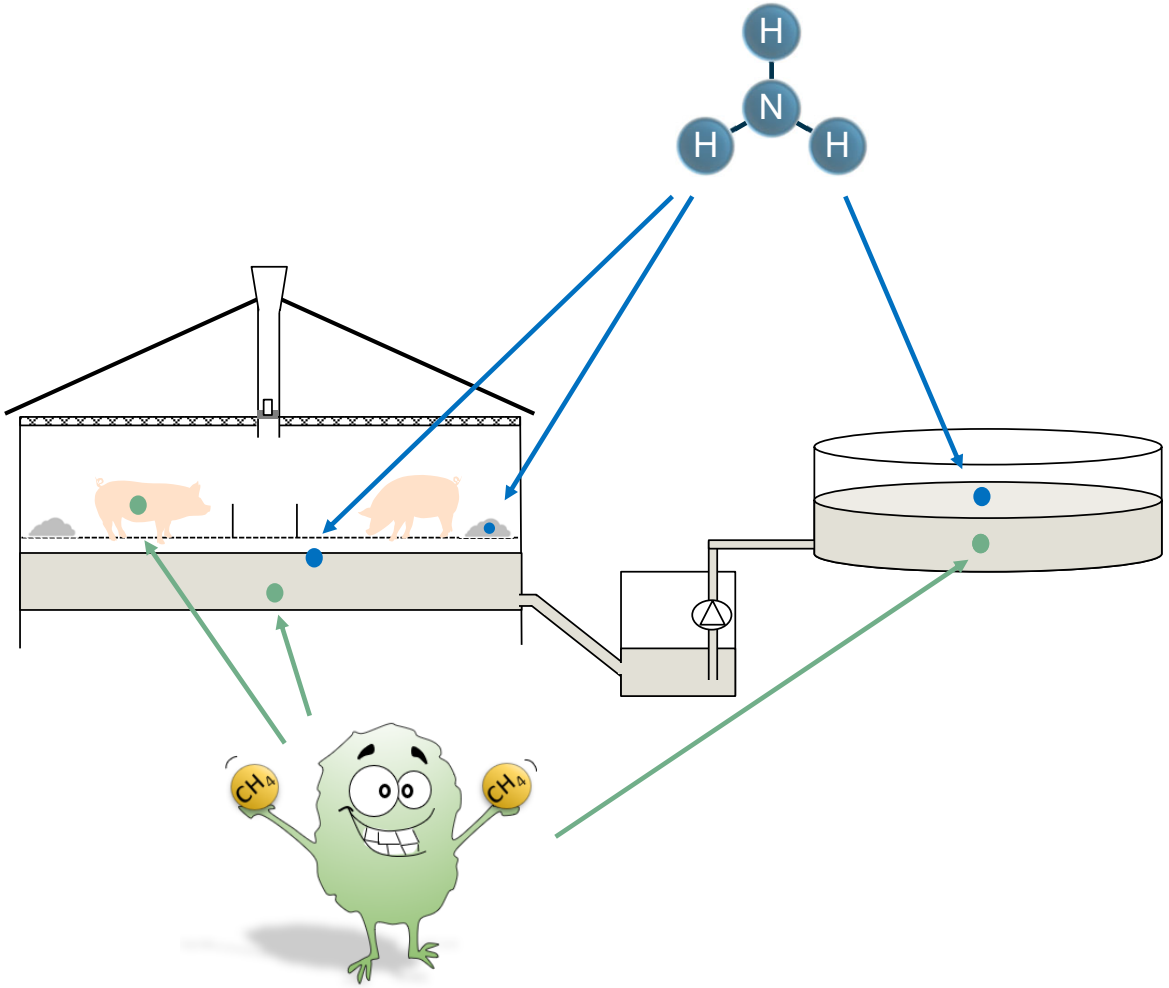
Ammonia

- Reduce surface
- Lower temperature
- Additives



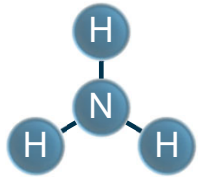
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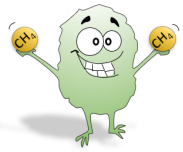
Ammonia

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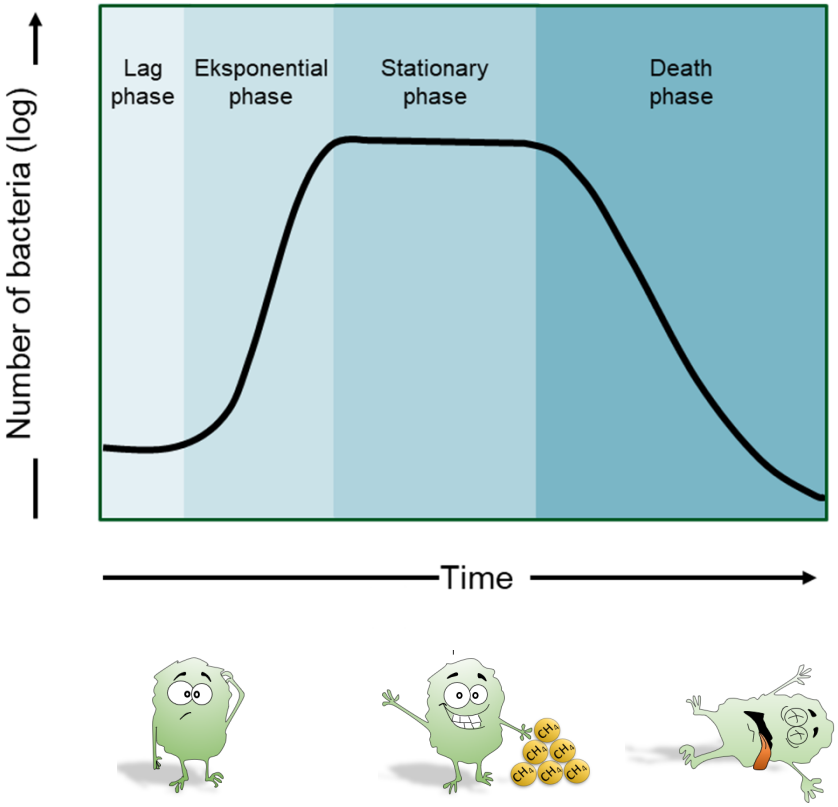
Methane

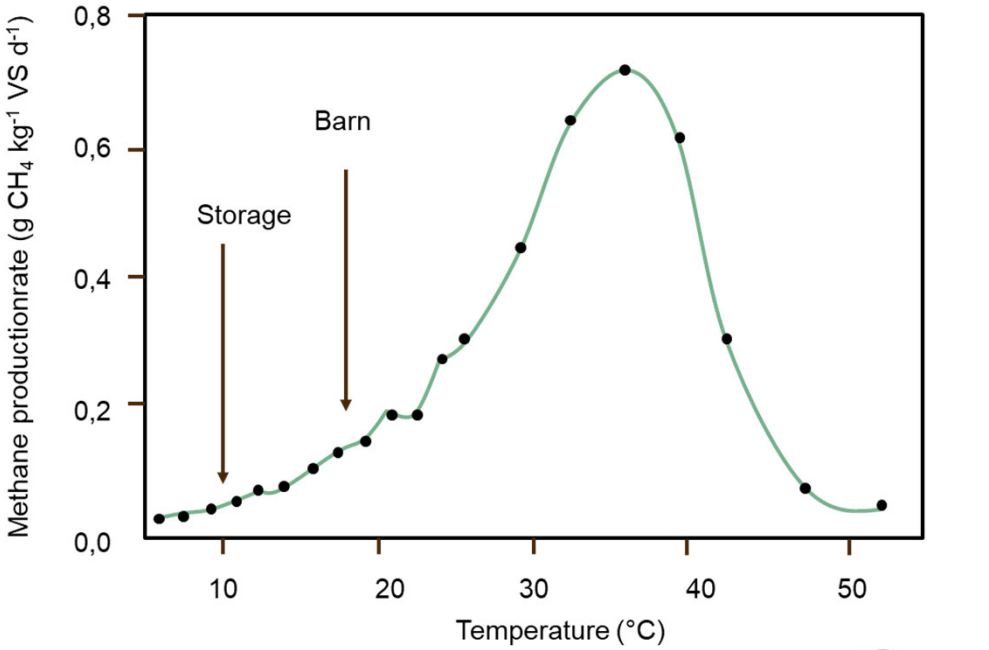
- Lower temperature
- Frequent remove manure



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Emission of methane - time and temperature





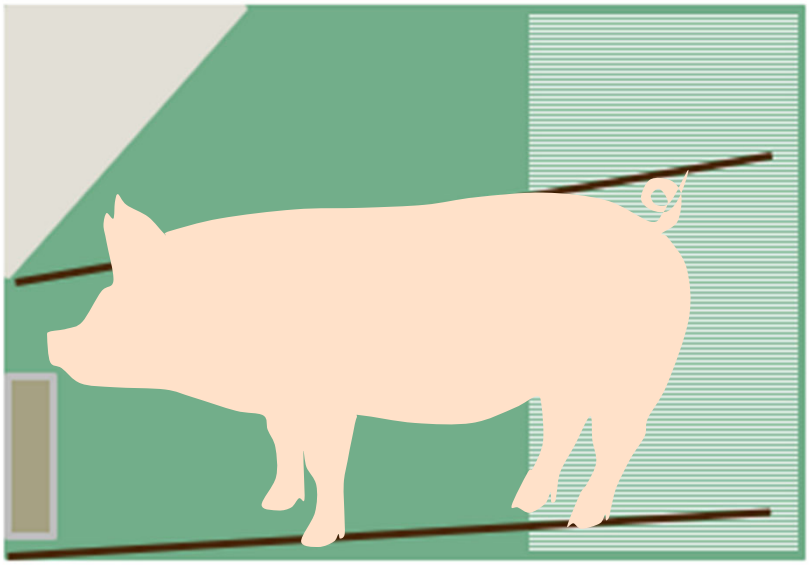
Elsgård et. al., 2016

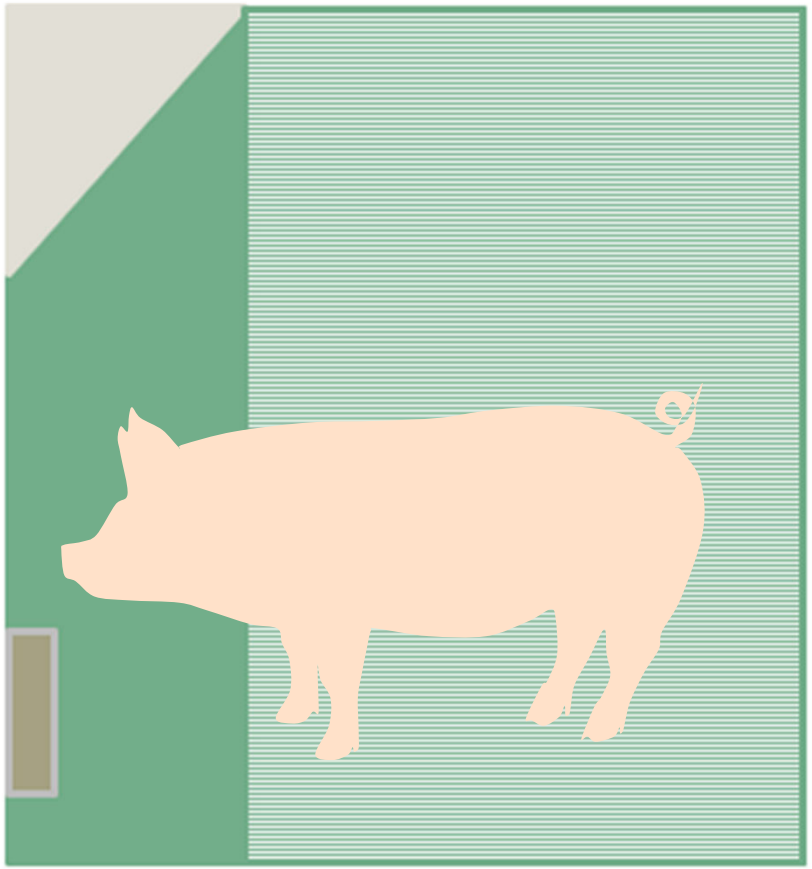
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Welfare vs. emission

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Welfare vs. emission

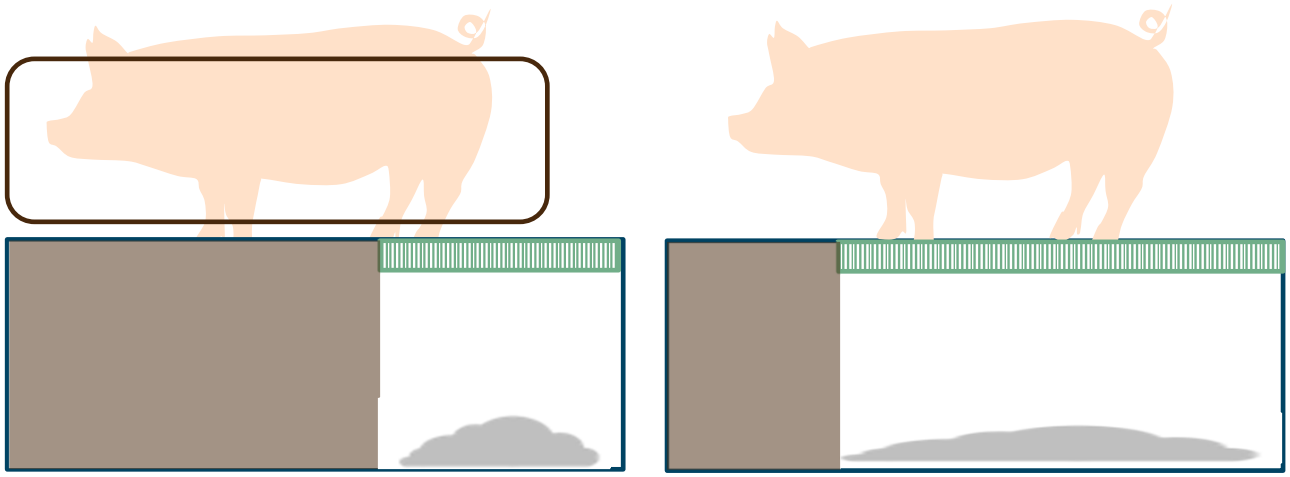




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Welfare vs. emission

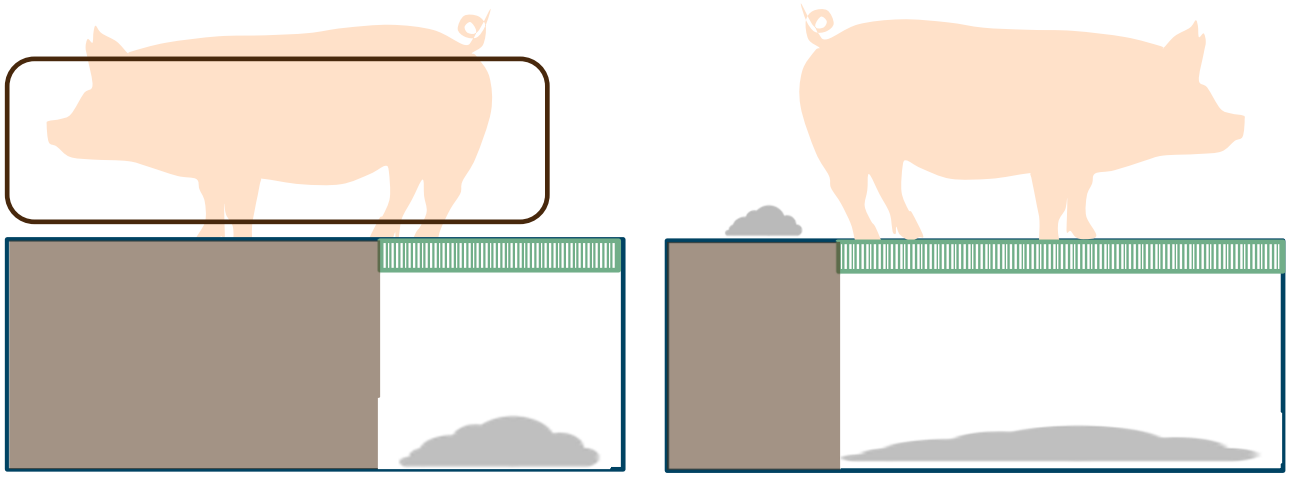
Larger surface area
=
Larger emission



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Welfare vs. emission

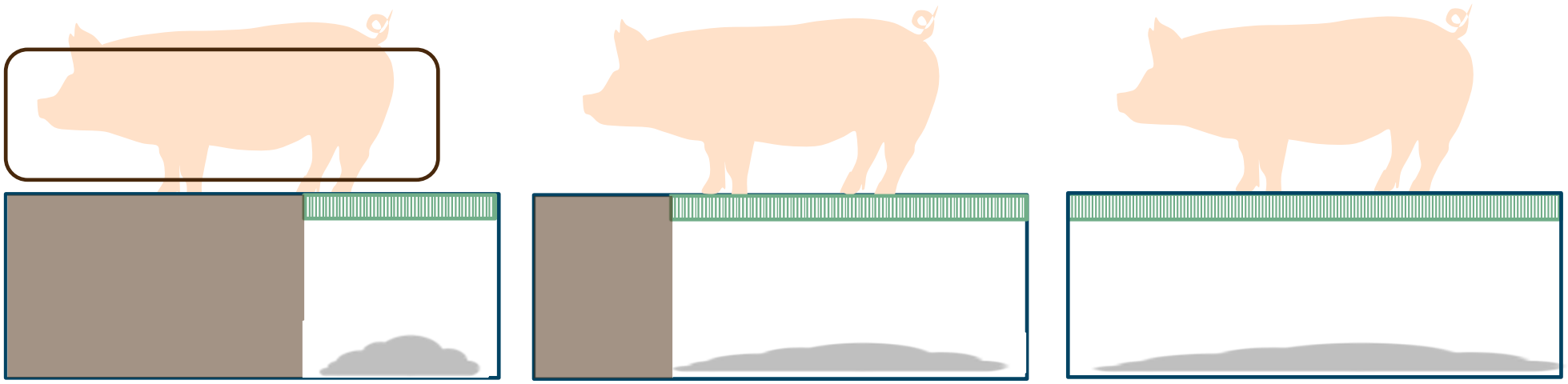
Larger surface area
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Welfare vs. emission

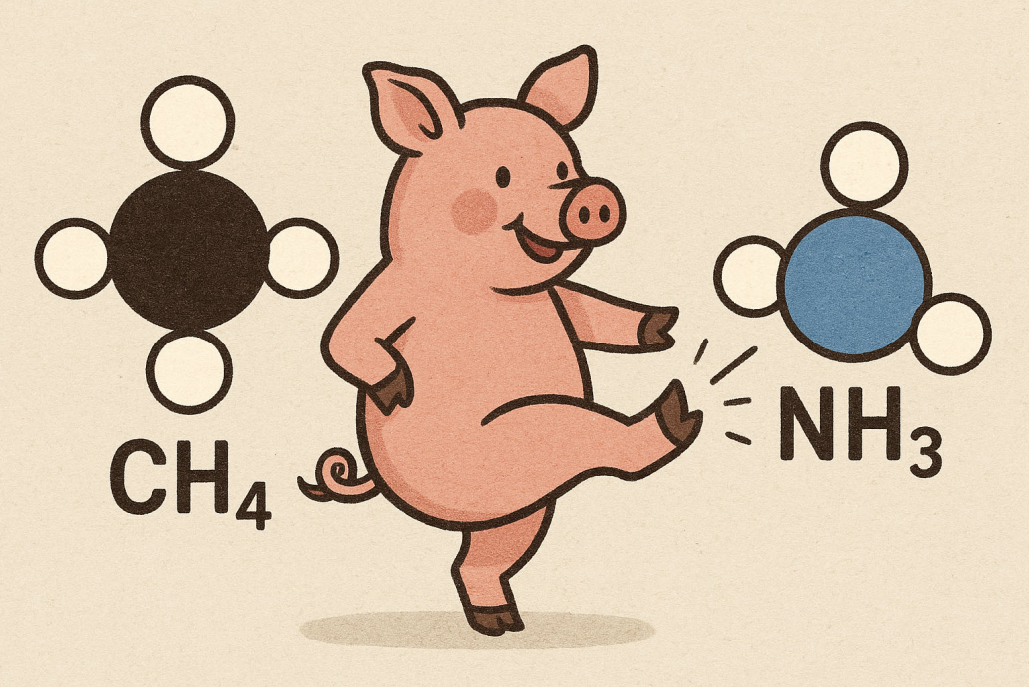
Where does solid floor provide better welfare without compromising hygiene and emission



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Simple measures to reduce emissions

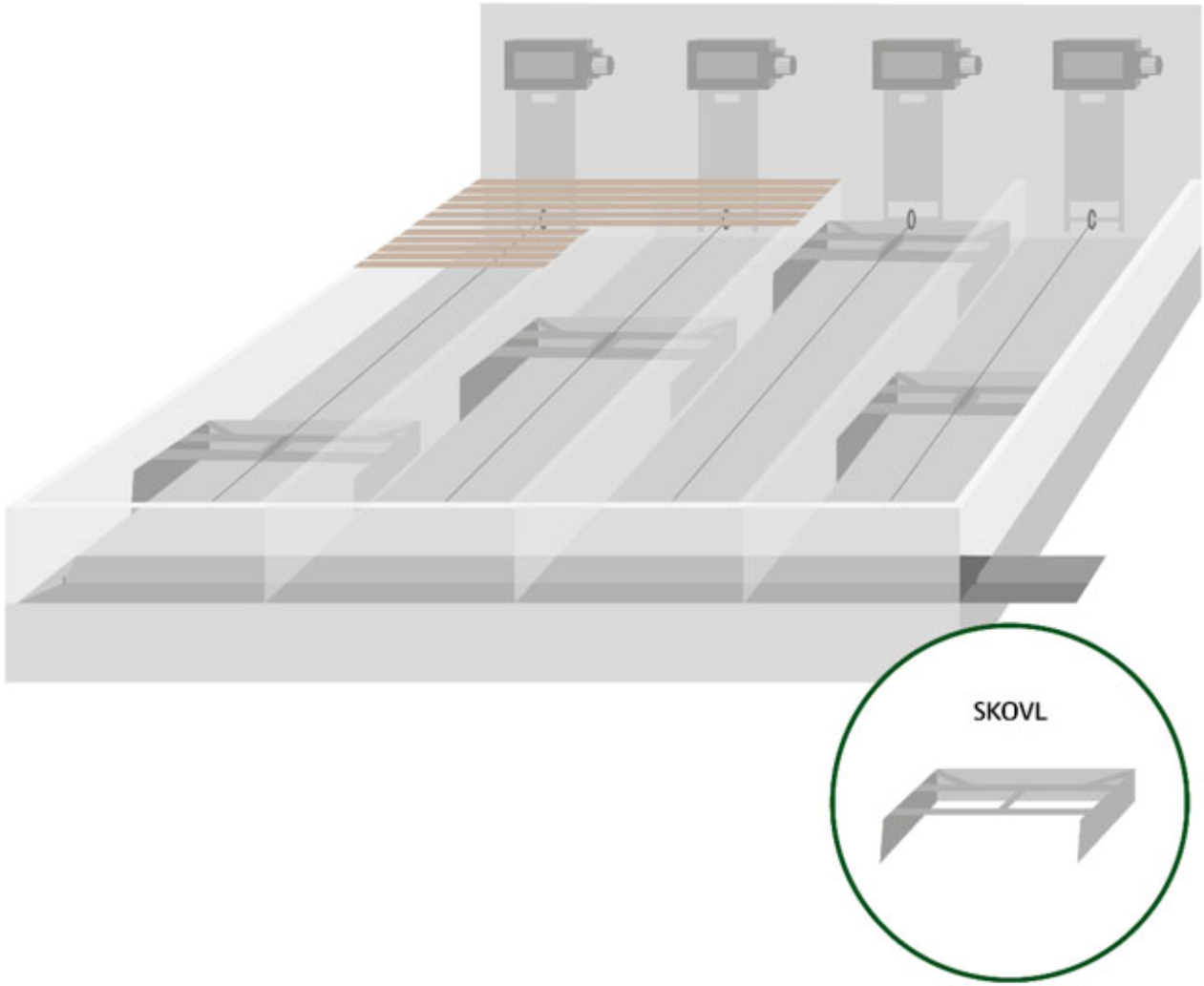
- Reduce storage time in the slurry pit
- Reduce the surface area



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Slurry scraper

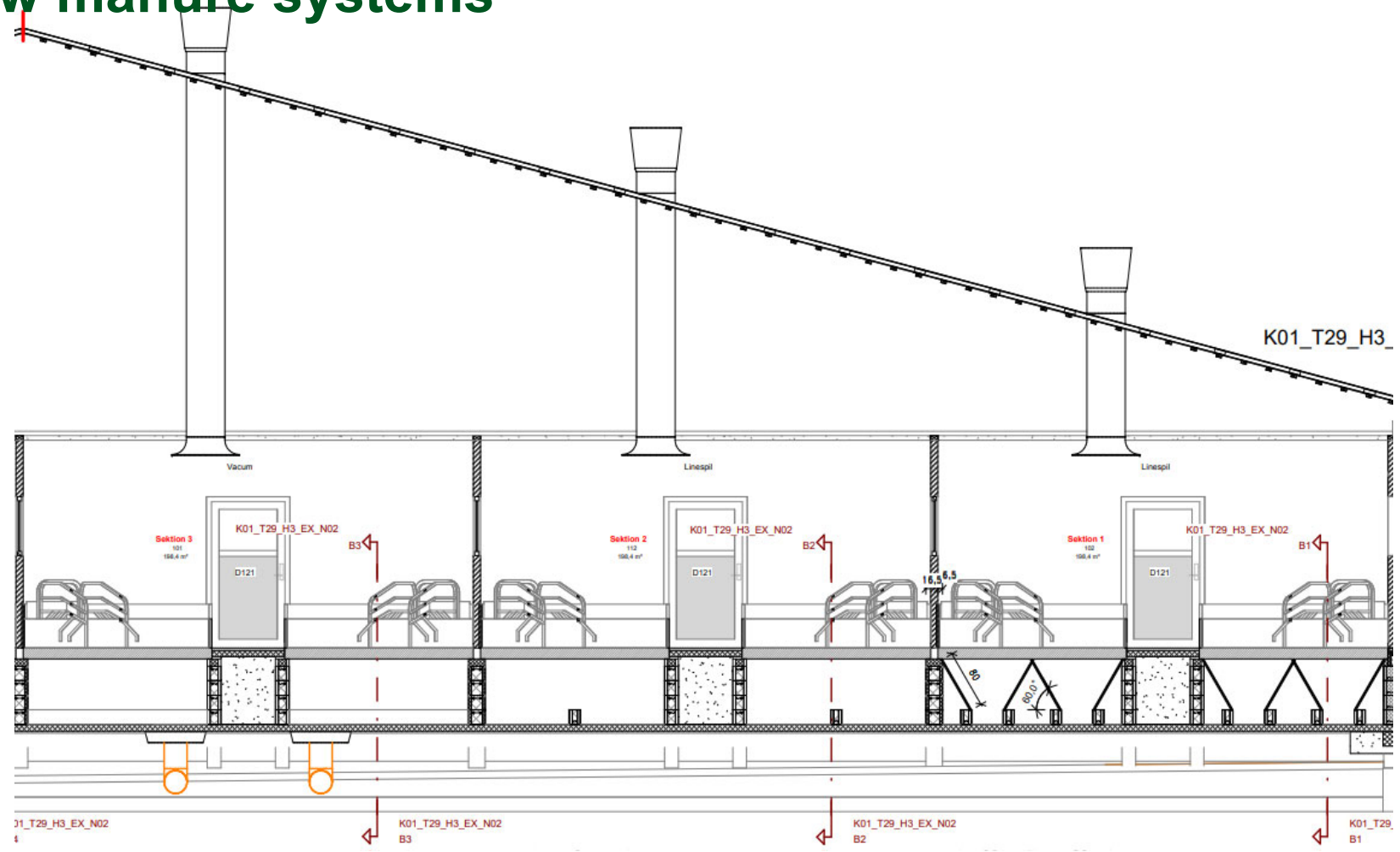


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New manure systems



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Conclusion

Increased welfare = higher emissions?

Keep environmental technologies in mind when designing the pen

Environmental impact of farrowing pens can be reduced

- Frequent removal
- Reduced surface area

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Thank you for your attention
Questions?

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