



PigStun

Developing non-aversive stunning methods for pigs



Ease of conversion

PigStun Stakeholders meeting 4th of April 2025

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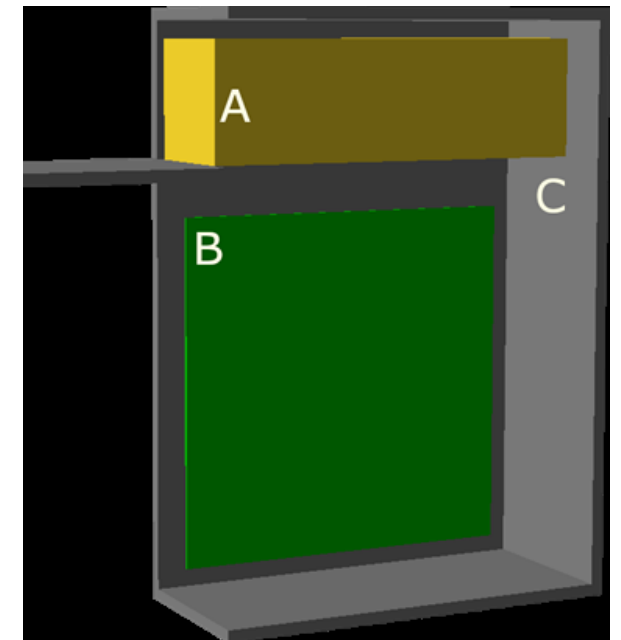
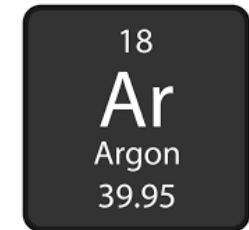
- **A questionnaire to the experts of each alternative system**
 - Designed to evaluate the transition from CO₂ stunning to an alternative
- **Discussion and knowledge exchange in consortium and in one-to-one meetings**
- **Review of literature and legislation**

- **Estimating the cost**
 - Estimates are based on scaling up to high throughput of >600 pigs per hour
 - The estimates are prices of the stunning equipment, while costs associated with the transition were not possible to include

- **Insufficient details for a thorough analysis of ease of conversion**
 - The new systems are not yet commercially available in high throughput scale
 - More analysis are needed to find optimal ways to design upscaled versions and to convert with least possible financial loss

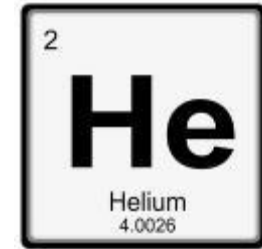
1. Argon Retrofit (Inert Gas Retrofit)

- + Existing infrastructure can be retrofitted at relatively low cost
 - + Retrofitting is relatively quick
 - + Argon gas is readily available and legal to use
 - + System can potentially adapt to other heavy gases
 - ÷ Increased exposure time reduces throughput
 - ÷ Argon is pricier than CO₂
 - ÷ Only technical test performed in paternoster system
- **Estimated feasibility – medium / high**
(assuming existing CO₂ stunner compatibility and space for additional stunner)



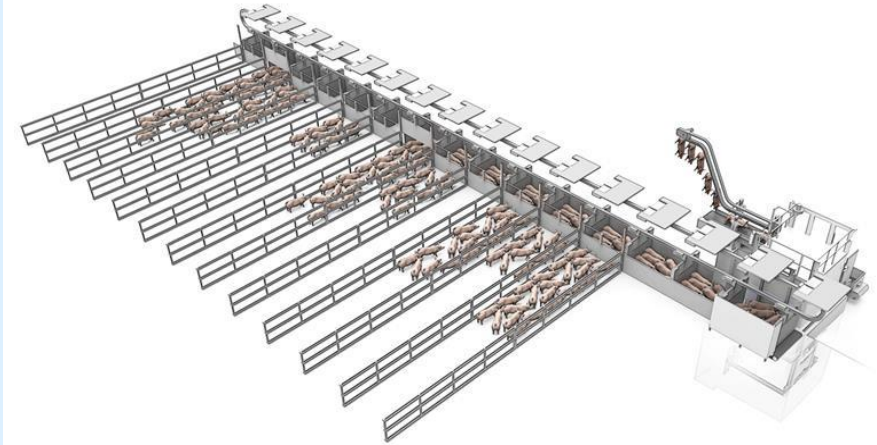
2. Helium

- + A recapture system is developed
 - + Possibility of adaption to nitrogen during helium shortages
 - + Helium stunning is already legal
 - ÷ Recapture system adds complexity and costs
 - ÷ Existing CO₂ systems are incompatible
 - ÷ Low throughput necessitates multiple new stunners
 - ÷ Helium is both potentially limited and expensive compared to CO₂ and to argon
- **Estimated feasibility – low**



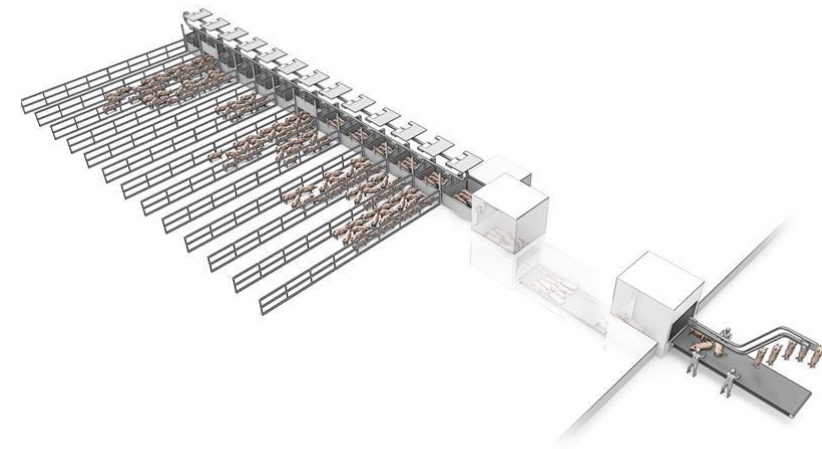
3a. Optimized CAS Retrofit (envisioned)

- + Envisioned system improve animal welfare in the induction phase
- + Retrofitting of existing infrastructure
- + Possibility to use different gas types (*throughput unknown*)
- ÷ Not tested in the project → limited knowledge on welfare improvements, retrofitting complexity, varying gas storage
- ÷ Possibility to maintain high throughput unknown
- **Estimated feasibility – verification remains**



3b. CAS Tunnel (envisioned)

- + Envisioned system reduce pre-handling stress
 - + Possibility to use different gas types (*throughput unknown*)
 - + Direct on-conveyor stunning might enable better stunning
 - ÷ Not tested in the project → limited knowledge on welfare improvements, commissioning complexity, varying gas storage
 - ÷ Possibility to maintain high throughput unknown
 - ÷ Requires a major slaughterhouse redesign – high cost
- **Estimated feasibility – verification remains**



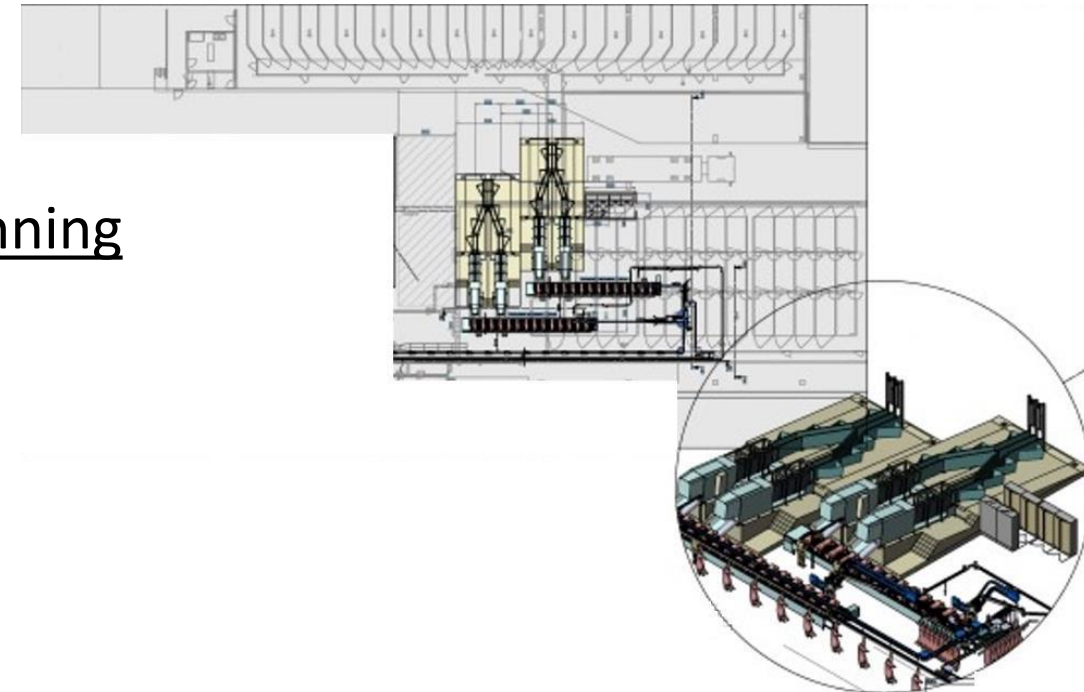
4. Improved Electrical

Converting from facilities using CO₂ stunning

- ÷ Increases area requirements for multiple stunners
- ÷ Requires a major slaughterhouse redesign – high cost – sufficient space is needed
- **Estimated feasibility - moderate**

Converting from facilities using original electrical stunning

- + Improved pre-stun handling
- + Existing infrastructure can be reused
- ÷ To remain high-capacity sufficient space is needed
- **Estimated feasibility - moderate**



- To fully investigate the ease of conversion more details are needed
- Analysis on productive ways to upscale all gas alternatives remains
- Argon retrofit compared to helium is closer to being a realizable way to convert from CO₂ stunning.
- The potential of converting from CO₂ stunning to either to the two envisioned optimized CAS systems remains to be analyzed
- It is estimated that improved electrical stunning is a doable way to improve animal welfare going from original electrical stunning. However, both going from original electrical or CO₂ stunning might require substantial reconstructing
- The improved electrical system is currently the only alternative tested in a high throughput setting



Coordinator



Beneficiaries



Associated Partners



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