



Growing
ideas
through
networks

Innovative Meat Factory Cell concept shows improved hygiene

- suggests need for changes in legislation

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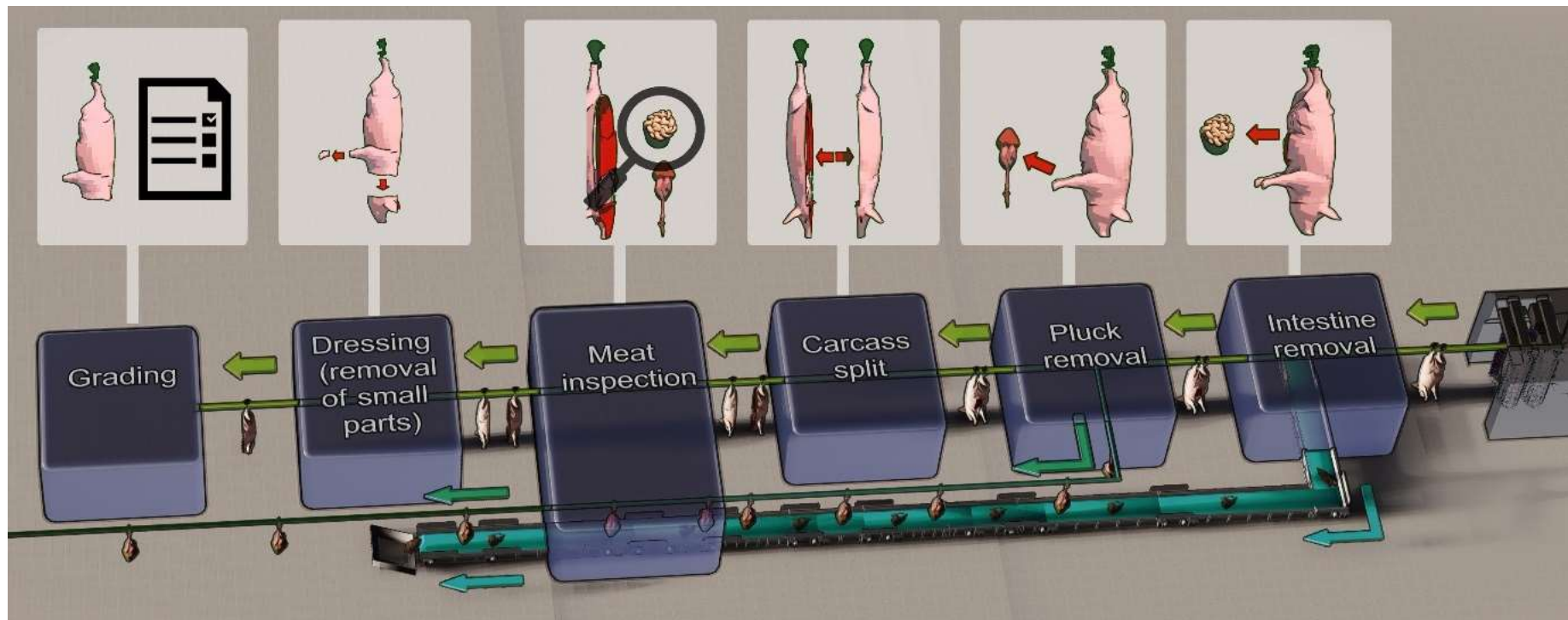
Virtual conference 15-16th October 2020



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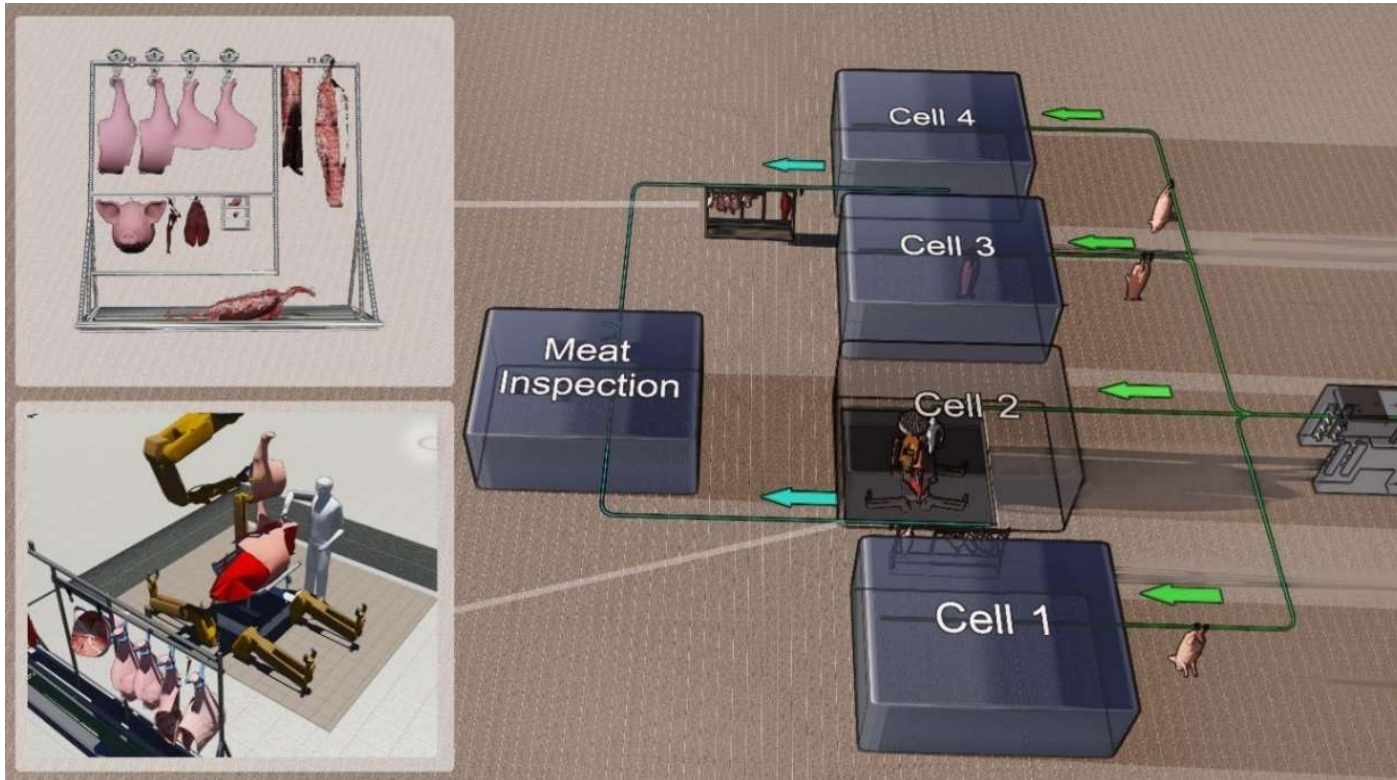
Conventional line-based production



Simplified overview of line-based production in Norway, from NFR project Meat 2.0. *Image: Håkon Sverdvik.*

MFC concept vs conventional. 3 principal differences:

- Cells
 - Slaughter AND primal cutting in one place
- Outside-in
 - Muscles are removed first, organs at the end
- Output
 - 6 primal cuts + viscera
- Lines
 - Slaughterhouse and Cutting room
- Inside-out
 - Organs are removed first, muscles at the end
- Output
 - 2 split carcasses + plucks and bowels



Overview of the initial MFC concept (bottom-left) and a rack (top-left). The concept (right) enables parallel rather than serial task-execution in abattoirs for greater flexibility, scalability and robustness at all volumes of production.



MeaTable: Carcass Handling Unit

Edited by: Alex Mason

12.01.2020

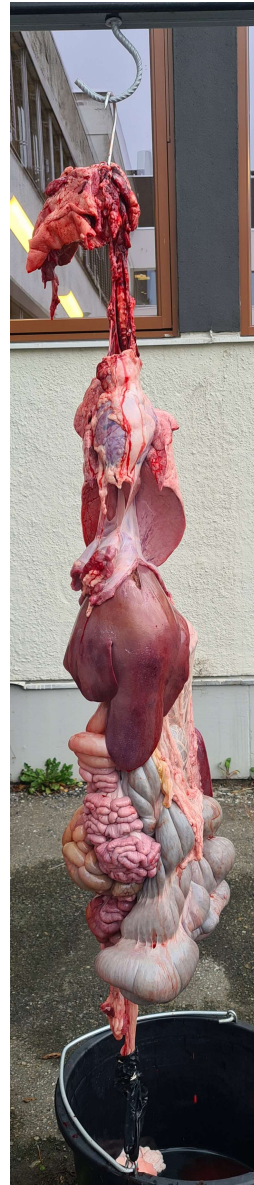
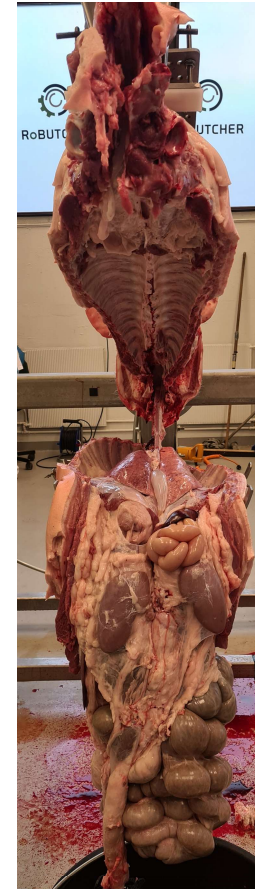
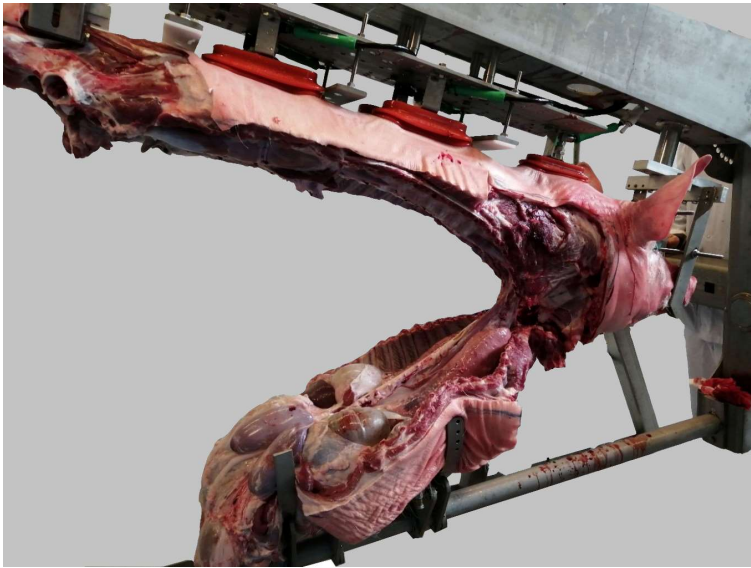
Results hygiene:

Enterobacteriaceae og E. coli.

- First pigs ever in MFC
- During MFC method development
- Swabs (USDA)
- Area: Approx. 12 000 cm²/carcass
- Petrifilm
- No growth: «0.1 CFU/carcass»
- Results: VERY GOOD!

	Mean log CFU/cm2	
	Enterobacteriaceae (n=19)	E. coli (n=29)
MFC	-1,54	-2,60
Conventional	-1,58	-2,07
T-test	0.962	0.07

Results evisceration: «One piece»



O. Alvseike, M. Prieto, P. H. Bjørnstad, and Alex Mason, "Intact gastro-intestinal tract removal from pig carcasses in a novel Meat Factory Cell approach," *Acta Vet.Scand*, vol. 62, no. 47, pp. 1–5, 2020.

Evisceration

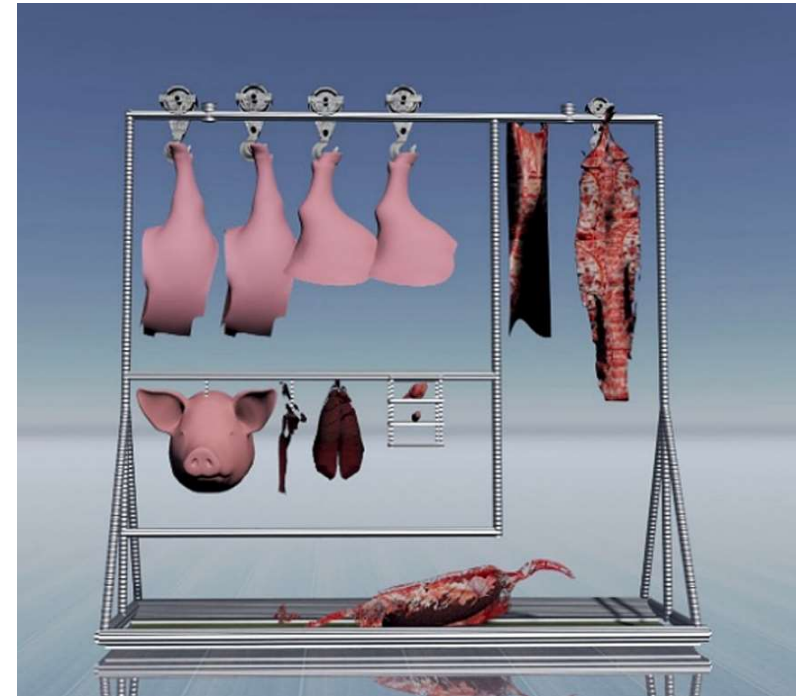
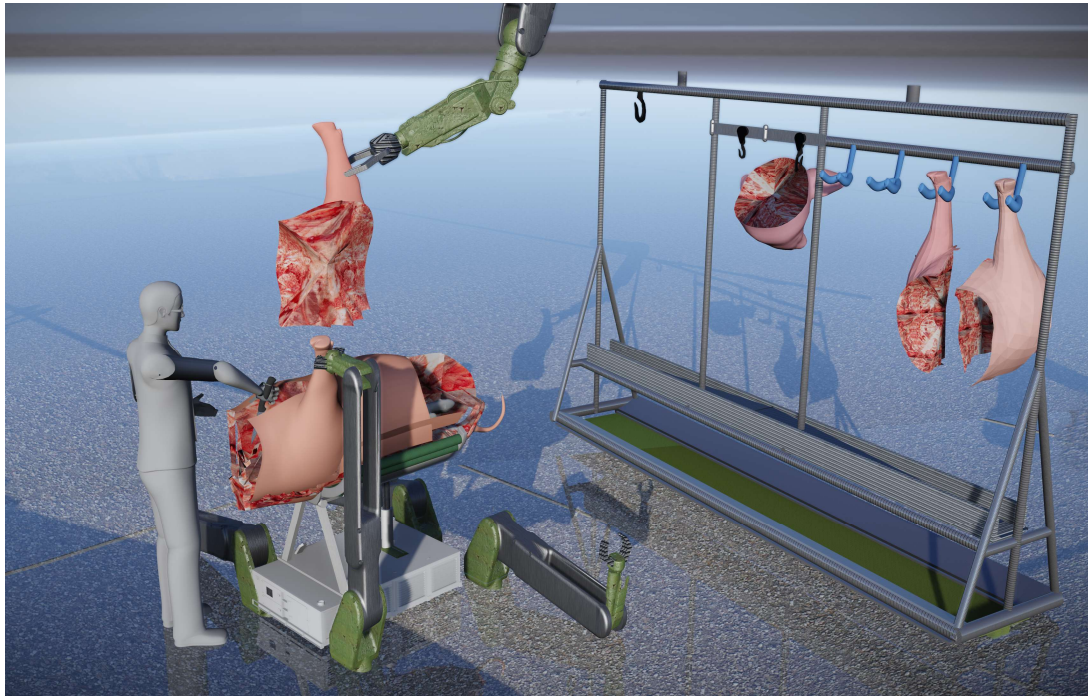
- Legislation:

Regulation 853/2004 claims that “measures must be taken to prevent the spillage of digestive tract content during and after evisceration and to ensure that evisceration is completed as soon as possible after stunning” (Annex III, Chapter IV,7 c).

- Why?

- Time from stunning to evisceration – gas production, growth through? No
- Because it is easier? No, and if it was, it is not CA's business
- Other reasons? Do not know
- Because that is the «mental model» that have existed (Ford's (dis)assembly line?) **Yes, I think so**

Meat inspection in the “MFC” concept



Overview of the initial MFC concept (*left*) and a rack (*right*) used for transportation of the slaughtered carcass for meat inspection and distribution purposes.

O. Alvseike, M. Prieto, K. Torkveen, C. Ruud, and T. Nesbakken, “Meat inspection and hygiene in a Meat Factory Cell – An alternative concept,” *Food Control*, vol. 90, pp. 32–39, 2018.

What we wish for:

- **Innovation friendly legislation (MFC is just an example)**
 - Intention already there
- **A basic common starting point: Legislation today? But compliance.....**
- **Not descriptions of HOW, but which OBJECTIVE TARGETS to achieve**
 - Microbiological criteria
 - Objective criteria for visual contamination
 - Time from stunning to evisceration
 - Meat inspection performances.
- **Introduce key performance indicators (KPIs) in Meat Inspection?**

Acknowledgements



- **Meat 2.0** and **MeaTable** have received funding from the Norwegian Research Council, grant ID 256266 and 281234 respectively.
- **RoBUTCHER** has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 871631