Preference Behaviour of Cows Choosing a Robotic Milking Stall

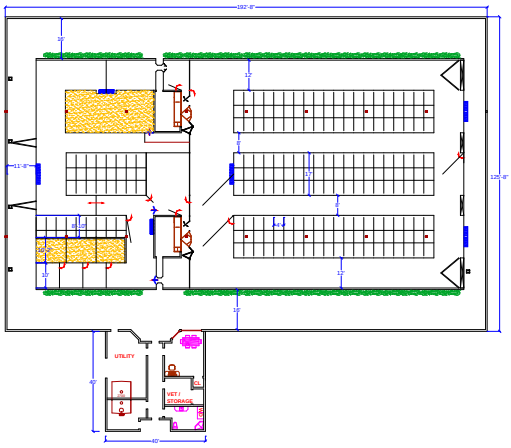
J.S. Gelauf, G.J. Vanderveen, and J. Rodenburg

VETVICE
Happy cows, happy farmers

Ontario
Ministry of Agriculture, Food and Rural Affairs

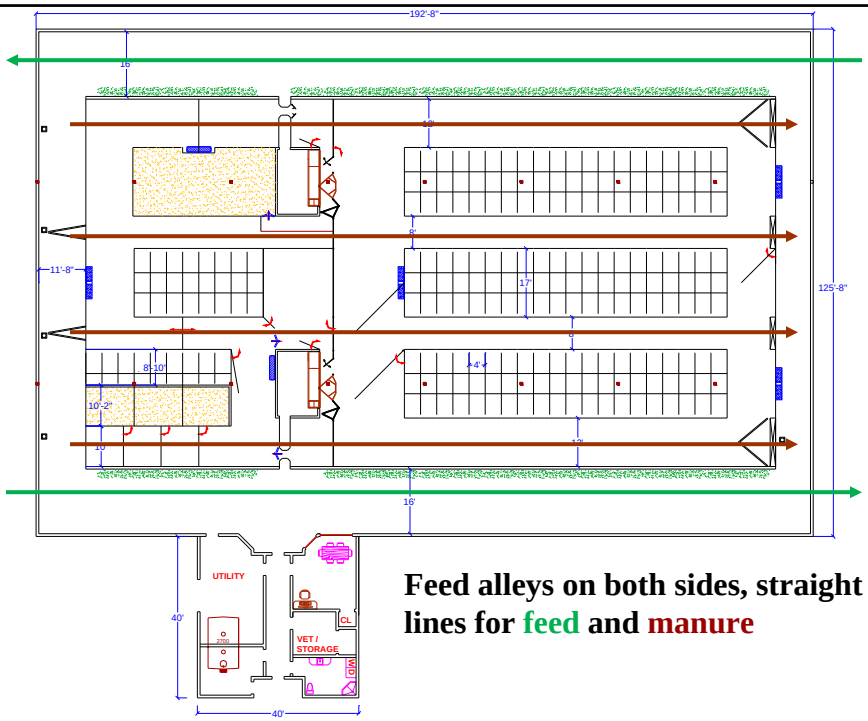
DairyLogix

Our long term objective is to design the ideal robotic milking barn.

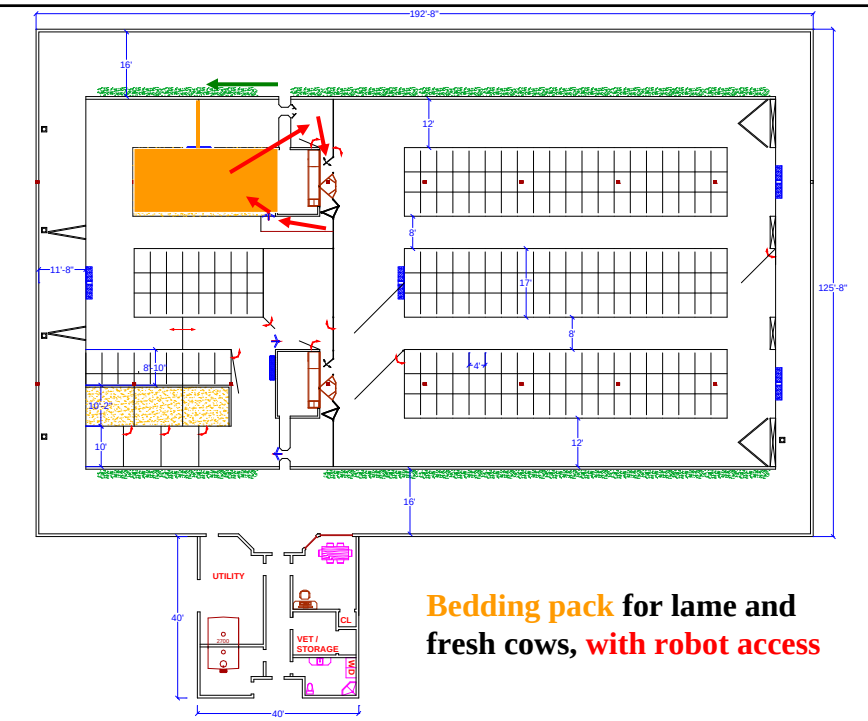


VETVICE/DairyLogix

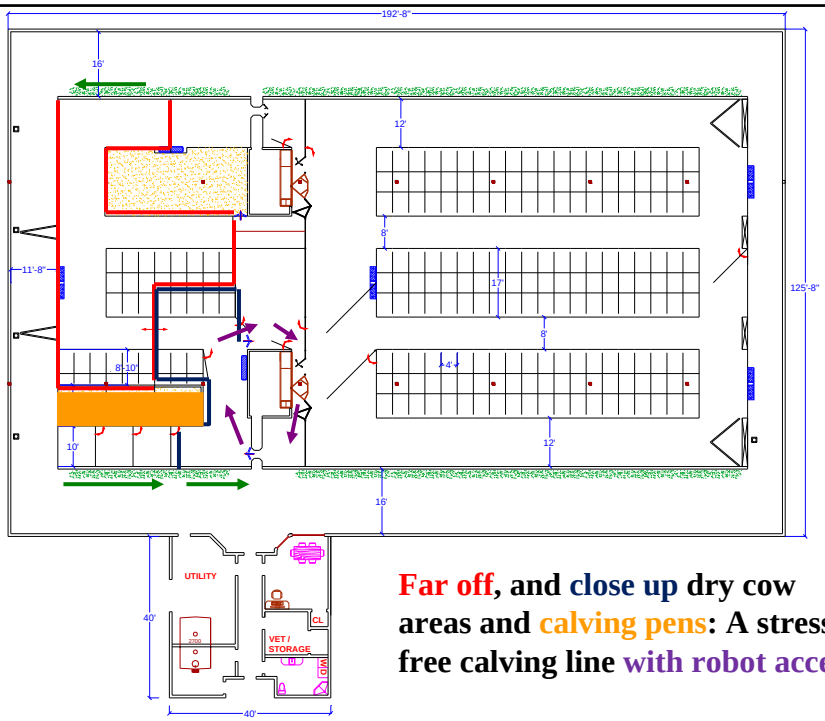
Robotic Milking Barn



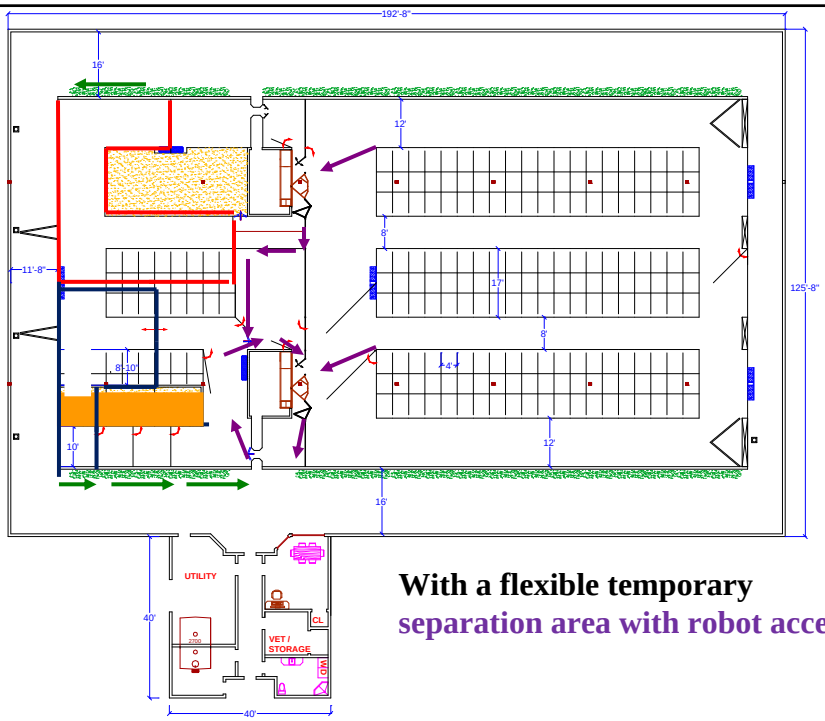
Feed alleys on both sides, straight lines for feed and manure



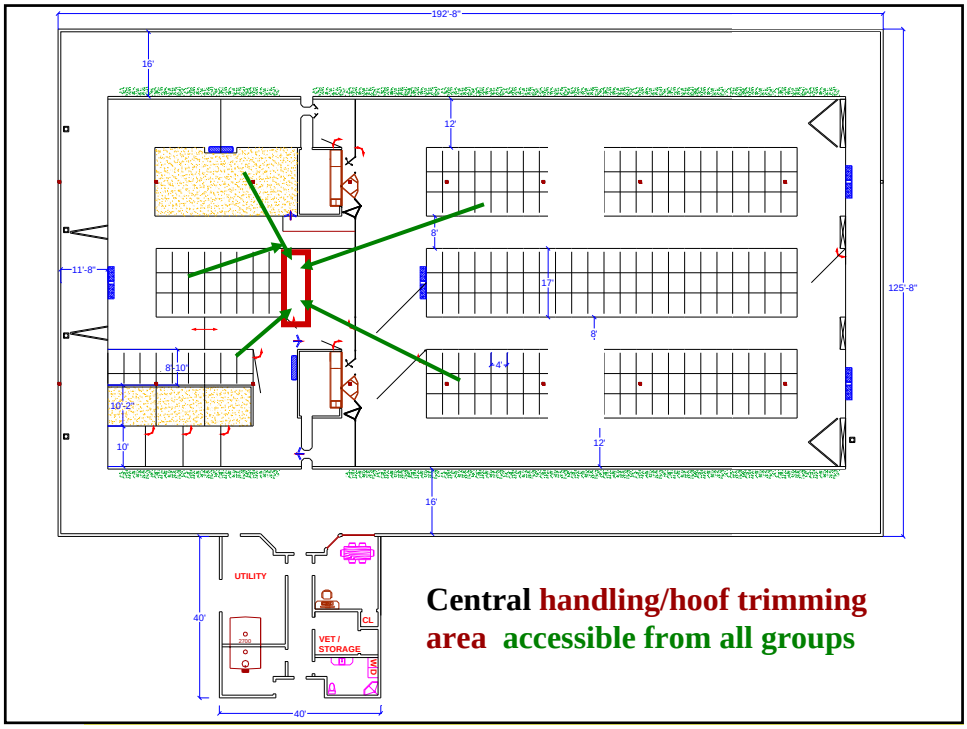
Bedding pack for lame and fresh cows, with robot access



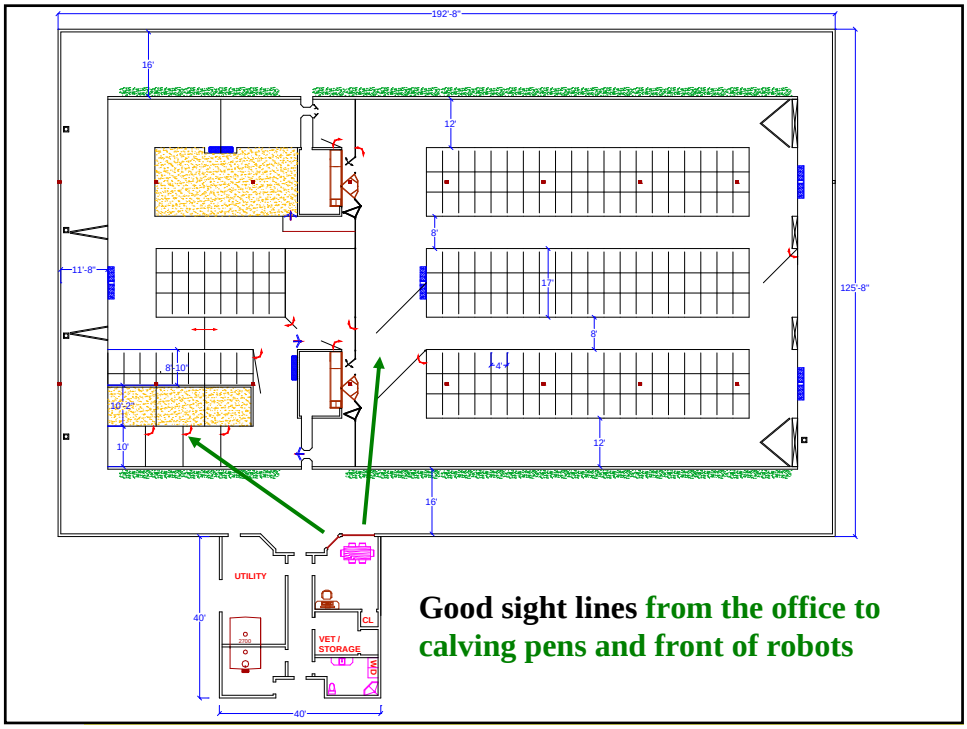
Far off, and close up dry cow areas and calving pens: A stress free calving line with robot access



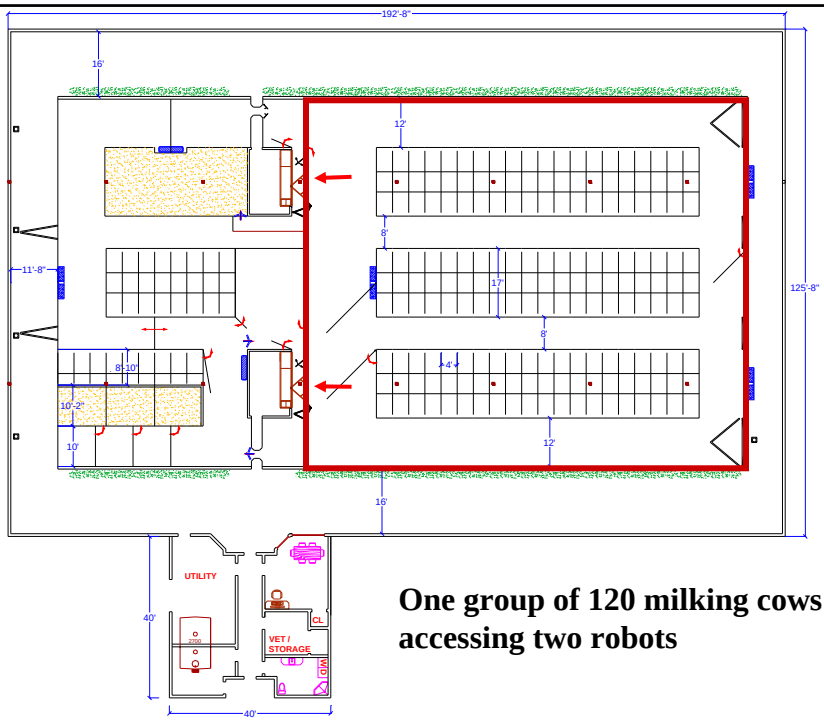
With a flexible temporary separation area with robot access



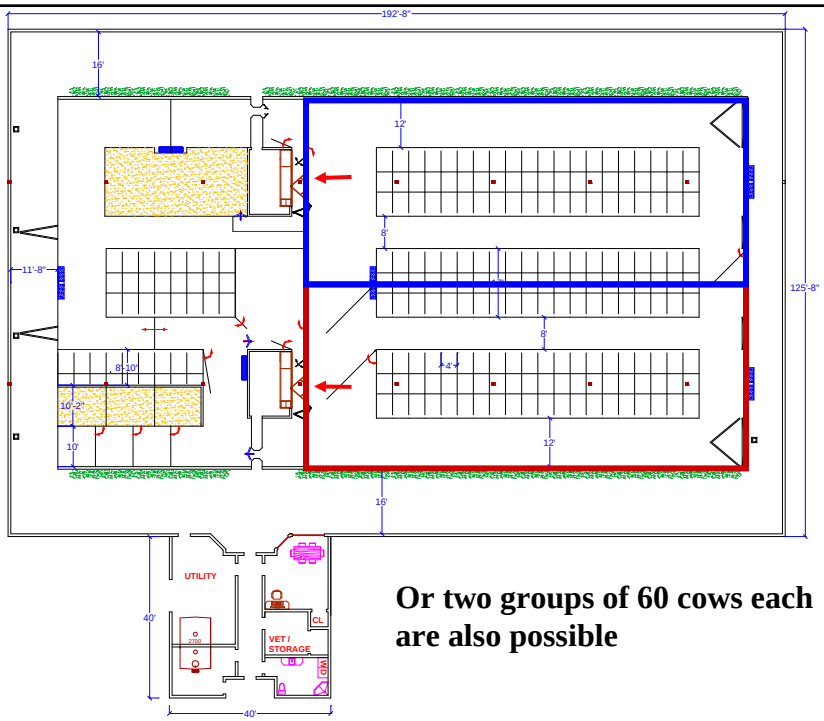
Central handling/hoof trimming area accessible from all groups



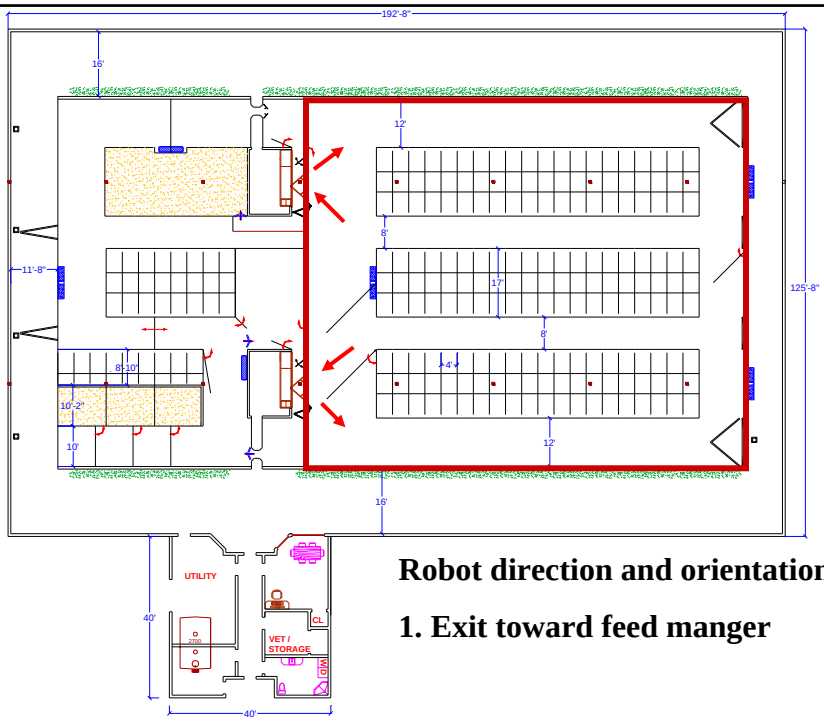
Good sight lines from the office to calving pens and front of robots



One group of 120 milking cows accessing two robots

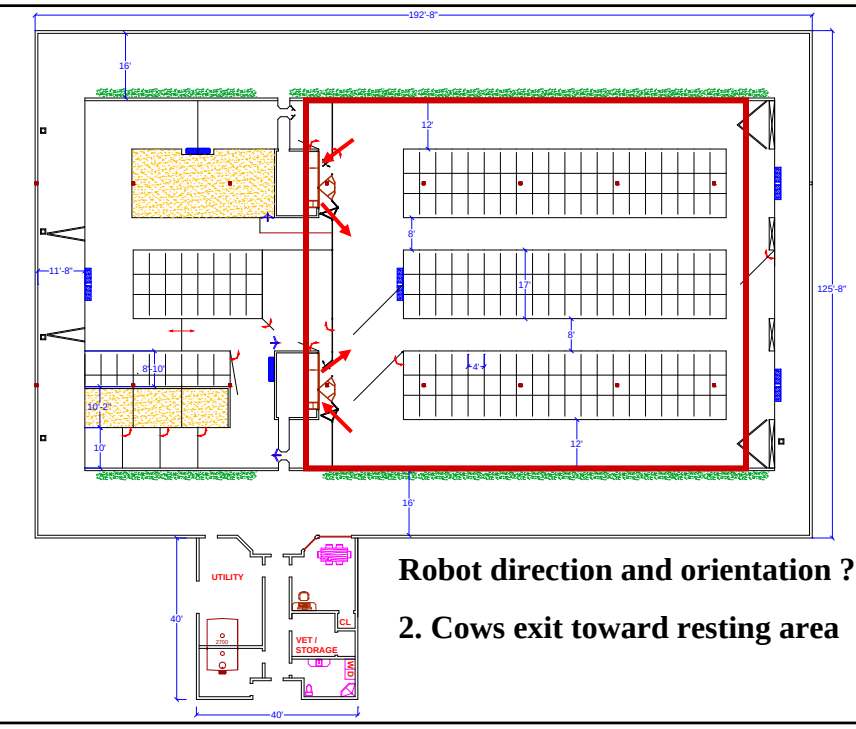


Or two groups of 60 cows each are also possible



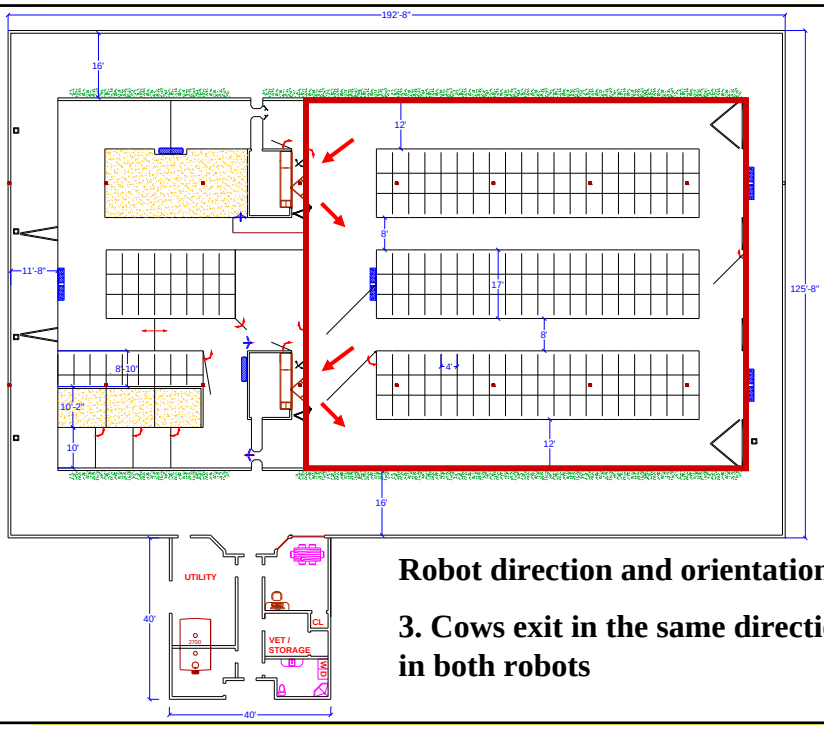
Robot direction and orientation ?

1. Exit toward feed manger



Robot direction and orientation ?

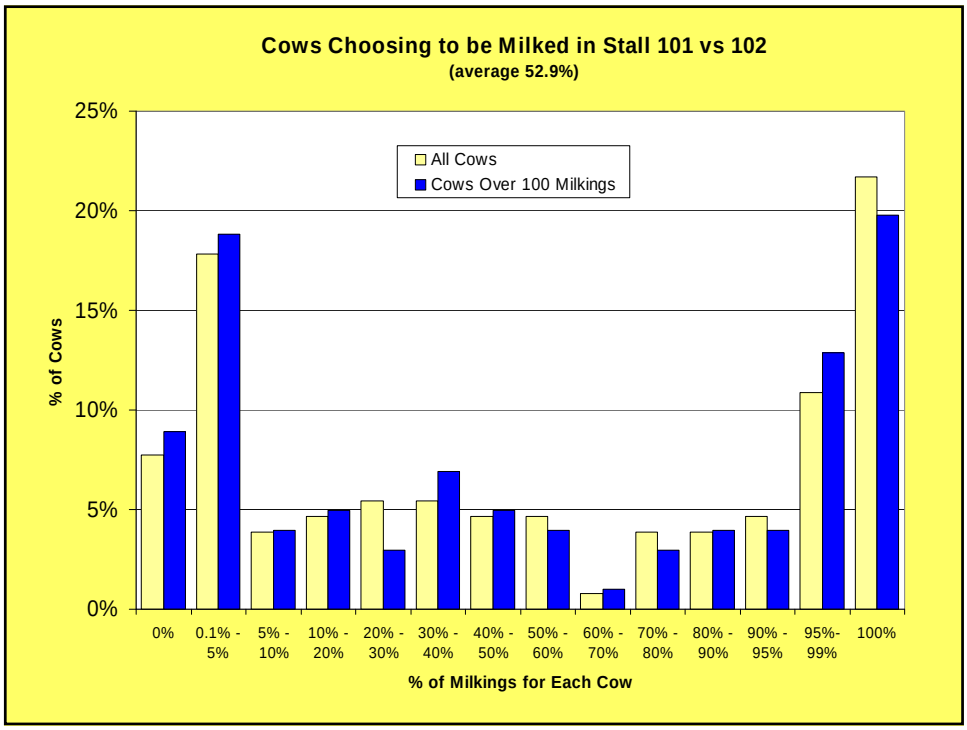
2. Cows exit toward resting area



Robot direction and orientation ?

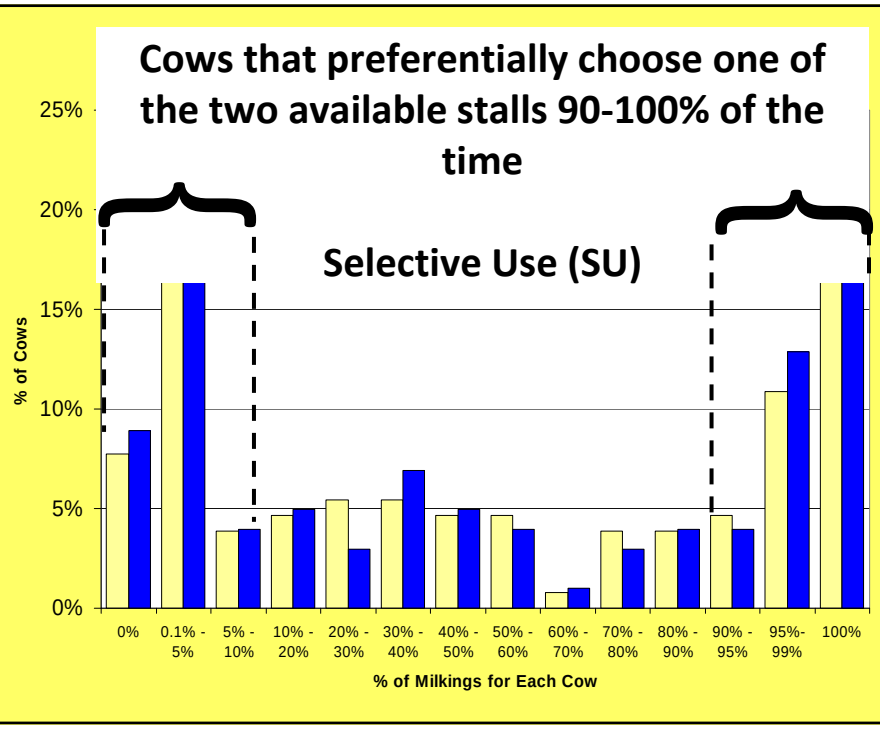
3. Cows exit in the same direction in both robots

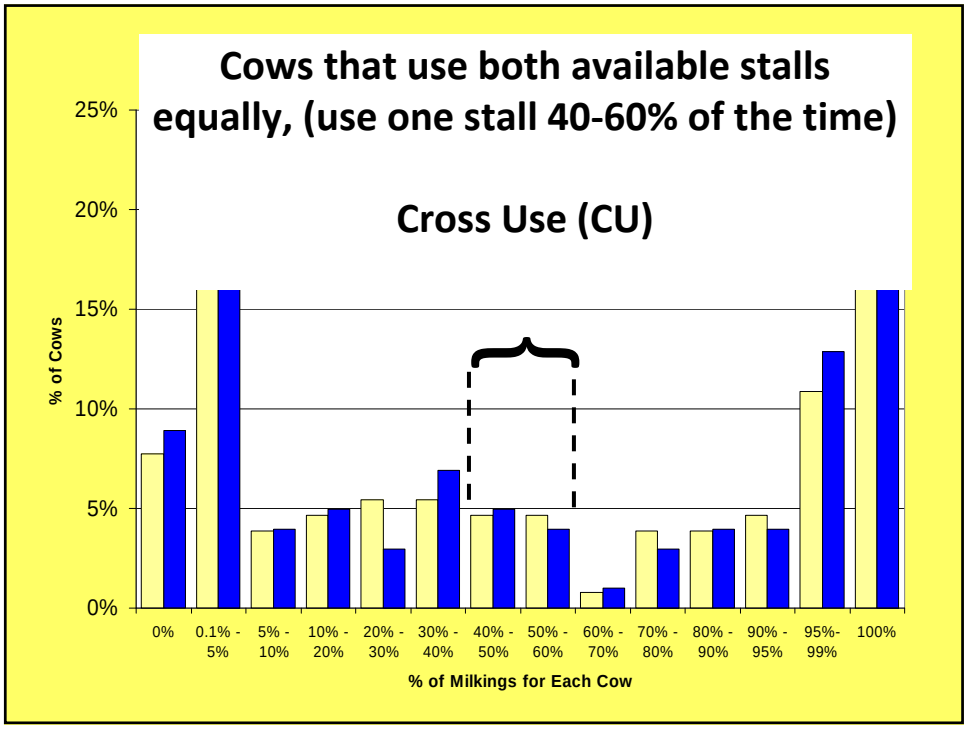

This herd was managed as two groups for the first two years of operation and then gates were removed.
Data was collected from 12 -24 months after removal of the gates


Cows Choosing to be Milked in Stall 101 vs 102
(average 52.9%)
All Cows
Cows Over 100 Milkings
% of Cows
25%
20%
15%
10%
5%
0%
0%
0.1% - 5%
5% - 10%
10% - 20%
20% - 30%
30% - 40%
40% - 50%
50% - 60%
60% - 70%
70% - 80%
80% - 90%
90% - 95%
95%- 99%
100%
% of Milkings for Each Cow

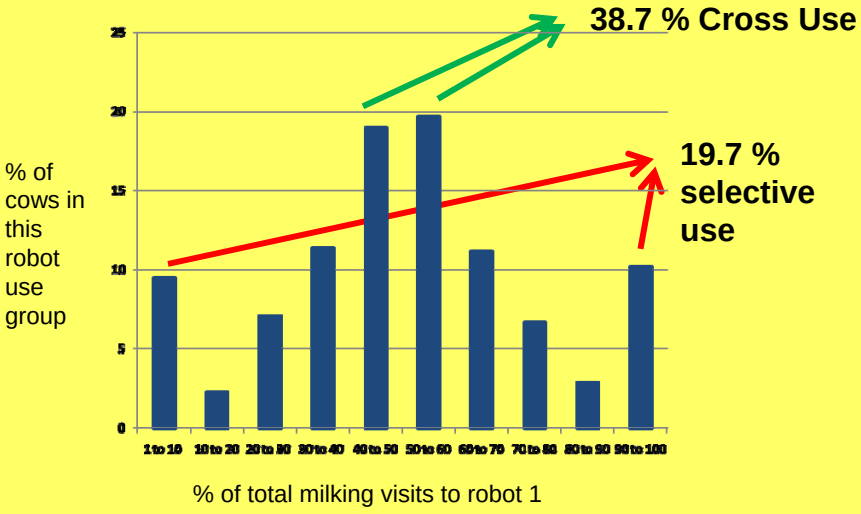
Preference Behaviour of Cows Choosing a Robotic Milking Stall

- **"Minimal preference" reduces stress when one stall is out of service.**
- **"Minimal preference" with two groups means easier adjustment to a new group when cows are moved**
- **Preferential use may provide an indication of how layout affects voluntary attendance**





3 months of data from 12 herds, 1165 cows



Tail to Tail Robots (1 herd)

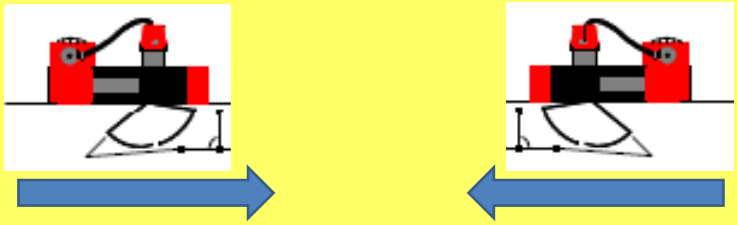
and 2 years of separate groups

Entry points are close together
Cows turn left or right to enter
Good visibility from resting area

Cross use was lowest at 10.4 %
(vs 38.7% in all herds)

Selective use was highest at 66.9 %
(vs 19.7 % in all herds)

Head to Head Robots (1 herd)

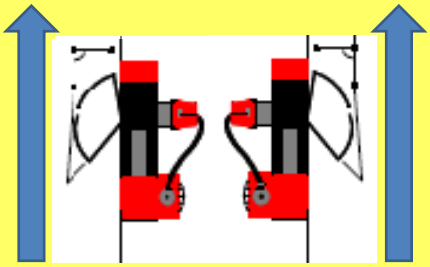


Entry points are far apart
Cows turn left or right to enter
Good visibility from the resting area

Cross use was low at 23.3 %
(vs 38.7% in all herds)

Selective use was high at 26.0 %
(vs 19.7 % in all herds)

Back to Back Robots (3 herds)



Entry points are close together and in same direction

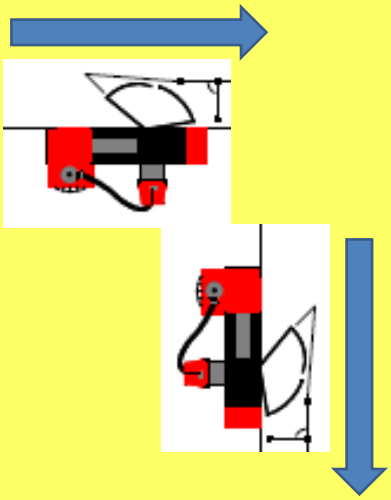
Cows turn left or right to enter

Poor visibility from the resting area

Cross use was moderate at 34.0 %
(vs 38.7% in all herds)

Selective use was moderate to high at 23.4 %
(vs 19.7 % in all herds)

Back to Tail Robots (1 herd)



Entry points are far apart
Cows turn same way to enter
Poor visibility from the resting area

Cross use was low at 23.3 %
(vs 38.7% in all herds)

Selective use was high at 26.0 %
(vs 19.7 % in all herds)

Tail to Tail Robots (4 herds)

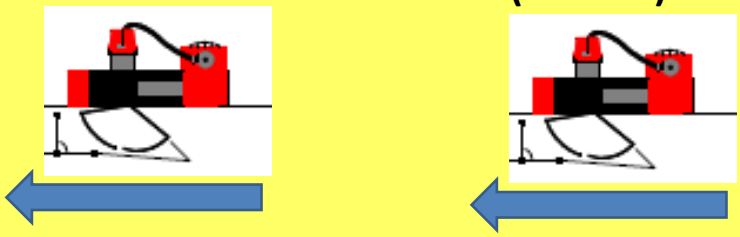
no learned behaviour issue

Entry points are close together
Cows turn left or right to enter
Good visibility from resting area

Cross use was 54.0 %
(vs 38.7% in all herds)

Selective use was 11.1%
(vs 19.7 % in all herds)

Head to Tail Robots (3 herds)

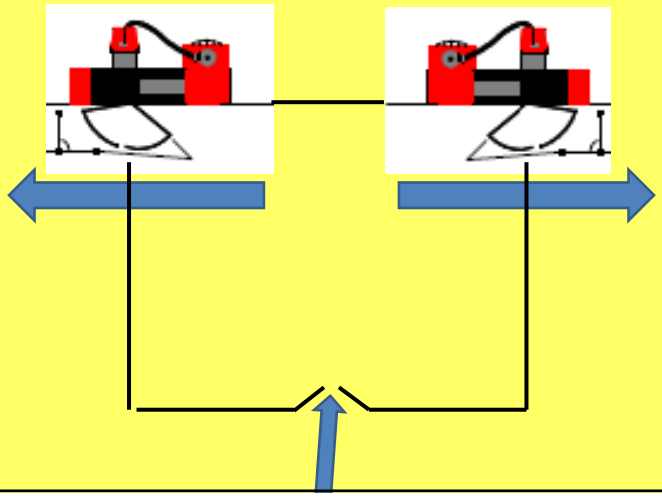


Entry points are far apart
Cows turn the same way to enter
Good visibility from the resting area

Cross use was high at 48.6 %
(vs 38.7% in all herds)

Selective use was lowest at 8.1 %
(vs 19.7 % in all herds)

Four herds with a single commitment pen for both robots had higher cross use (55.1% vs 44.6%) than two similar layouts with no commitment pen



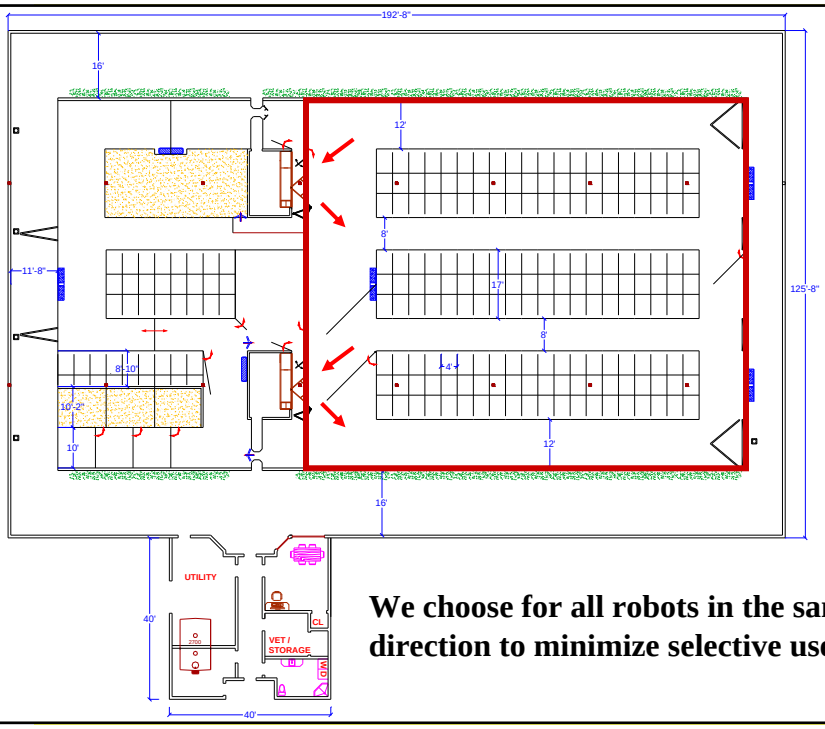
Observations

1. Prior training on a right or left entry robot results in subsequent selective use

2. Poor visibility from the resting area reduces cross use

3. Opposite entry robots close together have the highest cross use

4. Matched entry robots have the lowest selective use



We choose for all robots in the same direction to minimize selective use

Thank you

The Second
North American Conference on
Robotic Milking

MARCH 2–5, 2010 ■ TORONTO, CANADA

www.precisiondairy2010.com

The First
North American
Conference on
PRECISION DAIRY MANAGEMENT

MARCH 2–5, 2010 ■ **TORONTO, CANADA**

www.precisiondairy2010.com