

TABLE 1

Key considerations when choosing how to orient a robot within a pen

Robot orientation	Side	Island	Tollbooth	Crossway	L-shape	4dBarn herringbone
Definition	Robots located on the side of the barn, parallel to the feed alley.	Robots located in an island in the center of the barn, parallel to the feed alley.	Robots located at the end of the pen, parallel to the feed alley. Cows enter parallel to the feed alley and exit perpendicular to the feed alley.	Robots located at the end of the pen, perpendicular to the feed alley.	Robots are located at the end of the pen, parallel and perpendicular to the feed alley. Robots can be placed facing each other (head-to-head), away from each other (tail-to-tail) or in the same direction (head-to-tail).	Robots are located at the end of the pen, slightly angled toward the feed alley.
Traffic system options	Free-, semi- and guided-flow	Semi- and guided-flow	Free-, semi- and guided-flow	Free-, semi- and guided-flow	Free-flow	Free-flow
Cows exit separate from cows waiting to be milked	No if more than one robot	No if more than one robot	Yes	No if more than one robot	Depends on robot orientation	Yes
24/7 access for a secondary cow group	No	Yes	Yes	Yes	Yes, for robot perpendicular to the feed alley	Yes, for robot nearest secondary group
Extended bunk space in front of the robot	No	No	Yes	Yes	Yes, from robot perpendicular to the feed alley	Yes
Cows can be automatically sorted through a footbath	No if more than one robot	Yes	Yes	No if more than one robot	No	Yes