

Digital twins report: Annex 1: Original generic Abattoir process flow chart

The following table lists all Inputs, Primary processes, Secondary processes and Waste streams in the generic abattoir process flow chart. The individual items are presented in approximately the same relative positions as on the flow chart. However, close proximity of items does not necessarily indicate a direct link with other entries.

The flow chart itself does illustrate linkages. Examples include links between: slapmark ink and sticking of casualty; bleed out and category 3 waste; anti-foam and water and de-hair; and carcass tags/flags and pluck drop.

| Inputs | Primary process | Secondary process | Waste streams |
|-------------------------------|--|---|-------------------------------|
| Pigs arrive from farms | 1.1 Livestock unloading (temperature ambient) | 1.1.1 Holding in Casualty/isolation pen | Category 2 waste |
| Animals dead on arrival (DOA) | 1.2 Ante-Mortem inspection | 1.1.2 Casualty Slaughter | - |
| Slapmark ink | 1.3 Pigs rested in Lairage | - | Water, feed and bedding waste |
| Captive bolt gun (optional) | 1.4 Pigs provided water/feed (optional) | 1.1.3 Sticking of casualty | - |
| Water, feed, bedding | 1.5 Transfer to Gas stunner/electrical stunning pen (optional) | - | - |
| Delivery of CO2 | 1.6 Gas Stun minimum 85% CO2 | - | - |

| Inputs | Primary process | Secondary process | Waste streams |
|---------------------|---|--|----------------------|
| - | 1.7 Electric Stun 1.3 amps over 3 seconds/captive bolt (optional) | - | - |
| Shackle | 1.8 Shackle Carcass | - | - |
| - | 1.9 Sticking (Gas-stun to stick 75 seconds, electrical stun-stun to stick 15 seconds) | - | - |
| - | 1.10 Bleed out (minimum 3 minutes) | - | Category 3 waste |
| - | 1.11 Scald (approximately 7 minutes at 57 to 63 degrees) | - | Water |
| - | 1.12 De-shackle | - | - |
| Anti-foam and water | 1.13 De-hair | 1.14.1 Buffering Rail (optional) | - |
| Hook Gambles | 1.14 Remove toenail, hair (optional), tendon cut and insert hooks | 1.14.2 Toenail removed (optional) | Category 2 Waste |
| Bungs, water | 1.15 Manual singe/dry polish/automatic singe 1/head and foot brush/wet polish/Automatic Singe 2 | 1.14.3 Bung wash (optional) | - |
| - | - | 1.14.4 Bung insertion (optional) | - |
| - | 1.16 Fore Trotter Hair removal and pruning (optional) | - | - |
| - | 1.17 Hind Trotter hair removal and pruning (optional) | 1.16.1 Manual head brush or shave (optional) | - |

| Inputs | Primary process | Secondary process | Waste streams |
|-------------------|---|--|----------------------|
| Carcass ink | 1.18 Carcass stamping (optional) | - | - |
| - | 1.19 Trim sticking wound | - | - |
| - | 1.20 Pizzle removal/initial opening | - | - |
| - | 1.22 Manual rectum separation/emergency bunging (optional)/testicle release | 1.22.1 Breast bone saw (optional) | - |
| - | 1.23 Evisceration | - | - |
| Carcas tags/flags | 1.24 Carcass Trim inspection and removal (check point 1 and 2) | 1.24.1 Offal FSA inspection | Category 2 Waste |
| - | 1.25 Pluck drop | 1.24.2 Transfer to Offal Breaking area | - |
| Water | 1.26 Pluck removal (hanging) | 1.24.3 Transfer to Green Offal Room | Water |
| - | 1.27 Automatic Carcase split | - | - |
| - | 1.28 Manual split (optional) | 1.26.1 Tongue wash (water) | - |
| - | 1.29 FSA inspection | 1.29 FSA inspection | - |
| - | - | 1.26.2 Liver wash (optional) | - |
| - | 1.30 Check point 2 and pizzle-root removal | - | - |
| - | 1.31 Flare fat and kidney release | - | - |

| Inputs | Primary process | Secondary process | Waste streams |
|----------------------|---|---|----------------------|
| - | 1.32 QA carcass inspection 1 | 1.31.1 Pleurisy removal (optional) | - |
| - | 1.29 FSA inspection | - | - |
| - | 1.33 MLC Grading | 1.32.1 Transfer of Carcass to detained room | - |
| - | 1.34 Loosen Jowls 1 and 2 | - | - |
| - | 1.35 Rectification (optional) | 1.32.2 Carcass trim (optional) | - |
| Dolavs and Tote Bins | 1.36 Excess blood meat removal | - | - |
| - | 1.37 Tonsil removal | - | Category 3 Waste |
| - | 1.38 Carcass Health mark stamp and kill number | - | - |
| - | 1.39 Spinal cord removal | - | - |
| Carcass ink | 1.40 Carcass trip inspection and removal | - | - |
| - | 1.41 (CCP01) Carcass inspection and trim (free from visible physical contamination) | - | - |
| - | MLC Weigh and grade | 1.18 Carcass stamping (optional) | - |
| Tote bins | 1.43 Kidney removal | 1.43.1 Bulk weigh/label | - |
| - | 1.44 Flare Fat gland removal | - | - |

| Inputs | Primary process | Secondary process | Waste streams |
|--------------|---|--|---------------|
| - | 1.45 Trichinella sample taken (optional) | 1.45.1 Trichinella sample transfer to lab, 1.45.2 Trichinella sample testing | - |
| - | 1.46 Half a head (optional) | 1.46.1 Flare fat lifting/snow fat removal | - |
| - | 1.47 Fillet drop and trim | 1.47.1 Fillet scraping (optional) | - |
| - | 1.48 Carcase misting (optional) | - | - |
| Hook gambles | 1.49 Carcase Rapid chill minus 18 degrees to 30 degrees approximately 1 hour. | 1.48.1 Hip/hyper stretch suspension (optional) | - |
| - | 1.50 Carcase chiller Carcass temperature less than 7 degrees in 24 hours, target less than 5 degrees. | - | - |

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