

Mechanics of Poultry Processing

First Processing



The slide features a title 'Mechanics of Poultry Processing' in black text, with 'First Processing' in white text on a green background. A small image of three white chickens is positioned between the title and subtitle. The slide is decorated with a yellow bar on the left and a green bar at the bottom. The logo for 'MECN Poultry Processing Solutions' is located in the bottom right corner.

Broiler Carcass Contamination

Factors affecting:

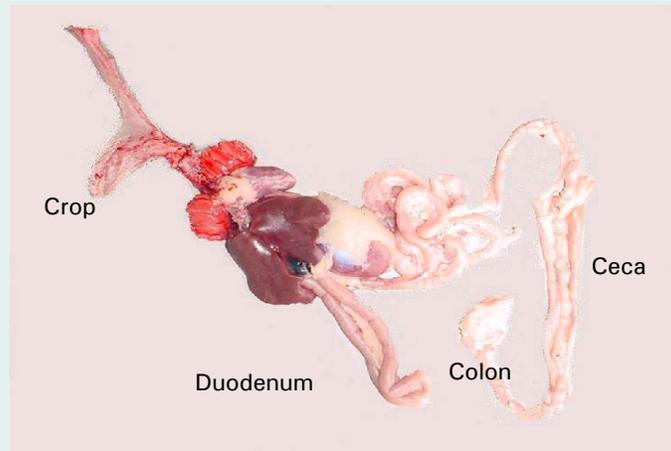
- Microbial load of live bird arriving at plant
- Conditions and content of GI tract
- Improper processing equipment set-up
- Maintenance of equipment

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The slide contains a title 'Broiler Carcass Contamination' and a list of four factors affecting contamination. The text is set against a light green background. At the bottom, there is a footer with the date 'Feb 23, 2006', the topic 'Post-Harvest', and the page number '2 of 28'. The 'MECN' logo is in the bottom right corner.

Main locations of pathogens in birds



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Processing Equipment and Machine Set-up

- Breed/ Strain Cross
 - Weight Variation
 - Differences in Feed Conversion
- Uniformity of Flock (Gender)
 - Efficiency of Process (Performance)

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Processing Equipment and Machine Set-up



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Summary of Broiler Weight Variation

- Over 20 Different Processors
- Over 60 Different Facilities

<u>Avg. live wt.</u>	<u>(lb)</u>	<u>Percentage</u>
< 2.0	1.5%	
3.65 – 5.40		37.5%
5.50 – 6.40		14.1%
6.50 – 7.40		28.1%
≥ 7.50	18.8%	

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Advances in EV Technology

Traditional Evisceration Systems:

- Streamline Inspection System (SIS)
- New Evisceration Line Speed (NELS)

High Speed Evisceration Systems:

- Meyn Maestro
- Stork Nuova

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Processing Equipment changes



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Vent Cutter

Potential Problems from Vent Failure:

- Opening cut can not be achieved
- No evisceration
- Increased number of carcasses requiring reprocessing
- Potential condemnation and economic loss

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Vent Cutter

Performance failures:

- Missed bird
- Vent still attached to bird
- Rosebud still attached to bird
- Cutting the intestine
- Back, kidney and/or hip damage

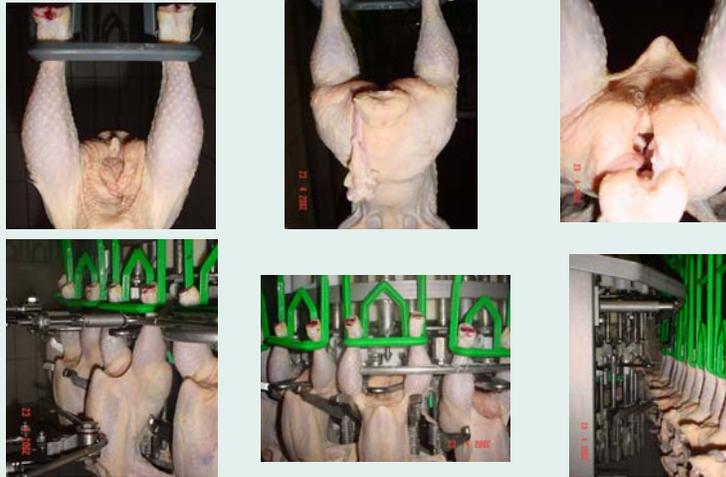
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Vent Cutter - photos



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Opening Machine

Function – and output demands:

- Opening of abdominal cavity
- No damage to keel or breast
- Sufficient coverage of keel area of breast
- Minimal or no damage to intestines

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Opening Machine

Various models available:

- Traditional, box cutter style opener;
- Scissors type opener; and
- Cross-cut style opener (C. & S. America)



Above: Box cutter style Opening Machine



Right: Breast skin coverage examples

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Opening Machine

Performance failures that can occur with the opening machine include:

- Missed bird
- Cut guts –
- Long & Short opening –
- Cut Keel (Breastbone) –

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Opening Machine - photos



Above: Units of Opening Machine – scissors type

Below: Units of Opening Machine – scissors type



Above: Birds being processed in Opening Machine – scissors type

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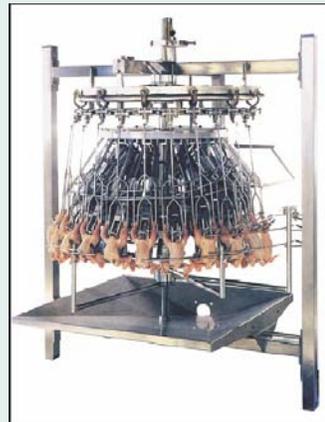
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Evisceration – “Draw” Machine

Operational specifications:

- Positioning of carcass
- “Draw” spoon is guided by cam
- Viscera pack is drawn out of the bird
- Lower unit pushes carcass out



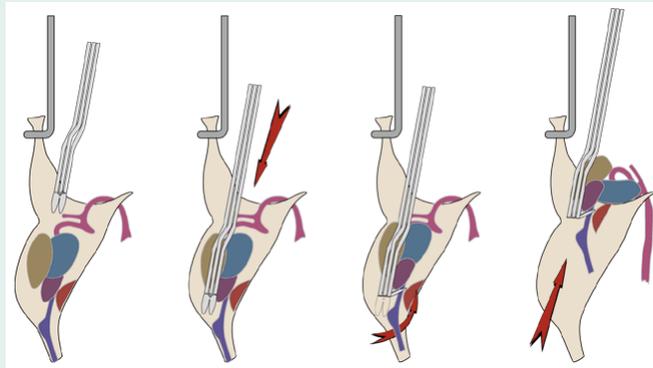
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Eviscerator – “Draw” Machine



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Eviscerator - Maestro

- New Technology
- Complete removal of viscera pack
- Pack transferred to pack take – over device
- Different colored pans
- Carcass and viscera pack presented in line

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Eviscerator - Maestro

Key actions of the Maestro eviscerator:

- Positioning of carcass
- Accurate positioning of the spoon
- Capturing of trachea and esophagus
- Removal of viscera pack from the bird

Key performance indicators for Maestro include:

- % of completely removed packages
- % of properly presented viscera packs to inspectors;
- % of damaged liver
- Synchronization of the pan conveyor and overhead conveyor

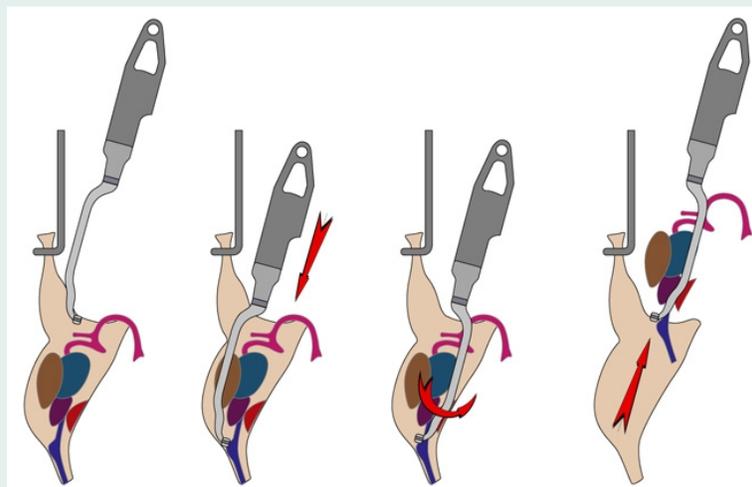
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Eviscerator – Maestro



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Eviscerator – Maestro



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Carcass Contamination

Prevention of contamination by process

- Method of kill
- Fecal matter removed

Reduction of contamination

- IOBW

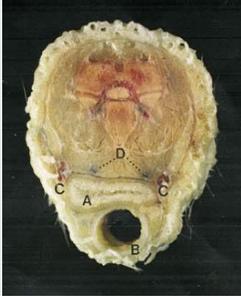
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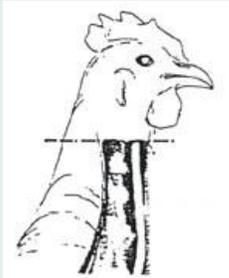
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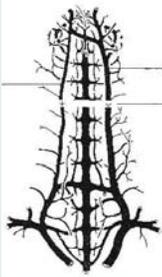
Method of kill



A. Esophagus
B. Trachea
C. Jugular Veins
D. Carotid Arteries



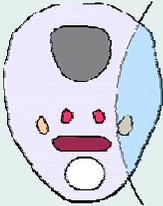
Location of Cross-section (above)



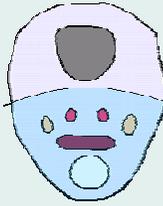
Left Jugular vein
Right Jugular vein
Location of killer cut

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Method of kill



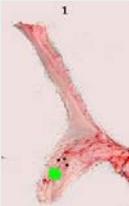
Shallow cut, bleeding less than optimal.



Killer:
Deep cut through all four blood vessels. Fast and certain brain death. Esophagus (gullet) and trachea (windpipe) disconnected from head



Crop ruptured during head pulling. Contamination by crop contents.



Crop entirely left in neck during head pulling. Intact crop and esophagus removed entirely by Maestro. Cropper removes remaining windpipe etc.

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Fecal Removal Machine

Machine operation :

- Location of machine
- Expression of fecal matter
- Rinse of carcass



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Inside/Outside Bird Washer - IOBW

Machine operation

Below: View of IOBW in operation

- Critical step in process
- Nozzles
- Water usage



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Conclusion

Broiler Carcass Contamination

- Conditions of bird at arrival
- Critical equipment
- Preventive approach

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Contact Information

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