Spray Chilling

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Benefits:
- Energy savings in terms of refrigeration cooling costs.
- Boners have indicated their preference for processing spray chilled carcasses.
- Carcasses retain their body.

Meat     Tonnes Year
Beef     2082 2011
Veal     46
Mutton   110
Lamb     396
Pig Meat 344
Total:   2977

Chicken 1014
Meat
Total:  3991

NOTE:
Chilling slows the growth of most bacteria and temperatures just above the freezing point can kill or injure bacteria.

Spraying Systems Co. delivers $4M ROI

Spray chilling is the intermittent spraying of carcases with water during the early stages of the cooling of hot sides. Spray chilling has been shown to reduce weight loss during overnight chilling. Research by Spraying Systems Co. has shown that the reduction of weight loss (shrink) of up to 2% due to evaporation of moisture from the surface tissue. In 2011 the Australian industry produced close to 2.1 million tons of beef and veal. Using an average beef sales price of $5.06 per kilogram, this is a cost to the industry of evaporative losses of between $106.3 Million and $212.5 Million in beef and veal sales alone. If we were to add lamb, pork other red meats and poultry you can see that the figure is staggering.

Spraying Systems Co. have developed and successfully installed systems in Australia that have added value not only in savings but has delivered a return on the original investment of $1 Million by returning $4 Million pay-back on the original investment in the first year.

Want more info? Call us on 1800 622 508.

How does Spray Chilling work?

The standard chilling process uses circulating cold air to cool hot carcases by passing cold air over the carcass thus evaporating surface moisture. As the cooling process continues and surface moisture has been evaporated, deeper tissue is cooled as moisture is drawn to the surface.

The evaporation is rapid in the initial stages as there is a large difference between the hot carcass temperature and the chiller air temperature. The evaporation causes carcass shrinkage, which is the moisture/weight lost by the carcass due to the chilling process.

Spray chilling uses sprays of water to offset the evaporative loss of carcass chilling. Sprayed water is then evaporated from the carcass and moisture is not drawn from deeper in the tissue. Timing of sprays and amount of water sprayed is key to get the shrinkage as close to zero as possible. Shrinkage and carcass chilling are also influenced by other variables; including but not restricted to: chiller design, operating conditions, carcass size and carcass fat cover.
About us

For the past 75 years Spraying Systems Co customers have relied on us as their preferred single source supplier for Spray research, testing, custom lance and header design and fabrication, automated spraying systems and of course spray nozzles. In that time Spraying Systems Co has become the largest manufacturer and supplier of spray nozzles in the world.

Spraying Systems Co have 10 manufacturing centres located across the globe supplying around 100,000 items of spray nozzles and spray equipment, servicing almost every imaginable industry. Spraying Systems Co's global reach, 75 years' experience and expertise has earned a reputation that is second to none. We have built strong business relationships, providing products and services that bring efficiency, improved production which allows our customers to gain a superior competitive advantage in their marketplace.

We offer expert advice, best quality spray hardware and complete automated turnkey systems designed and engineered to suit almost all industry needs. If it's Washing, Coating, Cooling, Gas Scrubbing, Humidifying, Dust Control or Drying – we have the answer. Our sales Engineers can assist you improve your production, save money, resources and effectively improve your efficiency. Our Sales Engineers are strategically located servicing all states of Australia, New Zealand and PNG.

Typical chilling process

Carcasses loaded into chiller within minutes of being slaughtered. Loading some chiller rooms can take 1-2 hours. After the doors close the chiller fans are turned on to full speed, circulating the air. As the carcass core temperature cools fans are slowed, until desired temperature is achieved. This may take 7-8 hours. The cooling then holds the room to a set temperature until the next morning and the whole process is repeated.

Typical Operation

Cooling the carcass with air draws moisture from the surface of the carcass initially and then from the inner carcass as the cooling process progresses. When air velocities around the chiller are increased to accelerate the cooling process it increases moisture and weight loss. The additional moisture on the surface of the carcass becomes sacrificial. So by spraying water to the carcass surface it is sacrificed in favour of natural carcass moisture thereby preserving moisture in the carcass and preventing further carcass weight loss during cooling process. Refrigerated air becomes low in humidity as it moves through the heat exchanger. Dry air attracts moisture as it removes the residual heat from the carcass. The moisture loss is also function of cooling and carcass weight loss occurs through this moisture evaporation. Spraying chilled water at 3 degrees Celsius has a more instant cooling effect on the carcass. This speeds up the cooling of the carcass core temperature. Carcasses retain moisture and therefore body weight.