Beef Industry Portfolio
Milmeq: Engineering for the Future

Milmeq custom designs, engineers and manufactures systems for primary food processing, materials handling, and chilling and freezing for processors within primary food markets, including red meat, poultry, dairy, seafood and horticulture.

We are focused on the development, design, delivery and support of our clients’ protein processing needs. With in-house expertise driving innovation and a proven track record when it comes to providing sustainable integrated systems globally, we are passionate about defining ways to enhance the performance of the businesses we partner with.

Engineering for the future.

History & Engineering Expertise

Milmeq initially grew alongside the New Zealand and Australian food markets and in line with the growing demand for export of primary produce from this part of the world. Some of our early developments were to aid the processing of dairy and meat for superior presentation and shelf life as well as influence the approach to chilling and freezing for optimum preservation and quality required to withstand the long distances product needed to travel to reach consumer markets.

Today it is recognised that primary food produce from both New Zealand and Australia has world renowned status and processing operations are often used as a benchmark.

The early Milmeq technologies and systems developed have continuously been improved and adapted through customising for varying applications and operations. This includes adapting technologies for international customers and market requirements.
Beef Portfolio at a Glance

Having been in operation since 1952 and through the combination of engineering expertise in process, refrigeration, mechanical, controls and analysis, Milmeq is a unique partner within the food processing industry.

High importance is placed on understanding particular requirements and factors that can affect the processing efficiency of a product. This understanding and awareness allows Milmeq to customise design and manufacture ensuring a system delivering optimum suitability to individual processing needs.

Specifically for beef processing systems, Milmeq designs, manufactures, installs and commissions;

- Slaughter operations
- Fabrication / cutting operations
- Carton conveying systems
- Chilling and freezing batch blast, air blast tunnels or plate freezers
- Refrigeration requirements for all plant operations
- Automated stock transfer systems
- Palletising systems

Overhead Process Conveyor - Beef Bleed Conveyor
This system utilises roller chain for lower power usage, cleaner operation and ability to change elevation. Other integrated features in the design include drip trays to contain fall out, safety rails to ensure trolleys do not fall off, electronic synchronisation for smooth transfers and continuous operation.
Design Approach

Understanding Beef Processing and Individual Requirements

The engineers at Milmeq place high importance on understanding the process requirements specific to individual customers as well as between each plant. This includes understanding the entire process and assessing the impact a new system or modification to an existing system can have across different process operations.

Milmeq recognises that the red meat industry faces the following challenges and ensures these issues are addressed at the design and scope stage of projects through close consultation and involvement with the customer, therefore presenting a customised solution.

Design Considerations for Food Processing Environments;

**Product related**
- Food Safety
- Shelf Life of Product
- Product Yield
- Packaging Costs

**Operation related**
- Environmental Impact
- Energy Consumption
- Inventory Control
- Owning and Operation Costs
- Water Consumption
- Raw Material Supply
- Plant Reliability

**People related**
- Occupational Health and Safety
- Working Environment
- Productivity
- Ability to Attract Staff
- Required Skill Level
- Noise Levels

*Beef Bleed Table & Elevator Conveyor* - Designed to raise cattle from the tipping cradle or slab to the bleed conveyor. Robust construction, easy maintenance, sized for throughput of plant.

*Bleed Queuing Conveyor* - This conveyor design provides both positive separation between animals and the ability to queue animals ahead of production.
- Gaps are avoided in the main processing system
- There is no contamination of the throat wound from adjacent animals.
Technology Highlight

We value our ability to custom design systems that ultimately contribute towards the bottom line of our customers’ business and that provide a reliable, consistent product to the protein supply industry.

Processing station with integrated tool & hygiene support.

Evisceration processing area.

Overhead process conveyors.

Multi-user handwash basin.
Processing Performance

Milmeq can provide the complete system for beef slaughter operations and has design solutions to achieve;

- Improved food safety and hygiene with lower contamination from the beef process system
- Improved productivity without compromise to quality assurance, worker and food safety
- Availability of proven robotic aids

Process equipment and systems that are utility efficient, compact, easily cleaned and have proven ability for reliable extended or multi shift operations.

Each system is designed for the individual client’s processing needs, type of carcasses to be processed and overall requirements. Milmeq beef systems can generally handle all types and sizes of carcass and we provide systems that handle from six cattle/day to hundreds of cattle per hour.

Key equipment for each beef processing stage includes;

- Knocking Box
- Electrical Immobilisation & Stimulation
- Landing Table/Tipper Cradle
- Beef Elevator
- Bleed Conveyor
- First and Second Leg Transfer
- Hide Puller
- Main Dressing and Transport Conveying Systems
- Rise and Fall Platforms / Stands
- Evisceration Conveyors and Systems
- Offal Transfer Conveyors and Systems
- Hygiene Equipment
- Detain/Retain Systems

Legging Changeover - The Milmeq first and second legging system allows for easy transfer from bleed trolley to dressing trolley in an ergonomic and safe manner.

Beef Hide Puller - Designed to provide efficient and effective hide removal with a minimum number of processes. Designs integrate an easily operated reversing chain system, assisted by two process operators on independent rise and fall platforms. Variable speed hydraulic or electric drive versions to process up to 50 cattle per hour. Milmeq partners with Sterilene Beef Hide Puller for processing at over 50 cattle per hour.
Technology Highlight

Our unique offal products pan conveying system with positive product separation supports the one-touch harvesting of offal and auto process station deposit of products. Our beef stacking bleed rail system assures proper carcass spacing and time without cross-contamination, and retain-delin rail system aids in the handling of poor stock whilst maintaining production without process interruptions.

System control choices from simple pneumatic to fully networked field re-configurable PC based Scada type (safe control wire bus system) with electronic synchronisation.

Beef Lowerator for Evisceration - Pneumatic lowerator to allow operator full control over carcass height during evisceration procedure. Design ensures evisceration carried out in ergonomic manner for operator and minimises risk of damage or contamination to product or carcass.

Access Platforms for Process with integrated Hygiene Equipment - Milmeq beef systems are characterised by easily cleanable, simple construction with care taken to locate work stations and hygiene equipment in an ergonomic manner.

[pictured to the right]
Technology Highlight

Beyond the slaughter floor

Single and Multiple Retention Tunnels

Milmeq has been building chilling and freezing tunnels since 1970 and with hundreds of installations worldwide this success has enabled the constant evolution to today's robust reliable tunnel. Initially developed for freezing red meat cartons, we now also have tunnels that chill red meat, freeze chicken, chill chicken, freeze pork, chill pork, freeze fish, freeze butter, chill butter, chill cheese, chill cream cheese and chill mozzarella.

The Single Retention Tunnel (SRT) is a true ‘first in / first out’ system designed for product requiring the same chilling or freezing time. The Multiple Retention Tunnel (MRT) enables chilling and freezing of product within the same system through automated sorting technologies incorporated at the conveyor in-feed operation. Product then enters a shelf in the tunnel allocated to a specific retention time.

There are three external factors that influence the conditioning of a product; the air temperature, the air velocity and the retention time. By their simplicity and nature our tunnels have excellent control over all three. Our tunnels can be designed to handle any product in a carton, box, case, mould, crate or even some plastic liners that can be transported on a conveyor and transferred by a mechanised pusher.

- Typical design retention times would be between 2 and 48 hours
- Typical capacities would range from 600 to 20,000 cartons
- Typical circulating air temperatures would range from +10°C to -50°C (+50°F to -58°F)
- Typical carton mass would range from 4.5 to 27 kg (10 to 60 lbs)
Technology Highlight
Beyond the slaughter floor

SRT installation including full remote control through the use of CCTV.

Carton conveyor delivers multiple SKUs to the chilling enclosure.

Multi controls and monitoring system for an SRT & MRT.
Technology Highlight
Beyond the slaughter floor

Having developed our business around the red meat industry, Milmeq can provide complete integrated systems from the Primary Food Processing operations to the Materials Handling systems to the Chilling and Freezing conditioning process.

Carton Conveying
The Carton Conveying technologies provided by Milmeq achieve maximum efficiencies when delivering product to automated systems such as boning rooms, the SRT, MRT and Plate Freezers. All Conveying systems and their associated barcode readers, sensors, controls and mechanics are suited to operate in low temperature environments.

By understanding different product types and number of current and future path requirements for cartons or product, Milmeq systems are capable of accelerating the pace of transport and ensure integrated devices such as Accumulation, Elevators, Decline, Diverters and Mergers deliver seamless transitions.

Plate Freezers
Milmeq developed Plate Freezing technology as a result of the requirement to extend the shelf life of meat product being exported long distances and is responsible for the world’s largest automatic Plate Freezing system. This freezing technology works well within processing operations that have high throughput of product requiring the same conditioning. Plate Freezers provide efficient and rapid freeze times within 24 hours due to the contact of the cartons placed between the freezing plates. This freezing method also delivers further efficiencies and cost savings to palletising and transportation operations due to the cartons having perfectly flat surfaces when exiting the freezer.

Refrigeration Systems
Milmeq designs, constructs and installs complete Industrial and Commercial Refrigeration Systems to suit many different requirements and applications. With the environment in mind our designs are focused on using natural refrigerants such as NH3 and CO2, combined with modern technologies and practices. We strive to become pioneers in leading-edge system designs that are safe, efficient and productive. As well as providing integration of complete Refrigeration Systems, Milmeq also supplies in-house manufactured Pressure Vessels, standalone Compressor Sets, Fluid Chillers, Condensers, Dehumidifiers and Ice Machines.
Milmeq Fully Automated Stock Transfer (MFAST) System

With the increase in the number of product SKUs in line with growing consumer market requirements, the Milmeq Fully Automated Stock Transfer (MFAST) system was developed to assist with product management and distribution needs.

The MFAST is capable of operating at -20°C (-4°F). It has an in-built multi use travelling beam which simultaneously stores product and then retrieves product upon return travel in order to assemble relevant SKUs or order lots ready for palletising.

The system optimises the space allocated for storage and pre palletising areas. Displacing the need for forklift operations, the robust design, automated mechanics and intelligent control system allows for a high structure. Refrigeration requirements for these types of spaces and to achieve product consistency whilst being held in a low temperature environment are also integrated within the development and design.

The system is installed and commissioned with easy to use controls for the management and provision of flexible alterations for the automated system. Remote monitoring and installation of CCTV allows for a link to Milmeq for ongoing support, regular maintenance programs as well as training refreshers as required.

Air flow control fan units to achieve consistent air velocity required for product conditioning.

Overview of depth and height of MFAST in operation. Top left image: Control room for MFAST.
Contact Information
Offices in New Zealand and Australia. Partners and installations worldwide.

For more detailed information regarding our systems and integrated solutions for food processing operations, visit our website or contact one of our offices to speak with a Business Development Engineer.

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