



# Hillhead of Covington

400 cow dairy herd

# Raw Milk of Quality

## 12 Month Average

- Butterfat 4.05%
- Protein 3.33%
- Bactoscan 19,000/ml (Band A <30,000)
- Somatic cell count 113,000/ml (Band A <250,000)

# What has milk become?

- Homogenised
- Standardised – cream removed. Whole milk 3.5% fat or higher
- Ultra filtered
- Lacking taste and texture
- Single used plastics – Fact: dairy aisle of supermarkets is the biggest food user of single used plastics

# Why we started....

- We have always consumed our own raw milk and wouldn't drink any shop bought milk.
- Pure and natural milk was loosing its popularity and was no longer resembling the product that we produced.
- Milk alternatives; oat milk, almond milk, soya milk were stealing the limelight.

We wanted to share our good quality product.



# A Passion for Milk

# Equipment Required

Container room

Pasteuriser and cooling  
equipment

Vending machine

# Shipping Container Micro Dairy

- Separate but near Raw Milk dairy parlor
- Hot and cold water
- Drainage into dirty water system
- Vermin proof
- Washable surfaces
- Insulated for Frost and cool in Summer
- Accessible



# Batch Pasteuriser from GN Limited

Manufactured in Kent



Batch pasteuriser to allow low temp pasteurisation and avoid wasting milk properties with overheating.



Fitted with a coil heating system from biomass boiler to reduce electric use



Linked to ice bank tank for cooling



Digital display, each stage of the process is visually displayed.

# Pasteurisation Process

Heat to 63.5 degrees

Dwell – 30 mins

Cooling

- Jacket Flush with cold water 30 mins
- Iced water cooling

Hold at <5 degrees



# Daisy Vending Machine

- British Made
- Off site cleaning of all parts
- Remote access
- Temperature recording
- Tank replacement controls
- Integrated milkshake system
- 2 x 100 litre tanks



# Location of Milk Vending Machines

## 1. Brownlies of Biggar – within the shop

### **Pros**

- Customer convenience
- Shop staff maintain the machine
- Clean indoor environment
- Open 7 days 6am – 10pm
- No payment system required
- Safe and secure

### **Cons**

- Lack of space
- Food Business Approval Required

## 2. The Milk Hut

Originally in an outdoor shed at Tinto Hill tearoom carpark now moved to shipping container at the farm Hillhead of Covington.



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- Direct to customer sales with unattended contactless payments.
  - Indoor environment better suited to the machines
  - Mains water and waste direct plumbing
  - Convenience for restocking, general cleaning and addressing problems.
  - See where your food comes from.

# Operating Procedure

## Raw Milk

- Raw milk is pumped directly to the pasteuriser from the late lactation COWS.
- No cows on antibiotics in this group
- Filter in line to collect any debris
- Raw milk pipe and pump cleaned within raw milk system.

# RAW MILK CCP

## Risk Rating

- Likelihood

1. Very Unlikely
2. Seldom
3. Frequently
4. Highly Likely
5. Very Likely

- Severity

- 1 No Issues
2. Complaint
3. Illness
4. Hospitalisation
- 5 Fatal

Step	Hazard	Likelihood	Severity	Risk Rating	Monitoring
Farm Raw Milk	Antibiotics	1	4	4	Non antibiotic cows Testing of raw milk on farm and by milk buyer

# Pasteurisation

- Batch pasteuriser: milk is heat to 63.5 degrees and held for a minimum of 30 minutes.
- Agitator paddle to ensure equal heating of the milk, no cold spots
- Time Temperature Records; pasteuriser and datalogger
- Testing for Alkaline Phosphatase <10 on traditional comparator, Fluorophos <350mu/l.
- Micro Monitoring
  - ACC <10,000,000cfu/g
  - Enterobacteriaceae <10
  - Listeria absent
- Validated cleaning regime



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Step	Hazard	Likelihood	Severity	Risk Rating	Monitoring
Pasteurisation	Presence of Alkaline Phosphatase  Pathogens from Raw Milk	1	5	5	Validation of plant. Time/temp.  Milk testing

# Cooling

- Aim to cool milk once pasteurised asap
  - Batch cooling ~ 2 hours <5 degrees
- Milk held <5 degrees throughout transportation and storage in the vending machines
  - Transport time 15 minutes max
  - Vending machine record of milk temperature

# Cleaning Regime

Pasteuriser

Pump and pipes

Vending machine tanks and dispensing pipework

- Swab testing to validate and monitor

Glass Bottles all prewashed and lidded prior to sale.

# Getting Started: milk vending machines delayed

## **Begin Product Testing December 2020**

### **Pasteurised Milk**

Initial Tests:       Freezing Point Depression  
                          Alkaline Phosphatase two batches  
14 consecutive samples of batch pasteurised milk  
                          ACC, Enterobacteriaceae, Listeria.

Weekly Environmental swabs for 7 weeks

Shelf life product testing up to 7 days

# Ongoing Testing

## **Vending machine testing February 2021**

Finished product samples of milk and milkshakes were tested on two consecutive weeks.

## **Routine Testing**

Milk: ACC, Entros, Listeria

Environmental swabs: ACC and Listeria

Shelf Life testing alternate Milk and Milkshakes.

# What Has Gone Well?

- Customer Support/feedback
- Reusable glass bottles
- Popularity of Milkshakes in 18-25 years old
- Customers from outwith the area



# What has been challenging?

- Thermometers on pasteuriser
- Technical Equipment with non local engineers
- Time and work involved, confidence in staff



# Future Plans

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- The Milk Hut now has coffee machine, cakes and a fantastic view.
- Improve our marketing and customer catchment
- Small mobile milk dispenser for small events
  
- Other products?
- Yogurt, soft cheese? Would require more equipment and investment and time.