

# Sourcing Used Equipment...

## Challenges & Opportunities

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# The Decision... New or Used Equipment?

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## ☐ New

- Some things you just can't find used any more.
    - ☐ Cheese vats
    - ☐ Small batch pasteurizers
  - Some new items are much more efficient.
    - ☐ HTST systems
  - Some used equipment doesn't pass current regulatory requirements
    - ☐ Requires investigation
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# The Decision... New or Used Equipment?

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## ☐ Used

- Often is a great option.
    - ☐ It lowers up front costs.
    - ☐ It may be a better value for the money spent.
      - “They just don’t build things like they used to.”
  - Be careful!
    - ☐ Demand has exploded and prices have skyrocketed.
      - Many buyers lack experience.
      - Some sellers don’t have the integrity that they should have.
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# The Decision... New or Used Equipment?

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## ☐ Used

- Generally requires more effort.
    - ☐ Research on line and/or watching for used equipment ads.
    - ☐ Travel to see the equipment and/or poring over photos
    - ☐ Decisions on rebuilding
      - What needs rebuilt?
      - Who will do the rebuilding?
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# So we've chosen to go used...

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- ☐ What is available?
  - ☐ What should we look for?
  - ☐ What are the pitfalls?
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# Selecting equipment -Tanks

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- ☐ What's available?
    - Old farm bulk tanks
      - ☐ Are less expensive
      - ☐ Will a "leaker" work? (one that doesn't hold a freon charge)
    - Some round vertical plant-type tanks
      - ☐ Round verticals are in high demand and are more expensive.
      - ☐ Some non-functioning pasteurizers can make great storage & mix tanks.
    - Wall tanks
    - Multi-compartment tanks
      - ☐ Generally the most expensive, but they are great space-savers.
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# Selecting equipment -Tanks

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- ☐ What should we look for?
    - Always inspect for condition
      - ☐ Look for the obvious internal damage – dents, scratches, chemical burns. (PMO Item 11p.)
      - ☐ Exterior – stainless or painted? Condition?
      - ☐ Outlet valve? Is it stainless steel?
      - ☐ Agitator drive – gearbox leaking oil? Is it in good running condition?
    - Will it hold a freon charge?
      - ☐ Insist on pressure testing
    - What is the compressor condition?
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# Selecting equipment -Tanks

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- ☐ What should we look for?

- Is a tank washer included?

- ☐ Is it in good working condition – internal leaks? Does the pump run?

- Let's add CIP! (PMO Item 12p.)

- ☐ CIP is not all that hard – saves elbow grease and time.

- ☐ Generally improves sanitation.

- ☐ Sprayballs can be installed on older tanks

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# Selecting equipment -Tanks

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- ☐ What are the pitfalls?
    - Leaking freon plates
    - Internal damage that will not pass inspection.
    - Missing components... agitator, valve, dipstick
    - An “over purchase”
      - ☐ Buying a good batch pasteurizer for a storage tank.
      - ☐ Buying an insulated tank when a single shell will do.
      - ☐ Buying a cooling tank if all you need is an insulated storage tank.
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# Selecting equipment - Pumps

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## ☐ What is available?

- All sizes... from 1hp on up.
- Small pumps (1hp–3hp) are in high demand.
  - ☐ Often there are not enough small pumps available to meet the demand.
- New ones aren't that expensive – Junky pumps are not worth a lot of money.

# Selecting equipment - Pumps

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- ☐ What should we look for?
    - Inspect for condition
      - ☐ Motor – does it run?
      - ☐ General appearance – watch for rusted out motors and flakey paint.
      - ☐ What is the condition of the seals?
    - What type of connections?
      - ☐ Bevel seat – may require welding on new ferrules.
      - ☐ Triclover
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# Selecting equipment - Pumps

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## ☐ What are the pitfalls?

### ■ Bad motors

- ☐ If you need a new motor plus a pump rebuild, you'll have "Abe Lincoln's ax" when you're done.

### ■ Leaking seals

- ☐ Seal plates cost big money.

### ■ Make sure it is a popular brand so that you can get parts.

- ☐ Triclover or Ampco
  - ☐ Fristam
  - ☐ A farm milk pump (DeLaval, Boumatic, Westfalia-Surge).
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# Selecting equipment – Batch Pasteurizers

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- ❑ What is available?
    - Small sizes... 50 gal – 100 gal are rare finds
    - Medium sizes are fairly available
    - Larger sizes 500 gal – 600 gal are less available.
  - ❑ A wide range of features and conditions.
    - Atmospheric or pressure wall
    - Painted exterior or all stainless
    - Wind-up recorders versus electronic versions
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# Selecting equipment – Batch Pasteurizers

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- ☐ What should we look for?
    - What is it?
      - ☐ Just the shell? (PMO requirements for vat pasteurizers. Item 16p. etc)
      - ☐ Is it atmospheric or pressure wall?
    - Overall condition of vat & accessories
      - ☐ With good agitator? (sweep agitator preferred)
      - ☐ Leak detect valve? (in good condition? All stainless?) (PMO Item 16p.)
      - ☐ Indicating thermometers? (product & air space)
        - Mercury ones are being phased out
      - ☐ Recording thermometer? (wind-up or electronic?)
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# Selecting equipment – Batch Pasteurizers

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- ❑ Atmospheric – water must flow through without generating any pressure
    - Spray ring / Water bath
    - Could require a braze plate heat exchanger and/or an extra pump.
    - Older and less efficient
  - ❑ Pressure wall – water can be pushed through under pressure and returned to heat or cooling source
    - Newer & more efficient
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# Selecting equipment – Batch Pasteurizers

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- ☐ What are the pitfalls?
    - There are a lot of nuances with batch pasteurizers.
      - ☐ Research carefully or deal with a reputable dealer.
    - Rusted out equipment
      - ☐ Bad bottoms
      - ☐ Leaky water jackets
    - Hairline cracks in the stainless inner tank.
      - ☐ Carefully inspect or dye test.
    - Non-PMO components.
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# Selecting equipment – HTST Pasteurizers

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## ☐ What is available?

- There are a lot of old & nearly worthless systems out there for sale.
    - ☐ Leaking or low pressure plate packs with old Taylor controls, cracked balance tanks, and bevel seat joints in the holding tube.
  - There are very few newer style used systems available.
    - ☐ Newer higher pressure plate packs with electronic controls
  - There are a few older systems that still have some life in them.
    - ☐ Plate packs in good condition that can be upgraded to new style controls – now or later.
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# Selecting equipment – HTST Pasteurizers

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- There are a lot of components to a complete HTST system – are they all there?
    - Balance tank
    - Pump – stuffer and/or booster pumps
    - Plate pack
    - Recorder-controller with all the sensors
    - Holding Tube
    - Flow diversion valve (and leak detect valve)
    - Flow diversion panel (or old-style Taylor controls)
    - Sight glass, vacuum breaker, test ports, pressure differential control, etc.
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# Selecting equipment – HTST Pasteurizers

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- ☐ Key areas to watch out for...
    - Plate Pack
      - ☐ Brand?
      - ☐ Pressure capability?
      - ☐ Has it been sitting? Plan to have it inspected and regasketed unless in use and/or recently rebuilt.
      - ☐ Size? Too large? Too small?
      - ☐ Efficiency of regeneration section?
        - Older units are often around 80% or even less
        - Newer units can be 90% or higher
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# Selecting equipment – HTST Pasteurizers

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- Key areas to watch out for...
    - Control / Flow Diversion Valve
      - Taylor single stem controls – all mechanical / no leak detect valve
        - Obsolete and will become a problem to repair soon
      - Alfa-Laval (or other brand) flow diversion panel with separate flow diversion & leak detect valves. Anderson AV9900 recorder-controller
        - The current model
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# Selecting equipment – HTST Pasteurizers

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- What are the pitfalls?
    - Old low-pressure plate packs
    - Plate packs that gaskets are no longer available for.
    - Incomplete systems.
    - Beat up balance tanks. (PMO Item 11p.)
    - Old controls.
    - Will it meet PMO Appendix H standards?
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# Selecting equipment – Cream Separators

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- What is available?

- Not many...

- Cream separators appear to be the first critical component nearing extinction.

- DeLaval closed bowl separators

- Old.. Old.. open bowl separators

- We have not found a source for new cold milk separators in the small sizes.

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# Selecting equipment – Cream Separators

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☐ What type of separator... Cold milk or Warm milk?

■ Cold milk

☐ Mostly DeLaval brand out there – they are excellent units even though they are old

☐ Milk is pumped through – not gravity fed (closed bowl)

☐ Size can be an issue

■ 240, 242, 340, 342 (approximately 200 gal/hr)

■ 270, 272, 370, 372 (approximately 450 gal/hr)

■ 290, 292, 390, 392 (approximately 640 gal/hr)

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# Selecting equipment – Cream Separators

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## ■ Warm milk

- Some real old used models out there – some of them still work.
  - Most units are gravity fed – output will be gravity as well. (open bowl)
  - New units are available
  - Available in smaller sizes – wide range of sizes available.
  - The cream will need to be cooled!!!
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# Selecting equipment – Cream Separators

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- ☐ What should we look for?
    - Does the separator work?
    - Does the separator run with minimal vibration?
      - ☐ Rebalancing is expensive.
    - Condition of bowl ring
      - ☐ Worn out threads make the unit a ticking time bomb and cost tens of thousands to fix.
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# Selecting equipment – Cream Separators

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- ☐ What should we look for?
    - Do a visual inspection. Has the separator been well cared for or is it all beat up?
      - ☐ The separator gets torn apart and put together every processing day. Some of them could tell a lot of stories if they could talk.
    - Is it painted frame or stainless frame?
      - ☐ If painted, make sure disc stack will pass inspection. (PMO Item 11p.)
      - ☐ Watch out for soldering in milk contact areas.
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# Selecting equipment – Cream Separators

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- What are the pitfalls?
    - Old machines with soldering and non approved product surfaces.
    - Bad rings & out-of-balance bowls.
    - Incomplete cream valves.
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# Selecting equipment – Homogenizers

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## ☐ What is available?

- Brand makes a difference here.
    - ☐ Gaulin is by far the most popular
    - ☐ Cherry Burrell, Creamery Package / Crepaco, etc. are out there (make sure you know what you are getting)
      - Most of the “off brands” are not a good buy.
  - These machines are often very old but can still work fine.
    - ☐ Don't be afraid of a 1950's machine.
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# Selecting equipment – Homogenizers

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- ☐ What should we look for?
    - Get the model and serial number. Age influences price.
    - Most machines are painted frame – stainless shielded machines are newer and much more costly.
    - Check the condition of the head.
      - ☐ Valve seats
      - ☐ Pistons
      - ☐ Homogenizing valves
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# Selecting equipment – Homogenizers

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- ☐ What should we look for?
    - These machines are similar to an engine – crankshaft, connecting rods, pistons, and valves
      - ☐ Does it need an overhaul?
      - ☐ Are the connecting rods loose on the crankshaft?
    - Make sure the machine is properly sized. Pulley sizes can change the speed – within a range. Find out the range of the machine you are looking at.
    - Plan to buy used – they are still fairly available and new ones are EXPENSIVE.
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# Selecting equipment – Bottle Fillers

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- What is available?
    - A nice amount of Federal fillers.
      - “A” machines will bottle up to half gallon sizes.
      - “G” machines will bottle up to gallon sizes.
    - Some Cherry Burrell machines and a few other brands.
    - Some old... old... two valve fillers that are non-stainless.
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# Selecting equipment – Bottle Fillers

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- ☐ What should we look for?
    - Decide how large a filler is needed. Will it take as long to set up as it will to fill?
    - Watch out for cap design!!!!
      - ☐ Caps feeders and caps chutes are typically designed for a specific cap.
      - ☐ Capping with more than one cap style generally is a problem.
    - Grade A milk must be mechanically capped. (PMO Item 19p.)
      - ☐ Watch out for the little non-stainless fillers.
    - Will you need to convert from glass to plastic?
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# Selecting equipment – Bottle Fillers

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- ☐ What should we look for?
    - Check the type of fill valves.
      - ☐ Plastic bottles will collapse if filled with the old fill valves that were meant for glass bottles.
      - ☐ The old valves include threads and are non-stainless. (PMO Item 11p.)
  
  - ☐ Is an automatic filler necessary?
    - New small fillers are available.
      - ☐ Less expensive than used automatic machines
      - ☐ Allows a person to handle small batches with less waste and down time.
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# Selecting equipment – Bottle Fillers

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- ☐ Automatic machines

- Brand makes a difference here as well

- ☐ Federal is by far the most popular

- ☐ Cherry Burrell, Cemac, Fogg, and others out there too.

- Cappers are tricky – will it handle your caps?

- ☐ New cappers and chutes are expensive.

- Check the condition of the filler drive.

- ☐ Are the gears in good condition?

- ☐ Do the various adjustments work?

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# Selecting equipment – Bottle Fillers

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- ☐ Automatic machines

- How many sets of star wheels will be needed?
    - ☐ Each size bottle requires a different set – except for half gallons & squat quarts.
    - ☐ Tall bottles with a small footprint generally require double-stacked star wheels.
    - ☐ Condition of star wheels & type of material.
  - Fillers are sold different ways – what is included?
    - ☐ Just a filler?
    - ☐ A filler with a caps feeder and caps chute?
    - ☐ A filler with caps feeder, chute and input & output conveyor?
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# Selecting equipment – Bottle Fillers

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- ❑ What are the pitfalls?
    - ❑ Watch out for converted Federals with a Filler Specialties tag!!! They are orphans.
    - ❑ Cappers are tricky – will it handle your caps?
      - New cappers and chutes are expensive.
    - ❑ Is everything included?
      - New accessories can easily double the price of the filler and more.
    - ❑ Non-stainless fill valves.
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# Selecting equipment – Bottle Washers

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## □ What is available?

- Lots of old rusty bottle washers – some out in the weeds.
  - A few decent washers that can be reused as is.
  - New batch bottle washers.
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# Selecting equipment – Bottle Washers

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## ☐ Batch or Continuous Flow?

### ■ Batch washers.

- ☐ Less expensive than used continuous flow machines.
- ☐ Works well in small plants.
- ☐ Washes up to 200 bottles per hour.

### ■ Continuous flow washers

- ☐ Only available used (unless you own the bank).
  - ☐ Needed for larger plants
  - ☐ Washes 1000 – 5000 bottles per hour.
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# Selecting equipment – Bottle Washers

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- ☐ Purchasing a used continuous flow washer...
    - Looks are deceitful!!!
      - ☐ Many of them are in worse condition than they appear.
      - ☐ Others are in better condition than they appear.
    - Almost all of them need serious work before being reinstalled.
      - ☐ Tanks rusted out
      - ☐ Chain badly worn
      - ☐ Linkage worn and loose
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# Selecting equipment – Bottle Washers

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- ☐ Rebuilt bottle washers
    - What is a rebuilt bottle washer?
      - ☐ Completely torn down.
      - ☐ Sand-blasted
      - ☐ Badly worn and weak parts replaced
      - ☐ Powder-coated
      - ☐ New pumps installed
      - ☐ Assembled with new plumbing and electrical components.
    - Rebuilt washers are ready to run for a lot of years.
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# Selecting equipment – Bottle Washers

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- ❑ What are the pitfalls?
    - Buying a “pig in a poke.”
    - Not adequately assessing what will be needed to get the washer in working condition.
  - ❑ See PMO Item 12p. Administrative Procedures No. 4 for requirements for soaker-type bottle washers.
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# Selecting equipment – Ice Cream Freezers

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- ☐ What is available?

- Batch freezers

- ☐ 10 quart, 20 quart, and 40 quart

- ☐ Emory Thompson is the most popular.

- Continuous freezers

- ☐ 50 gallon per hour and up.

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# Selecting equipment – Ice Cream Freezers

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## ☐ Batch or Continuous?

- Batch freezers typical for small dairies.
    - 10, 20, and 40 quart models
    - Self contained or remote compressor
    - Capacities up to 50 gal/hr
  - Continuous freezers are used in the larger plants.
    - Most of these are 100 gallon per hour or larger.
    - More waste for small batches
    - Much more expensive.
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# Selecting equipment – Ice Cream Freezers

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- ☐ What should we look for?
    - Condition of the freezer.
      - ☐ Overall condition of barrel.
      - ☐ Dasher condition.
      - ☐ Door – is it all stainless?
      - ☐ Mechanical condition.
      - ☐ Compressor condition.
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# Selecting equipment – Ice Cream Freezers

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- ☐ What are the pitfalls?
    - Condition of the freezer.
      - ☐ Non-working compressor.
      - ☐ Dairy metal door. (PMO Item 11p.)
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# Selecting equipment – Other items.

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## ☐ Butter churns.

- Rarely available in small sizes.

## ☐ Cheese vats and accessories

- Rarely available.
  - Some people are using old Girton milk tanks as cheese vats.
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# Don't get burned

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- ❑ The used equipment market is subject to a lot of abuses – we have heard our share of horror stories.
  - ❑ You spell assume with two dollar signs (a\$\$ume).
  - ❑ Look before you leap.
  - ❑ Let common sense prevail.
  - ❑ Work with someone who understands the small processing equipment market.
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