Brewery Equipment and Brewhouse Procedures

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The Basics

- Mash Tun
- Boil Kettle
- A means to boil wort
- Wort Chiller
- Fermentation Vessel
- Thermometer
- Tubing for wort transfer (high temp rated)
- Packaging method (bottles/kegs)
Mashing

Considerations:
1. Insulation
2. Separation of grain and wort
3. Exit valve
4. Sparging method
Boil Kettle

Considerations:
1. Stainless steel
2. Separation of hop matter
3. Exit valve
4. Volume measurement
Wort Chilling

Considerations:
1. Efficiency
2. Ease of Cleaning
Plate Chillers

Advantages:
1. Very efficient
2. Relatively affordable
3. Can be outfitted with quick connects

Disadvantages:
1. Difficult to clean
2. Can’t take apart
Counterflow Chillers

Advantages:
1. Copper = happy wort
2. Easy to clean
3. Efficient
4. No need to take apart

Disadvantages:
1. Relatively spendy
2. Difficult to mount on a brew stand
Lack of Chiller Option

Advantages:
1. Cheap
2. Wyoming is a cold place

Disadvantages:
1. Highly inefficient
2. Wort is exposed to the elements
Fermentation Vessels

Considerations:
1. Cost
2. Material
3. Ease of cleaning
4. Temp control capabilities
5. Portability
Plastic Bucket

Advantages:
1. Cheap
2. Easy to clean
3. Easy to transport
4. Low hydrostatic pressure
5. Some come with racking ports

Disadvantages:
1. It’s plastic
Carboys

Advantages:
1. Relatively affordable
2. Glass cleans up well
3. Can see fermentation/flocculation
4. Can be temp controlled in a fridge

Disadvantages:
1. Glass is fragile
2. Difficult to clean
3. Medium level of portability
Stainless Steel

Advantages:
1. Highly durable
2. Very easy to clean
3. Highly sanitary
4. Good temp controlling options
5. Racking arms/yeast harvesting

Disadvantages:
1. Expensive
The Next Level...

1. pH meter
2. CO2 tank
3. Refractometer
4. Pump
5. Stainless steel/quick connect fittings
6. Oxygenation
7. Temperature control fermentation
8. Beer gun
Cleaning and Sanitizing

Cleaning and sanitizing are not the same thing!

Considerations:

1. Keep EVERYTHING clean
2. Use common sense (scratching, safety)
3. If something isn’t clean, it can not be sanitized
4. Sanitize everything that will touch wort post-boil (hot side vs. cold side)
5. Thoroughly rinse cleaning agents, DO NOT rinse sanitizer.
Cleaning methods

1. Detergent soak/scrub
2. CIP
3. Hot water?

Common cleaners:
1. PBW
2. LCCC (caustic)
3. Acid
Sanitizers

Considerations:
1. Everything that wort will touch post-boil (including your heat ex) must be sanitized
2. Dilute your sanitizing agent at suggested rates

Methods:
1. Star San (high foaming)
2. Sani Clean (low foaming)
3. Heat Pasteurization
Some Guidance...

1. It’s impossible to be too clean
2. Put your brewery equipment away clean
   a. My advice would be to wait to have a beer until cleaning commences
3. Obsess over your heat ex and fermentation vessels
4. Decide what your motivation/goals are for homebrewing; this will dictate what you’re willing to spend on equipment
5. Develop your palate to identify potential cleanliness/sanitation issues
   a. Phenols/Acetic/Tart/Metallic
Brew Log

At minimum, you’ll want to collect (and record) the following:
1. Recipe (grist/hop schedule)
2. Mash pH
3. Mash temp
4. Original Gravity/Terminal Gravity
5. Anecdotal notes on fermentation
Homework

For next class (@ Altitude...)

Please bring a beer of your choice and be prepared to talk about what it is that you love about the beer.