

CIDERY START-UP OPERATIONS AND FACILITY DESIGN

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NOW WITH MORE 20% MORE PICTURES!

2. Rundown of topics that will be discussed

- Real Estate Considerations
- Legal Documentation needed for startup
- Other Entities to be mindful of....
- Key considerations for facility design
- Budgeting for equipment
- Low cost startup options
- Tools at your disposal



1. Brief description of Wandering Aengus Ciderworks and 10 years of growth

- 2004 Initial launch with 4 acres of cider apples and a 2500 sq foot cidery and tasting room. 400 cases produced
- 2007 Stopped pressing own fruit. 2000 cases produced
- 2009 Used combination of co-packers and own bottling equipment to achieve. 6000 case production
- 2012 Moved to new 7000 sq ft facility and invested in new bottling line.
 20,000 case production
- 2014 Investment in new fermentation and bright tank capacity. New crossflow filter. Anticipated production 100,000 cases.

1. Choosing building locations for different types of cider businesses

- Direct to consumer with urban retail potential
- Farmstand agritourism model
- Production cidery with larger distribution base



2. Types of buildings to look for

- · Barns, Concrete tilt-up, Steel building, New construction
- How much space do you need now? In the future?
- Access to utilities Water pressure/quality, Power (three phase, single phase, 120, 240, 480v), Natural gas, internet/phone, steam?
- Price per square not cubic foot can always grow up
- Proximity to customer/major distribution routes

3. Lease or Buy

- Business plan/level of initial investment will dictate
- Most buildings will need improvement, who gets to keep improvements
- Municipal loan programs can help with building



LEGAL DOCUMENTATION NEEDED FOR STARTUP

- 1. Entities you will need to obtain permits from
- 2. Start with good record-keeping and keep it up



1. Entities you will need to obtain permits from

- OLCC (Oregon Liquor Control Commission) or other state liquor control agency - Inventory tracking and consumer safety
- TTB (Alcohol and Tobacco Tax and Trade Bureau) Inventory tracking and labeling
- ODA (Oregon Department of Agriculture) Food safety
- FDA (Food and Drug Administration) bioterrorism act, labeling

1. Entities you will need to obtain permits from

- DEQ (Department of Environmental Quality) if not connected to sanitary sewer - Wastewater
- Local municipality (County or City) Liquor control plan, building permits, noise and wastewater compliance
- Fire Marshal MSDS, ingress/egress

2. Start with good record-keeping and keep it up

- Gallons of cider in bulk and bottled, alc%/vol, free and total Sulfites, CO2, ingredients quantity and source.
- Bonded vs Taxpaid storage



- Inspections can happen at any time and fines can be levied
- Safety hazards in cider industry
 - Confined spaces
 - Forklifts
 - Lock out/tag out
 - Co2 gas



- Safety hazards in cider industry
 - High pressure vessels
 - High level workspaces
 - Wet, slippery floors
 - Chemical spills/burns/inhalation



- Safety hazards in cider industry
 - Heavy lifting/repetitive stress injuries
 - High noise levels over
 85 decibels
 - Broken/flying glass



- Documentation needed to keep up OSHA happy
 - Standard Operating Procedures
 - Records of workplace injuries
 - Emergency evacuation plan



- Documentation needed to keep OSHA happy
 - Weekly safety meetings with designated safety coordinator
 - Forklift training for all employees who drive forklifts and maintenance plan for forklift

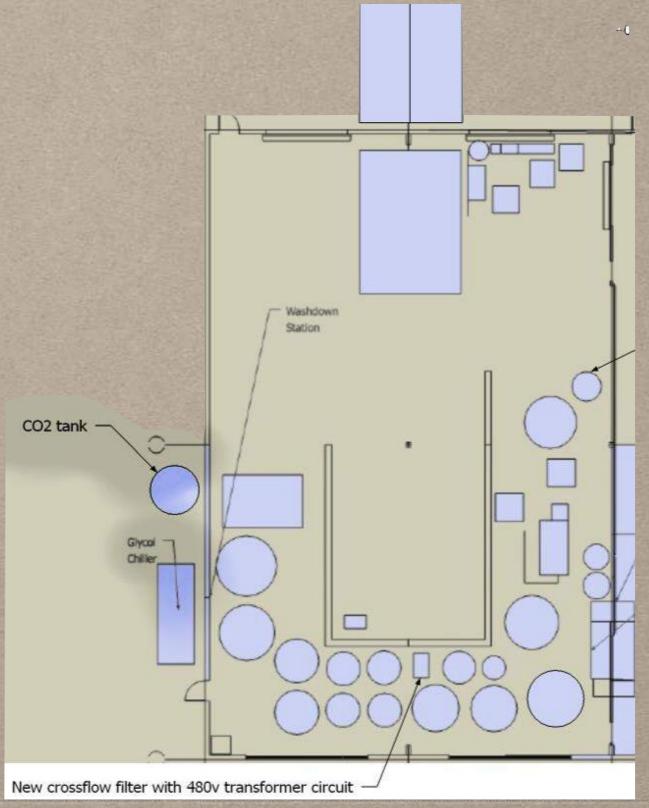
- Invite them to do a preinspection and assessment
 - No fines levied
 - Three months given to ameliorate



State Employment Department

- Bureau of labor and industries rulemaking enforced
- Exempt vs. non-exempt employees
- legal worker status
- Breaks, Portland sick pay rules, Employee handbook

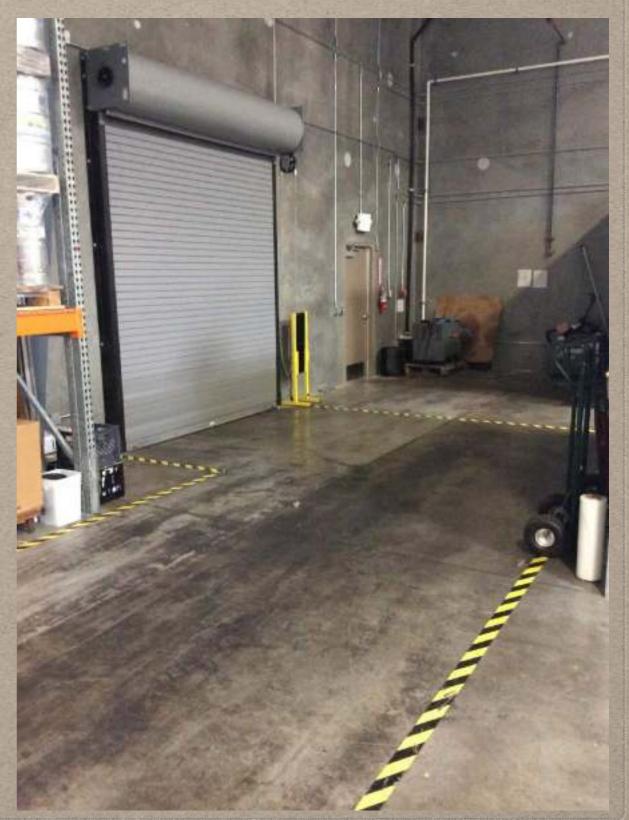
- Insulation Building and Tanks
- Conditioning entire space or just key components
- Washable walls and floors -How much sloped to drain? FRP, Coving



- Workspace flexibility Able to grow and change production methods over time
 - Minimal fixed equipment
 - Ceiling drops for electrical, water, air, glycol, co2
 - Access to additional electrical, water, air, natural gas for future capacity increase
- Logical flow of materials Receiving raw materials, fermentation, blending, filtration, packaging, storage shipping of finished goods



- Segmented work stations and safety corridors for forklifts
- Ample lighting
- Proper ventilation CO2,
 Boilers



- Energy conservation renewable energy options, recycling, heat exchangers, CO2 regeneration, night air cooling, electric car charging, bike racks/storage
- Pallet racking
- Loading docks/ramps, area for tanker receiving, fruit receiving
- CIP down-tubes on all tanks or catwalks
- Separate space for employee breaks/lunch



- Separate space for lab
- Separate space for office/document storage
- Eyewash stations, first aid, handwashing sink and process sink
- GFCI Plugs in wet areas
- No extension cords



- Chemical storage area or cabinet
- Approved ingress/egress with fire extinguishers and exit signs
- Durable materials where applicable
 - Concrete floors with or without epoxy sealer
 - Concrete or plywood on lower 4 feet of wall surface
 - Bollards to protect critical equipment/passageways



- High ceilings with high and wide overhead doors bigger tanks in the future
- Fitting boards, hose ranks/pulleys
- If processing fruit, keep that area physically separated from fermentation/packaging if possible



- Outdoor space for empty drum/tote storage, pallets, keg paddock, shipping contaners
- Wastewater treatment
 - Settling tanks and dispersion
 - pH Buffering tanks
 - Inline floor drain valve to stop chemical spills
- Cold storage for kegs/fruit/frozen juice



- Fire sprinklers, alarm systems?
- Ample hot water extra large capacity boiler/water heater



Tanks

- Material
- Insulation
- Jacketing
- Cladding
- Pressure ratiing
- Size



Filtration

- Crossflow
- Plate and Frame
- DE
- Centrifuge
- Sterile Membrane
- Lenticular



Bottling line

- Inline
- Rotary
- Still vs carbonated
- Canning
- Bottle and can cos
- Automation



Stabilization

- Sulfites
- Sorbates
- Velcorin
- Sterile filtration
- Pasteurization
- Refrigeration



Kegging

- Keg washing
- Storage
- Logistics
- Costs
- Automation





Pumps, Hoses, Lab, Forklifts, etc





Juice processing

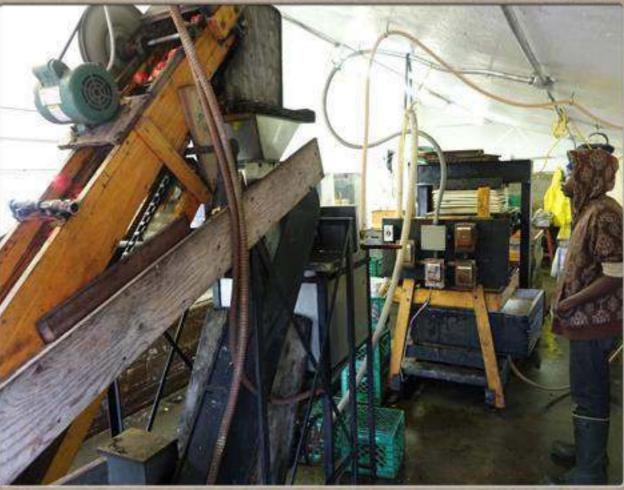
- Cold storage
- Bin dumper
- Crusher
- Sorting/washling line
- Fruit Elevator

Press technologies Bucher/Guyer, Belt,
 Rack and Cloth,
 Bladder press,
 Squeezebox, Heat and enzyme clarification









LOW COST STARTUP OPTIONS

- 1. Custom crush arrangements
- 2. Mobile services



1. Custom crush arrangements

- Using local winery, cidery, or co-pack facility for fermentation through packaging
- · Can be somewhat expensive depending on services rendered
- Keeping costs variable, less fixed cost can grow with demand
- Decreased margins

2. Mobile services

- Crossflow Filtration
- Velcorin
- Bottling/Canning
- No need to purchase expensive equipment out of the gate, less capital investment, more money to spend on marketing/sales



TOOLS AT YOUR DISPOSAL TO GAIN ADDITIONAL KNOWLEDGE

- 1. Cider Institute of North America
- 2. Northwest Cider Association
- 3. United States Association of Cider Makers
- 4. Cider Digest
- 5. Probrewer
- 6. Wine Business Monthly

