Starting a Winery in Texas

- things to consider

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Overview

- Legal aspects
- Logistics
- Varietals
- Equipment
- Design
- Marketing

Legal aspects

- Ask yourself the following questions:
- Should we…..
  - Apply for the winery permits in our own names?
  - Form a LLC, corporation, or other limited liability entity to apply for the winery permit?
- You already own a vineyard. Should title to the 15 acres be held in the winery entity?
- Does you own an interest in a wholesaler or retailer of alcoholic beverages?

  Does it matter?

Legal aspects

- U. S. Treasury Tax & Trade Bureau

  www.ttb.gov

  - Process takes 2-3 months

- Must you produce wine right away?'

- How does label approval work?

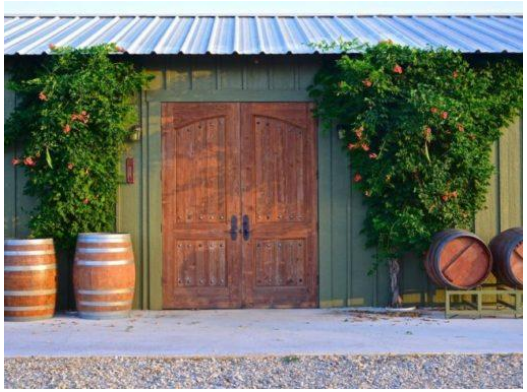
- What if you can produce wine, but lack the resources to start a own stand-alone winery?

Defining Your Style Goals

- Interventionist / minimalist winemaking
- Estate production / custom crush facility
- Large block harvesting / small lots based on terroir
- Per acre / per ton contracts
- Hand fruit sorting / mechanical sorting / post destemming sorting
- Aerobic processing / hyper-reduction/ oxygen monitoring
- Fixed tank layout, mobile equipment / fixed equipment, mobile tanks
- Oak: barrels, alternatives
- Maceration programs and equipment
- Product-based / market-based production
- Blending programs: small lot fermentations/aging v. large fermentations/aging.
- Style goals: long aging v. short aging wines
- Filtration methods
- Warehousing: In house storage, off-site storage
  - Finished and unfinished products
- In-house / mobile bottling lines

A successful winery design should meet all of the following criteria as best as possible:

1. *Have a desirable location*
2. *Have a sound business plan [that is realistic]*
3. *Produce wines of consistent and uniform quality*
4. *Efficiently utilize raw materials, manpower, and energy*
5. *Encompass a functional and expandable design*
6. *Have low construction costs*
7. *Establish a positive image*
8. *Optimize a desirable working environment*
9. *Achieve an acceptable environmental impact*



Location Decisions

- Sources of raw material
- Sources of capital
- Personnel
- Location of the winery
  - *Cellar-door sales*
  - *Distribution channels*
  - *Vineyards*
- Drainage, sewage, water, waste
- Can natural topography and geography be used in the design
- Can the facility handle tours (directed, self-guided)

Business Decisions

Vision Statement:

- How do you want your business to look in 5 years? 10 years?
- How does this apply to your brand with respect to products and service?
- Be optimistic, what do you want to achieve?
  - *What has to happen to make you proud of what you have done?*
- Keep your statement simple!
  - (One or two sentences)

Business Decisions

Vision Statement:

"[Yõur] Estate Winery will make and sell small lots of the highest quality wines in the Texas Hill Country Appellation"

Note that the statement:

- Does not say how the wines will be manufactured
- Does not say how they will be branded or marketed

Business Decisions

Mission Statement:

- Outlines your preferred course of action.
  - *How will your vision be realized?*
  - *How will you be uniquely valued?*

- This is the point where the founders values and philosophies, culture become a factor.

These statements may undergo several revisions as development progresses!

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Business Decisions

Mission Statement:

"[Yõur] Estate Winery will craft and serve only the highest quality wines, at reasonable prices, from sustainable grape varieties from our vineyards"

A mission statement should:

- Identify target consumers
  - 'Reasonable prices' (not 'value', or 'icon', or 'unreasonable')
  - Implies targeting moderate to high involvement consumers
- Indicate some boundaries with respect to production or marketing
  - This can be directly stated or indirectly implied
    - 'Sustainable grapes'
    - No grapes from off-site

Business Decisions

SWOT Analysis:

Identification:

1. **Strengths** – internal features of your business that will help you to succeed.
2. **Weaknesses** – factors within your business that may hinder your attempt to reach your vision.
3. **Opportunities** – external factors that could be used to, or may benefit your business.
4. **Threats** – outside influences that you have little/no control over. May prevent, or hinder your establishment.

Business Decisions

SWOT Analysis:

Examples:

- You have large capital savings and will not require outside financing.
- You have a limited grape growing season.
- You have no marketing or branding experience.
- You have a well known winemaker lined up work for you.
- Your vineyard site has two water courses on it.
- Your winery is within an emerging VA.
- There are several other wineries in the region who produce high quality wines.
- Your vineyard is close to several large population bases.

Business Decisions

SWOT Analysis:

Once you have created a SWOT for your winery you now need to develop a strategy to manage the issues:

- **You have a limited grape growing season**.
  - *You focus on grapes with a short growing season*
- **You have a well known winemaker lined up work for you.**
  - *Ensure that they are being used to their fullest potential*
- **Your vineyard site has two water courses on it.**
  - *Ensure you are complying with environmental protection laws*
- **There are several other wineries in the region who produce high quality wines.**
  - *Consider tourism partnerships or regional branding opportunities*

Business Decisions

Feasibility Analysis:

1. **Demand or Market Analysis**
   - How much you can expect to sell in the first year etc…
   - Does the market you are targeting want the varieties/styles you can produce?
   - Sales: estimate 50% increase in first year, 10%+ each year for 2nd through 4th years.
2. **Technical or Production Analysis**
   - Processes and equipment needed to accomplish brand goals.
   - General cost of processing and equipment.
   - Human resources?
3. **Cost Analysis**
4. **Sensitivity Analysis**
   - 'What-if's'
   - Location changes? Pricing changes? Style changes?
5. **Financial Analysis**
   - Will you need to revise your Vision or Mission Statements to make it financially viable?

Preliminary Decisions

Any winery is ***very*** capital-intensive!!

There is a need for large upfront capital

- Is there sole ownership? partnership? investors?

There is a lag in any return on investment

- Optimistically, a winery beginning from nothing will need 5-8 years from inception to begin to realize a profit (Pellechia, 2008).

Business Decisions

Creating a 3 to 5 year financial plan for your winery is usually one of the tasks in developing a new winery:

- Base operating (sales, growth, operating expenses)
- Production (costs of goods)
- Capital budget (equipment purchases, property, and depreciation)
- Financing (interest expense, credit lines, and long term debt)
- Operating forecasts
- Production and case costs analysis
- Inventory movement
- Administration and Taxation

Adapted from Virtual Business Systems (2007)

Capital and Cash Flow…

- Where is the initial capital input coming from?
  - How much capital is available over 5 years, 10 years?

- What sales channels are available for generating cash flow in the winery?
  - Cellar-door retail, Winery Retail Store
  - Distribution Channels (Winery-to-Home, restaurants, etc)
  - Growth in sales
  - Growth in production

Winery Design: The Big Picture

From Zoecklein (2008)b:

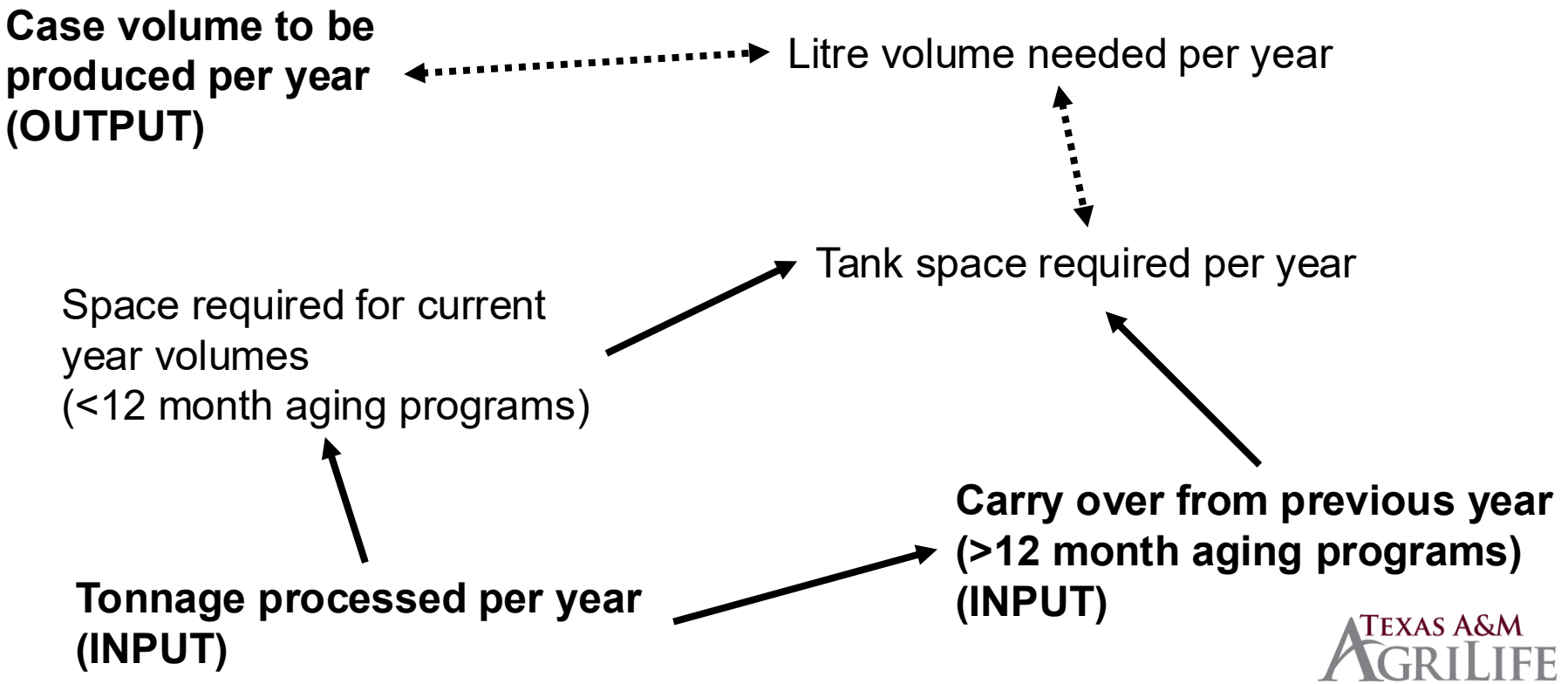
A design can be broken down into the following separate spaces:

- Raw Product Handling
- Fermentation
- Storage
- Laboratory
- Bottling
- Warehousing
- Tourism/Administration

While these categories may overlap in most wineries it is probably easier to consider them separate when planning a winery layout.

Planning Overview

Ideally, develop winery 'case volume' production goal and project down accordingly:



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Planning Steps

Once Overview is Outlined:

1. Estimate grape availability
2. Tabulate maturation projections for the grapes supplies
3. Tabulate the receiving schedule for the various grape varieties
4. Estimate for a given variety the minimum and maximum delivery spans:
    - Minimum
        - Total processing capacity
        - Total cooling capacity
    - Maximum
        - Smallest individual vessel in use

Planning Steps

5. Develop the expected storage/processing requirements derived from the expected receival tonnages
    - ~ 600L per ton (white grapes)
    - ~ 650L per ton (red grapes)
6. Consider the effect of bottling rate on tank size and bottling line sizes

Planning Steps

7. Fermentation calculations
   - 21 day white fermentations
   - 10 day red fermentations
   - Develop Gantt charts for each fermentation
   - Allow 900L/ton red fermentation
   - Allow 800L/ton white fermentation
     - This allows for expansion
8. Adjust total cooperage to allow for operating space:
   - The facility is at capacity when 2/3 to 3/4 of the storage vessels are full

Planning Steps

9. **Actual selection of vessel sizes absolutely needs to consider**:
   - Expected grape delivery batch size
   - Expected filtration and other processing rates
   - Ease of cleaning sizes of one size tank over another
   - Standard or custom size vessels
   - Ease of off-site fabrication

   Choose convenient vessel sizes consistent with:
   - Processing rates
   - Size lots
   - Rate of grape receival

Planning Steps

10. Concurrent with the determination of standard tank capacities match the tank dimensions so that catwalk heights can be planned
11. Once sizes selected, designs can be finalized
    - Ceiling heights
    - Building materials
12. Decide on tank arrangement and determine the maximum height of sheltered tanks
    - Recall minimum height clearance to catwalks and spacing, drainage etc. between tanks
    - Maneuverability of equipment

Planning Steps

13. A ‘standard’ aging process is developed for each wine type made
    - 18 months to 24 months for barrel aging
    - Not precise but helps in barrel selection
14. Capital
    - Where is the money coming from
    - Wineries are not big money-makers!
    - Premium wineries are especially capital intensive, be prepared to spend huge dollars in fixed and continued variable costs during operations

Planning Steps

15. Quality Control
    - Materials in construction
    - Sanitation
    - Pest control
    - Wastewater management
16. You can never have too much space!
17. Will the winery design ultimately reflect the brand image?
18. Will your planning allow for future expansion or growth? Efficiently?

Building Layout

In a perfect situation, the red wine and white wine would be processed in separate areas of the building or even in separate buildings

The whole facility is maintained under temperature controlled conditions that are conducive to winemaking, and storage

Processing Area

Goals in designing the ideal processing area:

- Efficient handling of expected tonnage in minimal time
- Minimum amount of handling equipment
- Most ‘fruit friendly’ handling possible
- Smooth flow of traffic (external)
- Smooth movement of lees, pomace, juice, and wine
- Ease of control, by the cellar staff, over the materials being handled
- Flexibility in layout

Processing Area Decisions

Where is the crusher located?

- **In a pit**
  - Easier grape feed
  - Need more powerful pumping equipment
- **Above ground**
  - Easier to clean
  - Lighter pumping equipment
  - Easier drainage for cleaning water
  - Must have the ability to move grapes, must into its proper equipment (conveyors, hoppers, etc.)

Processing Area Decisions

Regardless of where the processing area is set-up:

- The ground of the area is ideally concrete that is easy to clean
- There should be sufficient supply of hot water
- Good ventilation

Fermentation Area

- **Tank sizes and designs should ideally be established before the fermentation area is determined**
- **Selecting the arrangement of**
  - Presses
  - Conveyors
  - Must lines

Fermentation Area

- **There needs to be very good ventilation**
  - Recall, CO_2 is heavier than O_2
  - CO_2 pools in low areas in winery
- **Placing some the more odorous processes at a distance from tasting rooms**

Building Area

Now that fermenting tanks and processing area is designed, the next items of consideration are?

- Tank requirements
  - Storage
- Barrel area
- Case goods area
- Laboratory space
- Retail area
- Offices
- Warehousing space, storage for bottling, and supplies

Calculations

Barrel

- Density is 0.5m^2 per barrel
- Barrels can be stacked

Cases (empty or full)

- Density is 59 cases per m^2
- Skids can be stacked

Cellar Door Retail

The Winery Retail Store is increasingly seen as a tool for positive brand-imaging.

Some tips for developing an effective tasting room:

- Hire good staff, reward and retain them!
  - *Ongoing training, tastings, incentive programs, sales goals*
- Balance spaces (not too much, not too little)
- Make use of natural light where possible
- Try to minimize outside odors
- Maintain a clean tasting room and storefront.
- Create positive environment
  - *Clear signage, restrooms available but out of site etc…*

Resource Conservation

Utilities of concern:

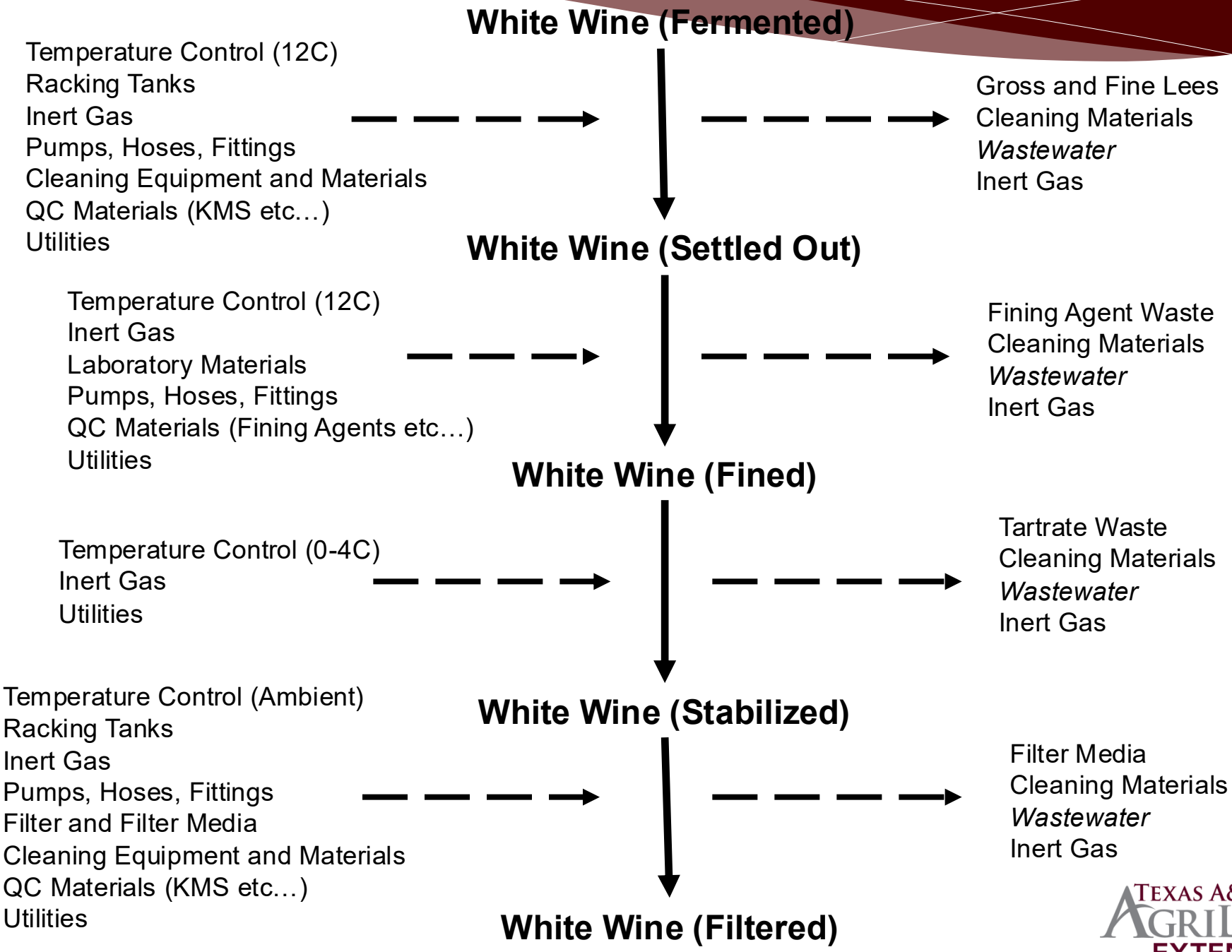
- Water (*hot, cold, steam*)
- Electrical power
- Inert gas
- Building temperature control
- Equipment temperature control
- Insulation (*building, tanks, and piping*)
- Waste water management
- Ventilation

Process Flow

Also known as **line models** or **material flow models**.

- These designs include all of the input and outputs required to produce the wine

- Implemented to aid in understanding of capacity, temperature flow rate, materials, residence times and all pieces of equipment used



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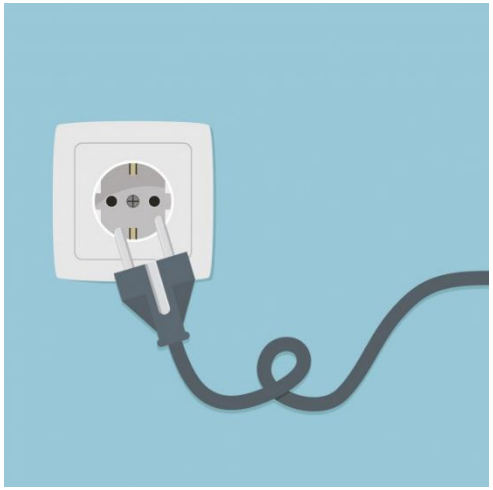
Process Flow

Winery Equipment in Process Flow includes:

- Harvest containers
- Weight scales
- Fruit dumping systems
- Grape inspection tables, pre-destemming sorting, post-destemming sorting
- Grape elevators
- Destemmer/crushers
- Fermentation vessels: bins/ tanks/ bags/ barrels/ concrete
- Presses
- Must pumps
- Must lines
- Tank mixers, agitators, washers
- Barrel washers
- Transfer pumps
- Transfer lines
- Storage vessels/tanks/barrels
- Forklifts
- Filters: plate and frame/ pressure leaf/ membrane/ and crossflow
- Laboratory equipment
- Bottling Equipment

Electrical Systems

- Existing power resources available on the site
  - What upgrades need to be made?
    - Is the power available compatible with the technology used in the winery?
    - Is there sufficient capacity to meet peak production requirements?
  - Reliable and cost-saving alternative energy sources
    - Fulfill energy needs
    - Subsidize energy needs



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Electrical Systems

Is your winery design efficient?

- Use of energy efficient motors
- Use of energy efficient lighting

Does the electricity design consider additional surge-protectors for the unique technology in a winery?

- Most power companies install general surge-protectors at every customer, but electronics susceptible to damage may need additional protection

Electrical Systems

Relative winery size	Estimated electrical load (kW)	Preferred utility supplied primary voltages (KV)
Small	<10,000	2.4, 4.16, 12.0, 17.2
Medium	10,000 - 20,000	17.2
Large	>20,000	17.2, 20, 780

Storm (1997)

How do we Conserve Resources?

Mapping out the **Process Flow** (**Flow of Materials**) of all of the materials in the winery will aid in minimizing wasted resources.

Additionally:

- Proper sizing of equipment
- Building design and orientation
- Building insulation
- Type of refrigeration system
- Refrigeration line insulation
- Tank types and insulation
- Water usage, water recovery efficiency, and hot water line insulation
- Types of lighting, layout

Adapted from Zoecklein (2008)

From Zoecklein (2007):

"While the wine industry has traditionally considered itself as environmentally friendly, a California study conducted several years ago reported …

… the [wine] industry was the largest energy user in the food industry sector.

This realization, coupled with the desire to sustain success, has promoted changes."

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Electrical Systems

"While the industry likes to promote a natural and 'green' image, that image does not always depict reality. Sources of energy consumption in the winery (from *A Guide to Energy Efficiency Innovation in Australian Wineries*) include:

- Refrigeration 40-60%
- Pumps, fans: 10-35%
- Lighting: 8-20%
- Compressed air: 3-10%
- Packaging and bottling: 8-30%
- Other consumptions: 3-15%"

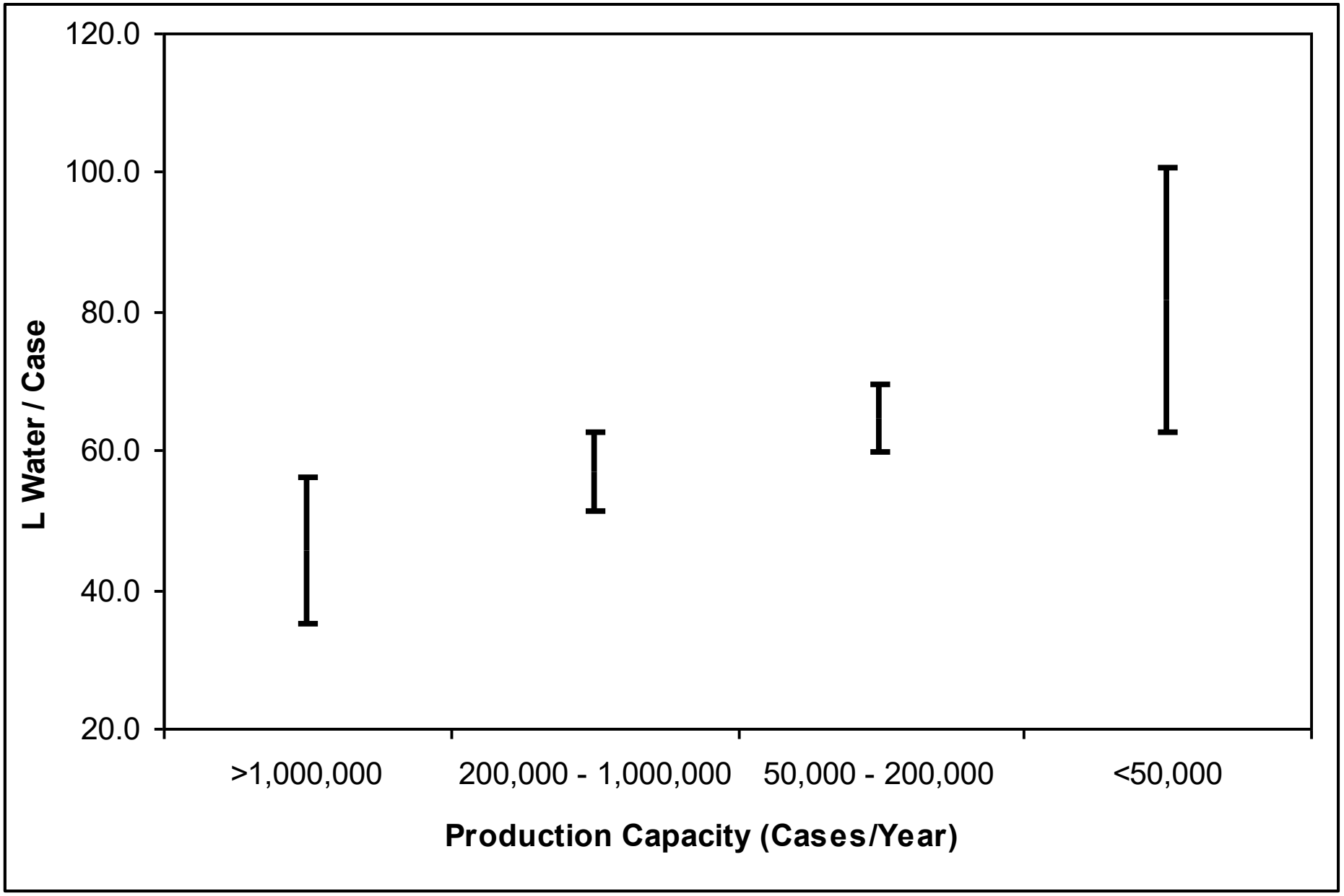
From Zoecklein (2008)a

Electrical Systems

- Laying out the needs for electrical and lighting systems is the responsibility of the designer and the architect
  - Professionals must consider the aesthetics, landscape, safety and emergency lighting requirements
  - Professionals must consider overall lighting load (in KW) and heat load of the lighting design
  - There must be input on the part of the owner/oenologist with respect to the equipment electrical needs, plug locations, etc…
    - What equipment will be in constant use at peak capacity?
    - It is the responsibility of the owner to consider long-term costs of a design laid out by the professionals

Resource Conservation

- 2-4L of water are generally used in the production of 1L of wine
  - 10L:1L have been observed
- Of the water used, at least 25-50% should be potable



Estimated Range of Unit Water Use in Liters per Case of 750mL Bottles
(Adapted from Storm 1997)

Water Conservation

- Incorporating water saving methods into design will save in variable cost
  - Assessing monthly water usage using **water meters** and then re-evaluating sensible water operations
  - 20-25% savings are attainable

Communication Systems

Every winery needs some form of external communications systems:

- Telephone
  - Single or multiple lines
  - Fax
- Building and personal security systems
- Internet access
  - Does your location support ‘dial-up’, ‘high-speed’, ‘cable’?

Is there a need for internal communications systems?

- Radio
- Mobile phones
- Intercom
- Message boards

Sustainability

From Zoecklein (2007):

Since sustainability is all encompassing – we will only discuss practical tips to maximize your sustainability:

1. Use cool-build materials
2. Use regional materials and local fabricators
3. Use building and construction materials with a high percentage of recycled content
4. Use optimum building insulation
5. Consider geothermal heating and cooling
6. Optimize the use of shading
7. Consider low emissive insulation on windows
8. Increase daylight levels and outside views in winery design

Sustainability Tips:

9. Design natural ventilation
10. Optimize water usage (water meters, low-flow nozzles)
11. Sustainable site planning
12. Use minimal exterior lighting and computerized cut-off fixtures, motion sensors, and timers for both interior and exterior lighting
13. Consider buildings with mass
14. Consider the use of biodiesel, wind energy, and/or solar energy
15. Gravity flow designs
16. Recycle
17. Avoid using products that are less eco-friendly (eg. DE)

Hiring an Architect...

When a professional designer is brought on-board:

- An architect will be able to take these concepts and layout a winery
- Expect some initial revisions to your ideas
- Provide the architect with freedom in design, so long as critical winemaking processes are not interfered with
- Always consider suggestions made by the architect even concerning a critical winemaking area

Hiring an Architect ...

- An architect will responsible for ensuring that your building is designed with an eye towards building safety and compliance with the law.
  - Entrances and exits
  - Safe lighting
  - Airflow within the building
  - Wheelchair access
- It is important that you work with your architect, municipal, provincial, and national bodies to ensure that there are little/no unexpected compliance issues with your design.
  - Signage
  - Driveway and parking lot access
  - Environmental regulations

Safety in Design

- Hygiene requirements must be met
- Safety of all persons whether visiting or working
  - Operating and maintenance access
  - Anti-slip floors
  - Proper lighting
  - Safety showers
  - Firefighting equipment
  - Personal protective equipment
  - Proper chemical storage
  - Atmospheric monitoring equipment and protocol

Choosing the grapes

Going back to stylistic goals….

Growing your own grapes?

- Winter Hardiness
- Bud Break Timing
- Disease hardiness, tolerance/resistance
- Harvest ease/difficulty

Purchasing the grapes?

- Press- Yields, Ease/Difficulty
- Nutritional Needs
- Flavor Components
- Aromatic Components
- Aging Potential
- Performance in Texas climate

Choosing the grapes

Whites:

- Albarino
- Marsanne
- Rousanne
- Trebbiano
- Viognier
- Picpoul
- Blanc du Bois
- Vermentino

Reds:

- Cab Sauvignon
- Cinsault
- Dolcetto
- Mourvedre
- Montepulciano
- Petit Verdot
- Sangiovese
- Tempranillo
- Tannat
- Black Spanish

Choosing the equipment

Based on stylistic goals and grapes you wills use:

Crushpad equipment
Pumps and presses
Fermentation
Conditioning
Storing and aging
Bottling
Other

Choosing your equipment