* What are the cost constraints of this project?
  + Matthew spent $100k on canning machine / other attempts but ideally a lot less than that, he wants to “fail on paper” first
  + Existing solution from manufacturer is only semi-automated and costs $25k so this is probably a better estimate of what our limit is, this solution requires you to use a foot pedal to pump the wine which is not ideal
  + Matthew said he can buy random parts off of Ebay at any time if we need
  + He also monitors auction websites since a lot of breweries are always going out of business and they sell their equipment so he can also bid for items there if we need
* In the list of specific requirements, it is said “fill the pouch with fluid (recommend time-based with manual adjustment)”
  + What is meant by “with manual adjustment”? Ability to fill pouch more/less depending on what the user wants?
    - Sometimes the warehouse area where the pouching is done can heat up significantly which can impact the volume / flow rate / pressure of wine going into the pouches so sometimes you will need to manually account for this
    - Note: it doesn’t matter what temperature the wine gets (heart warmer is served warm anyways) but the volume matters
    - He has a small machine that he bought off ebay for $100 that is an analog filler, Hayden has this and we are free to take it apart and study / learn from it
  + Will we be filling just 1 size pouch (1.5L) or other size pouches / would you be interested in the capability of filling multiple sized-pouches? (being able to input a certain volume to dispense)?
    - He has 1.5L pouches and 750mL pouches, both with identical caps / dispensers but just different volumes
  + How set are you on the time-based method of filling the pouch / would you be open to other solutions?
    - Open to other solutions ( fill based on time and flowrate – need constant pressure - or weight of pouch)
    - Currently the volunteers fill the pouches based on volume
* Max number of people to operate.
* What are the dimensions of the cap that we will be sealing the pouch with (diameter, fillet radius, height of cap) (take a pouch and cap with us?)
  + Caps / pouches obtained
  + Ideally the pouch needs to be held level by the plastic part that clicks on to the cap while it is being filled in order to avoid spillage
* In the poster presentation, what is meant by, “the Scrum master would like to run the project with an agile methodology”?
  + Just means that we need to create a project plan and while he doesn’t have super high expectations or deliverables for us, whatever we choose as a team to do we should follow through and plan accordingly and keep our project plan updated
* Ask about what is meant by “Sprint” planning and just in general what their expectations are for communication
  + Email
* Do you have any specific deadlines that you want a certain deliverable by?
  + - No, up to us
* How often per week or month would you like to meet?
  + - Up to us, he wants to hear from us and be of help but has no requirements for that
* Are you open to virtual meetings, or would you like these to be in-person meetings?
  + Open to virtual meetings, can use whatever platform (teams, zoom, etc)

Volunteering process:

1. One volunteer sits on the side and adds the sticky brand labels to the pouches for the next week’s pouching session to use
   1. Could be another opportunity to automate this process as part of the assembly line
2. Other volunteers sit/stand at tables facing a forklift platform which has two big, elevated containers of wine with tubes coming out of them feeding the tubes that the volunteers use to fill the pouches

A picture containing indoor, clothes

Description automatically generated

Figure 1: The box that the volunteers take the wine pouches/ caps out of

A picture containing text, person

Description automatically generated

Figure 2: View of the metal slot where the pouch is held during filling process, rag on the side to wipe excess wine

A picture containing person, indoor

Description automatically generated

Figure 3: Another close-up view of the metal holder

1. A group of people in a room

   Description automatically generated with medium confidence

Figure 4: Lady on right is in charge of delivering nitrogen puff to empty bags

A picture containing text, indoor, floor

Description automatically generated

Figure 5: The valves / tube that the volunteers use to fill the pouches with

1. A picture containing indoor, ceiling, several

   Description automatically generated

Figure 6: Wine container on forklift before being tipped

A picture containing indoor, ceiling

Description automatically generated

Figure 7: Wine container on forklift after being tipped

* 1. The forklift can lift up/down and can tilt a little bit (wine containers are strapped in) but the forklift can’t tilt enough to get everything out of the bottom of the containers so there’s some waste and hassle with that
  2. Opportunity for improvement here

1. Volunteer slides the plastic part around the cap of the pouch into a metal slot to hold the pouch in place
2. Another volunteer comes around with a tube linked to a tank of gaseous nitrogen (can use any type of inert gas, he uses nitrogen because it absorbs the oxygen and expands the shelf life of the wine)
   1. Volunteer with nitrogen tube delivers puff of gas into pouch to open it up

A picture containing indoor, person

Description automatically generated

1. Volunteer opens valve on their tube connected to the big wine containers and fills pouch up to 1.5 L (uncertainty: 1.45L-1.52L, shoot for 1.48L) based on a sensor which measures the flowrate of the wine coming through the tube to measure volume delivered to pouch
2. Volunteer closes valve of tube and applies force to cap to snap it on to the plastic part of the opening (snaps on/off if you pull/push)
3. Wipe pouch off if spillage occurred
4. Place pouch in box (6 x 1.5L pouches per box)

* Volunteer pouch filling rate: 4 volunteers can fill 250 pouches of wine in about 1 hr 30 mins – 1 hr 45 mins—this should be our absolute minimum
* Vs. the canning machine that they currently have can fill 16 cans/min with 1 “head” or 80 cans/min with 5 heads (head = attachment connected to wine container that has ability to fill a can)
* His expectations for us: He would be happy with a version 1 specification or online CAD model of what the machine would look like
  + Ideally we can get a working prototype but he understands that we have lives, other classes and work outside of senior design
* He is busy MWF nights but could meet outside of those times during the week
  + Him and his wife live close to UCCS so we don’t necessarily have to come all the way to Palmer lake every time we want to talk to him
* Matthew would be fine if 1-3 people were needed to manage the machine we make he just wants to be able to it during the week instead of hosting all of these pouching sessions for volunteers on the weekends
* There is a depalletizing machine from a company in Durango that he is aware of, could give us more info on that ($50k)
* Each pallet size is different depending on the order size, one that he had in the warehouse had 9 boxes per layer(3x3 grid) and 4-5 layers of boxes stacked on the pallet (if it had 5 layers, it would’ve been 45 boxes total)
* Want our design to be waterproof to enable ease of washing it in case wine gets on it
  + He currently uses a product called PBW which is a non-toxic, non-corrosive cleaner used frequently in the beer industry, used with hot water to clean the canning machine that they have
* Bottom line: he is limited by his ability to produce wine and needs to increase his supply to meet his growing demand
* Fun note: they are opening a location at the old Josh & Jon’s location off Pikes Peak in downtown Colorado Springs and going to call it “Lemon Lodge Ski Bar” where they will offer their wines and feature a skiing machine that Is used in the Park City Utah Olympic training center for skiiers
  + 4-94 years old, beginner level – professional level, can adjust the type of snow (powder, slush, ice, etc), has a leaderboard to keep track of records and stuff
  + Opening in February
* Recommended reading the book “Blue Ocean Strategy” for tips on how to open up new markets such as lemon wine
  + Red ocean = blood in the water because the competition is high
  + Blue ocean = green light, good place to open up a new market
  + Lots of breweries are getting shut down all the time because there are so many of them it’s hard to get demand for the product
* Pictures of the canning machine:
  + We can go attend a canning session if we want to see this process

A picture containing indoor, sink, cluttered, miller

Description automatically generatedA picture containing indoor, wall, cluttered

Description automatically generatedA picture containing indoor

Description automatically generatedA picture containing indoor, appliance, cluttered, messy

Description automatically generated