# Case Study: MAP Brewing Co.

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## Company background:

MAP Brewing is a locally owned craft brewery situated on Glen Lake, also known as Bozeman Beach in Bozeman, Montana. Since opening in 2015, MAP has earned a reputation for brewing award-winning, high-quality beers. Staying true to its mission, MAP is dedicated to crafting and enjoying great beer.

Additionally, many customers praise the food as flavorful and well-suited to the beer selection, complimenting items such as burgers, poutine fries, and bratwurst.

## Pollution prevention tasks:

**Task 1:** MAP Brewing's key performance indicators (KPIs) for the brewing process were almost all below average compared to industry benchmarks. The KPIs I tracked using the Brewers Association's Excel tool included water, electricity, natural gas, and CO2 usage. However, MAP's CO2 purchase quantity stood out as relatively high. MAP purchases 52,355 pounds or 23.7 metric tons of CO2 per year for carbonation, purging tanks, cleaning and pressurizing, and a few other routine tasks. At the same time, an estimated 70,000 pounds of CO2 are released into the atmosphere each year as a natural byproduct of the fermentation process based on brewing volume and beer types.

The potential solution I found is a Dalum CO2 recapture system. It works by collecting the CO2 from the fermentor and scrubbing it, filtering it, and compressing it into liquid form. This system would capture around 70,000 pounds of CO2 annually, and the excess CO2 can be vented off or possibly sold. If implemented, the Dalum system would save MAP from purchasing 52,355 pounds of CO2 per year, saving MAP an annual cost of $21,780 in CO2. After MAP pays off the system, that $21,780 figure will be pure savings.

**Task 2:** Right now, MAP uses PakTech plastic 6-pack holders, which are a very common holder for craft breweries. These holders are nonrecyclable in Montana and at MAP, contributing to 8,000 pounds of plastic waste per year.

A very possible solution is cardboard Proper Pack 6-pack holders. They are fully recyclable and seem to be quite durable from what we have seen. Currently, MAP has an American Canning PakTech applicator, which MAP could sell for around 6-15 thousand dollars, depending on demand and the market. This money could go towards a new cardboard applicator for Proper Pack, which costs $15,000. Additionally, MAP would save $2,750 per year due to Proper Pack being cheaper by a cent and a half per unit.

**Task 3:** Heather Higinbotham and the program directors, Jenny and Barb, have been working on the Sustainable Brewery Certification. The SBC would be awarded to breweries in Montana that practice sustainability, such as waste reduction, energy efficiency, and resource conservation. The SBC is not in effect yet, but I am confident that MAP will be one of the first to earn this certification.

## Results:

If MAP implements Dalum, they will save $5,280-$21,780 annually and 52,355 pounds (23.7 MTCO2e) of CO2 from entering the atmosphere per year. The ROI is 21 months, or 46 months, depending on the financing option. If MAP chooses to go with cardboard 6-pack holders, they will save 8,000 pounds of plastic from entering the landfill per year. The ROI is roughly 0-3 years, depending on how much they can sell the American Canning applicator for. Additionally, both of these P2 tasks will offer marketing opportunities for their product.

| Reccomended P2 Actions | If implimented | | annual reductions | | | If not implimented | |
|---|---|---|---|---|---|---|---|
| | One time cost to impliment | Annual Savings from P2 Action ($) | Plastic waste (lbs) | Air emissions (lbs) | $MTCO_2e$ emissions (tons) | Barrier to Implement | Plans to Implement within 5 years? (Y or N) |
| Dalum CO2 recapture | $80,278-$115,500 | $5,280-$21,780 | | 52,355 CO2/year | 23.7 | Cost + new machine | Yes, if finances work out |
| Proper pack 6-pack holders and automatic applicator | $15,000 | $2,750 | 8,000 lbs of plastic/year | | | Cost | Yes, if the product is durable enough, and if finances work out |