

Sizing for a Craftbrewery - Example

Proper sizing for a Craft brewery should always allow for future expansion. Many micros will start out with possibly single size fermenters and as demand increases, double or even triple size fermenters (and bright tanks) are added. Labor and available space will generally determine the appropriate time to expand to a larger brewhouse. You have properly sized your brewery if you can get 5 to 10 years out of your initial brewhouse.

Parameters:

Estimated Annual Production: **3000 Barrels per year; 75% (2250 bbl) Ales, 25% (750 bbl) Lagers**
50 brewing weeks / year
14 Day Ales / 28 Day Lagers with full fermentation in fermenters
Ales - 25 cycles/fermenter/year (50 brewing weeks / 2 week fermentation)
Lagers - 12.5 cycles/fermenter/year (50 brewing weeks / 4 week fermentation)
Produce 4 different styles of beer

How to calculate system size and number of fermenters:

Select system size:

20 Barrel system	$3000 \text{ bbl/year} / 20 \text{ bbl system} / 50 \text{ brewing weeks/year} = 3 \text{ brews per week}$
30 Barrel system	$3000 \text{ bbl/year} / 30 \text{ bbl system} / 50 \text{ brewing weeks/year} = 2 \text{ brews per week}$
40 Barrel system	$3000 \text{ bbl/year} / 40 \text{ bbl system} / 50 \text{ brewing weeks/year} = 1.5 \text{ brews per week}$

Comment - One must look at the labor component in selecting a system size.

Most properly sized Craft breweries brew 2 - 3 times per week in their first couple of years of operation.

Brewing less than once a week, the system may have been oversized to start with.

Brewing more than 3 times a week, the system may have been initially undersized, particularly if future expansion is anticipated.

For this example, either of the above systems would be recommended. However, if future sales are anticipated to be, say over 5000 bbl/yr, then the larger systems would be preferred.

Calculation of number of fermenters required

Projected: 2250 bbls Ales (75%) & 750 bbls Lagers (25%)

Ales ----->	$2250 \text{ bbl/year} / 25 \text{ cycles/year} = 90 \text{ bbls fermentation capacity}$
Lagers ----->	$750 \text{ bbls/year} / 12.5 \text{ cycles/year} = 60 \text{ bbls fermentation capacity}$
Total ----->	150 bbls fermentation capacity

For 20 bbl system 8 x 20 bbl fermenters are required

For 30 bbl system 5 x 30 bbl fermenters are required

For 40 bbl system 4 x 40 bbl fermenters are required

****Note:** The use of double or triple sized fermenters and conditioning/lagering tanks will reduce the number of fermenters required to meet annual production.

System Recommendation :

30 Barrel system with 5 x 30 bbl fermenters and 1 x 30 bbl bright tank. This will comfortably allow for future expansion.

Factors that influence selecting the size of system are;

good utilization of manpower

available floor space

better priced/more economical (eg. fewer fermenters)

expansion capabilities

meeting all system requirements