



## How to estimate the number of Evaporators necessary!

**Step 1: Determine the volume of water you wish to evaporator**

- ✓ You may have a inflow figure you wish to evaporate
- ✓ May need to calculate the size of the pond and determine and average depth.
- ✓ You will need to know objective, does the company wish to maintain the level of the pond or lower the level or eliminate the pond.
- ✓ See our description of Pond Volume Calculations above to figure out what you have. Just how big is your problem?

Take the volume determined from the above analysis and get that figure into US gallons.

- ✓ Depending upon the above results you will get a figure for an annual basis, or monthly or daily.
- ✓ You must chose what time period you wish to work with, a daily volume is easy because you can take the results and determine the length of your operating season by days.

**Step 2: Determine the pressure that will be available at the machine. Ask Slimline for assistance if you do not know.**

**Step 3: Spray system Spiraljet hollow cone flow rates**

Pipe Size	Spray Angle	Capacity Size	Gallons Per Minute at PSI		
			100 PSI	150PSI	200PSI
1/4	90 degrees	7	2.2	2.69	3.11

Use these figures to calculate your volume based upon pressure at the machine.

**Step 4: Multiple the gallon per nozzle by pressure x 30 to obtain total output in US gallons per minute for one S30P evaporator. If the pressure is different than the 100 PSI example shown above, the results will vary.**

**If you find you have a pressure below or above the chart please contact Bob McIntyre at Slimline Manufacturing Ltd for formula to determine actual output.**

**Please note we recommend everyone use at least 100 PSI to obtain a water droplet size that is desirable. The higher the pressure the smaller the water droplet size, the smaller the water droplet size the higher the evaporation rate will be, but along with that increase in evaporation, will be an increase in the drift, which is what increases the evaporation efficiency.**

**The spiraljet hollow cone Teflon nozzles (BSJ90) will give us an average size water droplet of 110 microns at 100 PSI.**

**Step 5: Determine the pan evaporation rate at the site, consult our estimate of evaporation rate obtainable at given pan evaporation levels. See following page for our chart or consult our website at**

**<http://www.turbomister.com>**

- ✓ The pan evaporation rate is often available from weather information services at a site close to your location. Almost all airports have pan evaporation rates. You may have to estimate from closest available.
- ✓ Most clients will have engineering available to construct a simple pan evaporation test if they have the time line available to do so. It will take them one season to collect this data on a daily basis.

This chart is indicating *inches per month*:

If you have an annual pan evaporation rate in feet, convert to inches and divide by 12 months to determine the average pan evaporation rate per month to use below.

\*\* Please note that these figures were based upon an average humidity at the site of between 50 and 60%. If you have a lower humidity level the evaporation rate will be considerably higher.

Net Pan evaporation (Inches / month) Inches	Percentage of Volume Pumped aloft	Net Pan evaporation (Inches / month) Inches	Percentage of volume Pumped aloft
1.5	20%	9.5	45%
1.75	24%	10	46%
2	27%	10.5	47%
2.25	28%	11	48%
2.5	29%	11.5	49%
3	30%	12	50%
3.25	31%	12.5	51%
3.5	32%	13	52%
3.75	33%	13.5	53%
4	34%	14	54%
4.5	35%	14.5	55%
5	36%	15	56%
5.5	37%	15.5	57%
6	38%	16	58%
6.5	39%	16.5	59%
7	40%	17	60%
7.5	41%	17.5	61%
8	42%	18	62%
8.5	43%	18.5	63%
9	44%	19	64%

## Step 6: The final step

Assume the following as an example and replace your actual figures to calculate the number of evaporators needed.

**Assumption 1:** You wish to evaporate 25 million gallons in a season and you have 10 months in your season. March thru December.

**Assumption 2:** You have a pan evaporation rate of 6.5 inches per month

**Assumption 3.** You can achieve 150 psi with Slimline supplied pumping.

a. First determine what one machine can do in this window, given these assumptions.

At 150psi using the standard nozzles the chart shows you pump aloft 2.69gallons per minute (gpm) x 30 nozzles = 80.7 gpm x 60 minutes= 4842 gph x 24 hours = 116,208 gallons per day. 10 months at 30 days/month =300 days. Therefore you know you can pump aloft 300 x 116.208 gallons for a total of 34,862,400 (34.862 million) gallons in a season per unit.



- b. If the pan rate is 6.5 inches/month the chart estimates 39% of volume pumped aloft will be evaporated. In this example you then take the volume one unit pumps x the % that will evaporate, that is 28,512,000 x .39 and the result is 11,119,680 us gallons. (11.119 million gallons in a season.)
- c. To determine the number of units needed, divide the desired amount which was 25 million gallons by 11.119 and you would need 2.25 units
- d. In this case we would recommend the customer purchase 3 evaporators to ensure they reach their goal.  
In fact 2 evaporators should get rid of 22.2 million gallons, and the customer may be satisfied with this. Depending upon the year, he may get more or less evaporation and we wish to point out, this is not an exact science, we are predicting results based upon experience of other customers and would suggest that if the customer has a dire problem, he estimate low on the evaporation rate, in anticipation of a bad weather year. We will always prefer to be on the conservative side.

**It is simpler to call 1 800 495 6145 and ask for assistance in calculating your needs. We are happy to do this and email you the results including the calculation.**