

Considerations for selecting a full Traditional Blowdown "Tank" vs. simple Blowdown "Separator"

All boiler rooms utilize intermittent bottom blowdown, typically occurring for a 15 to 30 second duration, occurring once a day.

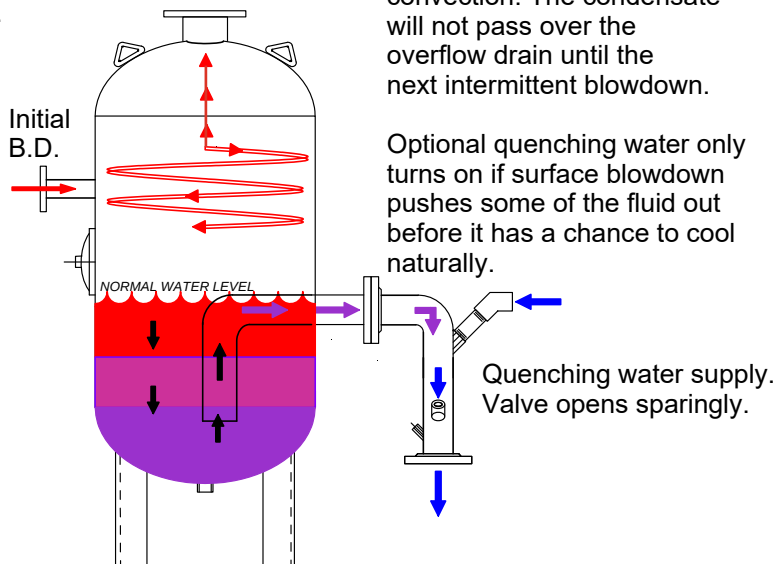
This diagram is intended to help choose when to use a traditional "Tank" vs. a smaller "Separator".

1.) The blowdown condensate varying colors shown in the tank help illustrate how condensate moves and cools through a traditional overflow style BD tank.

2.) This said, after start up, most of the time this condensate will be at ambient temperature. Waiting to quench the next bottom blowdown.

On average it takes 4-6 hours to cool to ambient temperature via natural convection.

I.E., The stagnant water would start "blue" (~75° F), then fresh "red" (212° F) blowdown condensate enters, quenching everything to "purple" (< 140°F). Exiting at a safe temperature without the need for injecting fresh cold water.



(General) Hot blowdown enters and immediately flashes. The condensate then begins cooling via natural convection. The condensate will not pass over the overflow drain until the next intermittent blowdown.

Optional quenching water only turns on if surface blowdown pushes some of the fluid out before it has a chance to cool naturally.

Pro's:

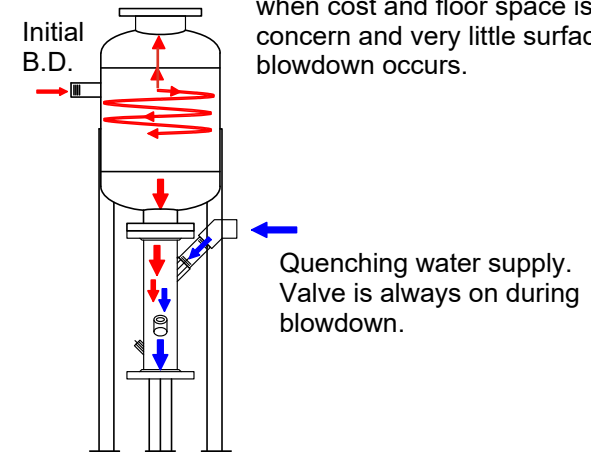
- 1.) Cold quenching water requirements greatly reduced.
- 2.) Longer service life due to reduced erosion via larger diameters.
(Reduces internal flash steam velocity within vessel body)
- 3.) Easier to design and more appropriate for multiple BD processes.

Con's:

- 1.) Larger upfront cost, typically \$15K to \$30K+.
- 2.) Takes up more floor space.

(General) Hot blowdown enters and immediately flashes. Quenching water always kicks on. Perfect for applications only doing intermittent bottom blowdown.

Still an appropriate choice when cost and floor space is a concern and very little surface blowdown occurs.



Pro's:

- 1.) Lower initial cost, typically \$6K to \$12K.
- 2.) Small footprint, requires less floor space.

Con's:

- 1.) Quenching water kicks on every BD event
- 2.) Reduced service life due to smaller vessel diameter.
- 3.) Not ideal for varying BD processes.