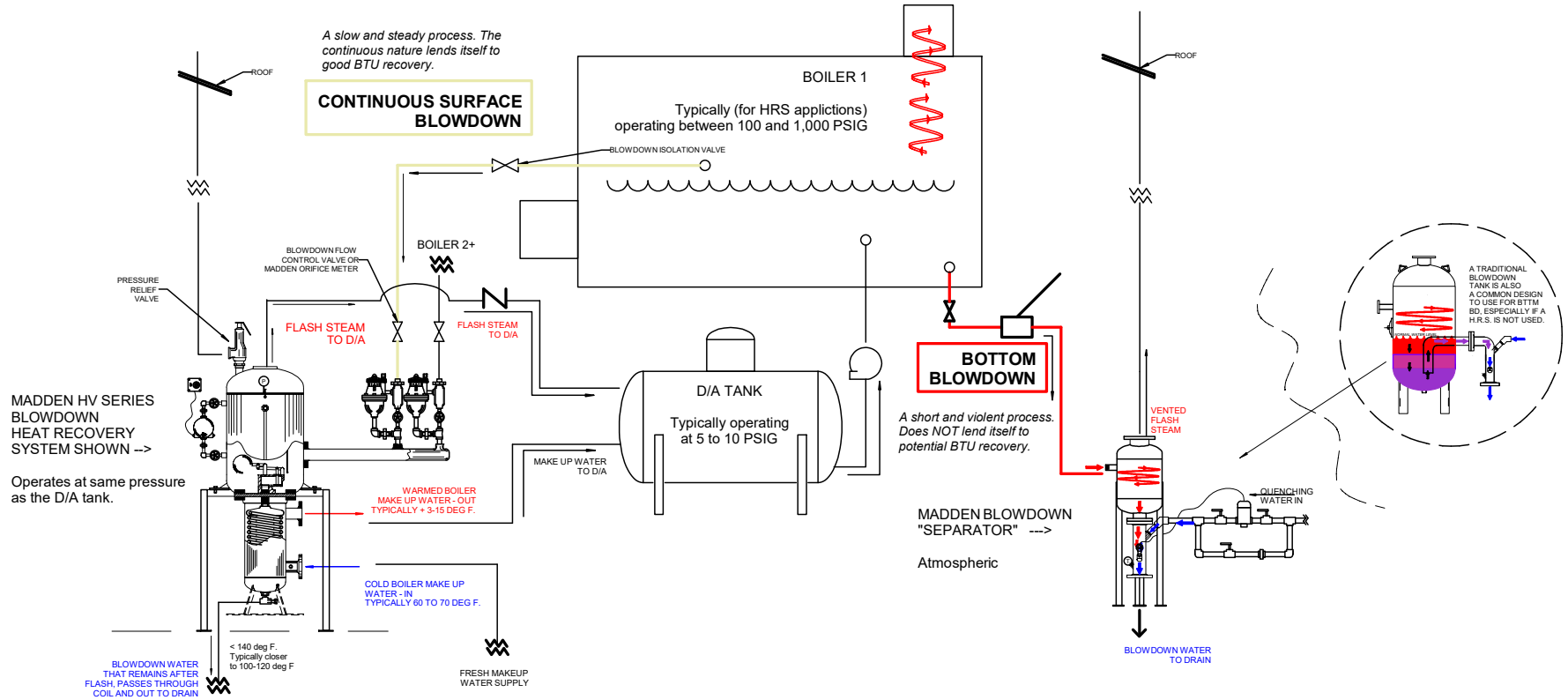


You CAN send both continuous surface and bottom blowdown to the same large traditional blowdown tank (or blowdown "separator" for lower pressure application).

HOWEVER, you should NOT send both bottom blowdown and continuous surface blowdown to the same HEAT RECOVERY SYSTEM.



CONTINUOUS SURFACE BLOWDOWN, normal parameters:

- This flow rate is typically "slow" and steady, relatively speaking.
- If you use automated conductivity blowdown systems, with a heat recovery system, remember that it is easier and more efficient on your HRS to adjust the flow to kick on less often and last longer, rather than burst down for a short period of time, every hour.
- As shown in the above pictogram, boilers operate at higher pressures than the HRS or BD separator. As a result, when they blowdown, some of this energy dissipates in the form of flash steam.
- For continuous surface blowdown, flash percentages are usually between 5% and 25%.
- Typical continuous surface blowdown flow rates range between 500 and 15,000 PPH. It is also important to note that for continuous surface blowdown, you use flow control valve. (However, for very large industrial boiler rooms, flow rates can go up as high as 30,000+ PPH).
- As a result, HRS typically yield $\leq 24"$ dia. flash vessels and $\leq 6"$ vents. It is important to note, HRS's use a heat exchanger to then cool the remaining blowdown.
- The heat exchanger and flash steam puts otherwise lost BTU's back into your boiler system. Madden can calculate a ROI based on the BTU recovery estimate.

BOTH PROCESSES CAN GO TO A BOTTOM BLOWDOWN TANK OR SEPARATOR.

HOWEVER,

BOTH PROCESSES CANNOT GO TO A HEAT RECOVERY SYSTEM.
AS THE INT. BTM. BLOWDOWN WOULD REQUIRE A MASSIVE HEAT EXCHANGER AND VENT, YET OFFER A TRIVIAL AMOUNT OF BTU RECOVERY.

INTERMITTENT BOTTOM BLOWDOWN, normal parameters:

- This flow rate is typically violent and only lasts 15 to 30 seconds.
- This is typically actuated by a slow opening gate valve and then a deadman lever (or quick valve).
- As shown in the above pictogram, boilers operate at higher pressures than the HRS or Blowdown separator. As a result, when they blowdown, some of this energy dissipates in the form of flash steam.
- For intermittent bottom blowdown, flash percentages are usually between 15% and 35%.
- Typical bottom blowdown flow rates (emphasis on "rate", it is not a total, just a rate, for 30 seconds) range between 25,000 and 150,000 PPH. This is because 100+ PSIG pushing through a wide open 1" to 2" line, withOUT any control valve (flow control valves canNOT be used on bottom blowdown), yields a very high flow rate.
- Blowdown Separators then use an aftercooler to immediately quench the blowdown. In the case of a traditional blowdown tank, it will hold the equivalent to one blowdown, then cool naturally by convection, until the next blowdown.
- As a result, vent sizes are usually 4" to 18" depending on pressure drops. And the drain sizes are typically 3" to 6", again, with an aftercooler often installed.