60 SECONDS WITH SUMMIT™ PUMP, Inc

VOLUME 3-3


*Snoring pumps… ever heard of such a thing?*

*I knew that pumps could run, burp, leak, stall and die (people "kill" them all the time), but I didn't know that pumps could snore.*

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Kidding aside, by definition a pump that is pumping a mixture of liquid and air is technically ***snoring***. The term originates from the process noises associated with the phenomena.

Does your pump have the ability to pump normally, then operate dry for some length of time and then self-re-prime and return to pumping? And then…does it have the ability to repeat that process over and over? Probably not. Pump snoring is a condition that leads to reduced reliability and shorter pump life.

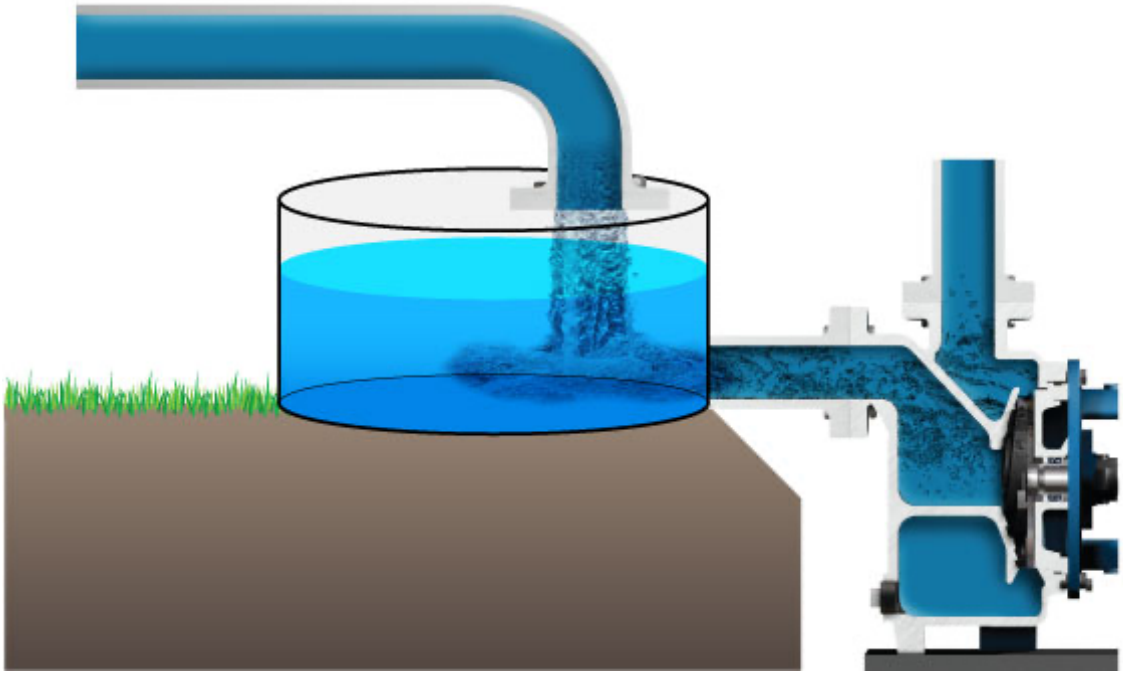
Most all centrifugal pumps **DO NOT** have the ability to pump liquids with air

entrainment above 10% and almost never much above 14%. As a matter of fact, most all centrifugal pumps will have issues starting as low as 2% air entrainment. Note: that self-primers, recessed impeller (vortex) pumps and disc friction pumps can possibly pump mixtures at higher percentages.

Snoring is usually a term reserved for submersible pumps on dewatering applications at construction sites, but the phenomena can apply to most any centrifugal pump type and application.

Another application where this phenomena shows up is pumping a tank down to empty and/or for transfer. The snoring issue occurs frequently with batch process operations and if the operator (or the process control system) are “out to lunch” the pump consequently suffers mortal damage to the clearances, mechanical seals and bearings.

Sometimes it is not the operator, but the system design that creates the issue such as dissolved – air flotation (DAF) systems and waste water treatments that require additives such as surfactants, alcohols and soaps.



One of the main culprits for pump snoring is simply poor sump design, where the influent is dumped into the sump at elevations high above the liquid level at or near the pump suction intake without the benefit of weirs or baffles. This improper geometrical arrangement contributes to a “waterfall effect” pulling air into the liquid…it probably should be called the “water torture” method.

Other common causes for air entrainment are sumps that are too shallow, frequently experienced on cooling tower applications and in underground mining applications (minimum overhead space) where the air gets mixed into the liquid due to inadequate submergence thereby creating a vortex action.

## Why do we care?

Entrained air is directly related to:

- Reduced pump performance, both head and flow and often to the point of stall
- Increase in vibrations and noise (the reduction in efficiency manifests as these)
- Overheating
- Higher incidents of shaft breakage

## Furthermore...

Don’t confuse air entrainment with cavitation as they are two different things, but they can sometimes be related by a root cause and both can occur at the

same time. Lastly, do not confuse dissolved air with entrained air.

Stop your pumps from *snoring*, don't let them drink air before they go to bed.


& The Summit Pump Team

For added background refer to my articles in *Pumps and Systems* magazine. The links are below for your convenience.

**How to Reduce or Eliminate Air Entrainment:**
https://www.pumpsandsystems.com/how-reduce-or-eliminate-air-entrainment

**Guidelines for Submergence & Air Entrainment**
https://www.pumpsandsystems.com/guidelines-submergence-air-entrainment

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