

Choosing between **SMART & FULL PURGE**

Codes require outside air to be introduced into the natatorium to help maintain the air quality and dilute airborne chemical levels. Sometimes, this code minimum is not enough, and a boost of outside air is needed. Several options are available to deliver more outside air when needed, such as Purge Mode.

1. What Is Purge Mode and Why You Should Consider It

Purge mode is a timed emergency mode that introduces more outside air than the code-required minimum for the removal of contaminated air when chemicals, such as trichloramines, reach critical levels and immediate removal is required. By introducing more outside air and purging the natatorium of chemicals, Purge Mode clears the air and allows normal operations to resume. There are a few options for how quickly you want to purge the space with one full outside air change.

Dectron offers the best options in the industry, which are considerably more effective than options from some other manufacturers.

2. The Difference Between Dectron's Smart and Full Purge

Full Purge (100% OA/EA) is the fastest way to purge all the air in the room. Delivering a full volumetric outside air change only takes 10 minutes, assuming six air changes per hour. Full Purge offers the quickest turnaround back to regular operation.

Smart Purge (50% OA/EA) is a new Dectron release that offers a lower first cost and a more compact unit that helps deliver a full volumetric air change in 20 minutes, assuming six air changes per hour. The Smart Purge is an excellent option for facilities with limited heating capabilities or mechanical room space.

A. Volumetric air change: How long does it take to move the air volume equivalent to the natatorium volume?

	DECTRON FULL PURGE (100% PURGE)	DECTRON SMART PURGE (50% PURGE)	KNOWN COMPETITOR (35% PURGE)
Time taken to achieve natatorium volumetric air change by % purge	10 min.	20 min.	28.6 min.

B. More outside air is better. The table below shows how quickly the original contaminated air can be removed from the natatorium.

TIME VS. REMAINING CONTAMINATED AIR CONCENTRATION	DECTRON FULL PURGE (100% PURGE)	DECTRON SMART PURGE (50% PURGE)	KNOWN COMPETITOR (35% PURGE)
0 min.	100%	100%	100%
10 min.	0%	50.00%	65.00%
20 min.	0%	25.00%	42.25%
30 min.	0%	12.50%	27.46%
40 min.	0%	6.25%	17.85%
50 min.	0%	3.13%	11.60%
60 min.	0%	1.56%	7.54%
70 min.	0%	0.78%	4.90%
80 min.	0%	0.39%	3.19%
90 min.	0%	0.20%	2.07%
100 min.	0%	0.10%	1.35%

Note: This table assumes ideal air distribution and six air changes per hour.

C. Real-world considerations

Purge effectiveness is affected by air temperature and air distribution effectiveness. In a real-world application, perfect air distribution and ideal air temperature conditions are extremely unlikely.

Impact of air distribution and temperature

Chloramines are four times denser than air, leading them to settle on the pool surface or “breathing zone” like a layer of fog in the absence of any air disturbance. Facilities with the best air quality continuously extract air from the water surface and breathing zone. This air distribution setup also delivers the most effective purges.

Temperature – heater sizing

In winter, purge mode could cool the space if the heating system is not sized to heat that much outside air. The longer it takes to complete the purge cycle, the more discomfort an occupied facility’s patrons will experience if the heating system cannot keep up. The heating capabilities at the facility might dictate what purge mode is best for you. The quicker the purge mode, the bigger the heater required.

3. Purge Option Summary

	DECTRON FULL PURGE (100% PURGE)	DECTRON SMART PURGE (50% PURGE)	KNOWN COMPETITOR (35% PURGE)
Time to achieve one air change of OA	Fastest	Fast	Slowest
Chemical removal effectiveness	Best	Medium	Worst
Energy saving Economizer* capabilities	Yes	No	No
Cabinet size	Largest	Standard	Standard
Heater size	Largest	Larger	Standard
First cost	Higher	Standard	Standard

***Economizer Mode:** One significant benefit of 100% Purge is that the unit is already set up with an economizer mode. Economizer operation saves thousands in operating costs per year. The energy savings can be significant, depending on your geography. These are pure savings since there is no upcharge for economizer mode when you have 100% purge mode.

Full Purge is not always an option based on site restrictions. Dectron’s new Smart Purge is a great option when Full Purge is not suitable for the application. Regardless of which fits your needs, contact your Dectron sales engineer to show you the operating cost savings for your project.