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air quality design, inc.
N O x W e r x

The next generation of the AQD photolytic NO₂ converter

Our research objectives

The objectives we desired to accomplish with the next generation of our photolytic NO₂ converter included:

- Improve the reliability and environmental resistance of the converter seals.
- Take advantage of the higher efficiency UV LEDs currently available.
- Ensure backward compatibility with the existing BLC generations.

The AQD solution

Our next generation photolytic NO₂ converters will be available at several power levels to best suit the application. The replacement for the latest generation BLC is the BLC2, shown in **Figure 1** below. The other power levels are presented in Figure 2 and Table 1. All versions are o-ring sealed. The lamps used with the BLC2 are compatible with the prior BLC generations. The lamps used with the DM33 and DM66 converters will larger to accommodate the additional power dissipation required.

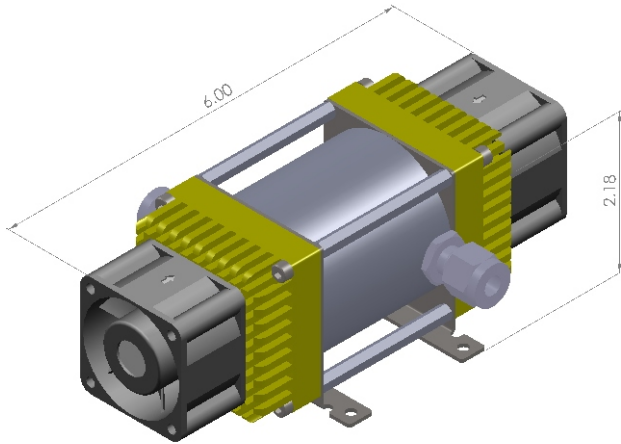


Figure 1. A 3-D model of the new BLC2. The BLC2 will be a direct fit* replacement for the original BLC, while offering substantially better performance. The dimensions shown are in inches.

* - The BLC2 uses a slightly larger fan than the original BLC is and is about ½" longer overall.

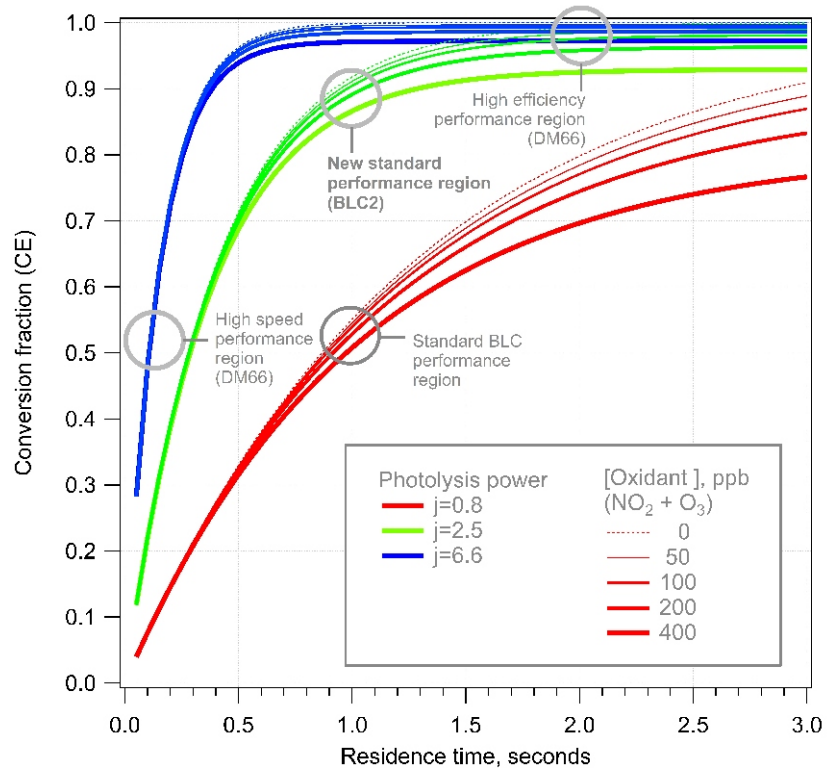


Figure 2. This graph shows the calculated conversion efficiency (CE) versus residence time for the standard BLC (red), the new BLC2 (green), and the new DM66 (blue). Each curve is also shown as a function of oxidant level (NO₂+O₃) from 0-400 ppb. The performance regions circled represent the available residence times (defined by the cell volume). The dual-mode (DM) converter may be operated at either atmospheric pressure (high efficiency) or at reduced pressure (high speed).

Table 1. Converter Comparison chart

NO ₂ Converter Options			
Model:	BLC2	DM33	DM66
Residence time (at 1slpm and either 1 atm or 0.1 atm)	1 second	2 seconds or 0.2 seconds	2 seconds or 0.2 seconds
Nominal Conversion efficiency (CE) at residence time	90%	98% (2 seconds) 50% (0.2 seconds)	98% (2 seconds) 80% (0.2 second) 50% (0.1 second)*
Power consumption	60 W	50 W	100 W
Power requirement	24 VDC	100-240 VAC 50/60 Hz	100-240 VAC 50/60 Hz
Control**	TTL	TTL	TTL
Signals available	N/A	Lamp Temperature, lamp intensity	Lamp Temperature, lamp intensity

* - A 0.1-second response time assumes a flow rate of 2 slpm.

** - a level converter to allow negative true logic is available.