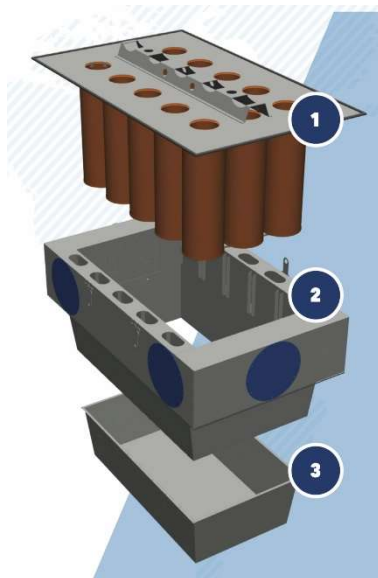

International

To: Dr. Michael Seitz
From: Joshua Lawson
Subject: Summary of Testing at BlueSky Global
Date: 7 October 2022

On 5 October 2022, a series of tests were performed for BlueSky Global on their test unit comprised of the base unit and HEPA SmartBox modules 2-22129, 2-21134, 2-22130, and 2-22131, in several modular configurations to determine individual and combined efficiencies of the various configurations.

From BlueSky Global: The use of SmartBox Modules ensure that the collected hazardous dust and contaminated filters never pose a threat to service personnel or the work site because the SmartBox Modules are not opened, with all dust and filters remaining fully encapsulated even during the services and disposal process. This is especially important when the captured pollutants contain asbestos, hexavalent chromium, silica, active metals, compounds, radioactive contamination, or bio-waste.



With reference to the exploded view alongside:

1. FILTERDECK – The FilterDeck assembly provides a rigid platform with fifteen (15) filter cartridges (usually Merv 14/15 but in this case HEPAs) permanently mounted to a metal deck.
2. DONUT – A dual-function component that supports the FilterDeck circumferentially and provides directed airflow channeling from the filter cartridges.
3. SUMP – The Sump is the capture/holding container for filtered dust-cake. For hazardous dust types, the Sump is not detached/removed.

Results for these tests are presented in the table below.

<i>Assembly Combination(s)</i>	<i>In-Place Leak Efficiency %</i>
2-22129 + 2-22134 (in series)	>99.999
2-22130 + 2-22134 (in series)	>99.999
2-22130	99.999
2-22129	99.9875
2-22131	99.977

These In-Place tests were performed using NUCON Procedure 12-67, which was developed using guidance from ASME N510. However, the test methodology used here would also be used to satisfy requirements from N511 and AG-1 if required.

BlueSky indicated it has 3 HEPA suppliers it uses. 2-22130 and 2-22134 were both SmartBox modules fitted with their STANDARD series BlueSky HEPA filters. 2-22129 were HEPA filters produced from a fabric source from a Japanese supplier (Toray). 2-22131 were filters from a Danish supplier (SEW).

Testing showed low levels of leakage for each of the individual serial numbers tested, with leakages below what a typical end user would expect (99.97%). As can be expected, while all filters met the minimum requirement, the different supplier's fabrics did result in small leakage differences. That said, the combined bank tests using the BlueSky preferred supplier showed no detectable downstream indication of challenge agent, showing that any minor differences that may appear on a HEPA-by-HEPA basis are easily compensable in a dual bank in-series alignment.

It is also worth noting that the test results obtained when testing 2-22131 (SEW) closely matched the efficiency tests previously obtained when testing HEPA filters from the same manufacturer used at another client location (test reference).