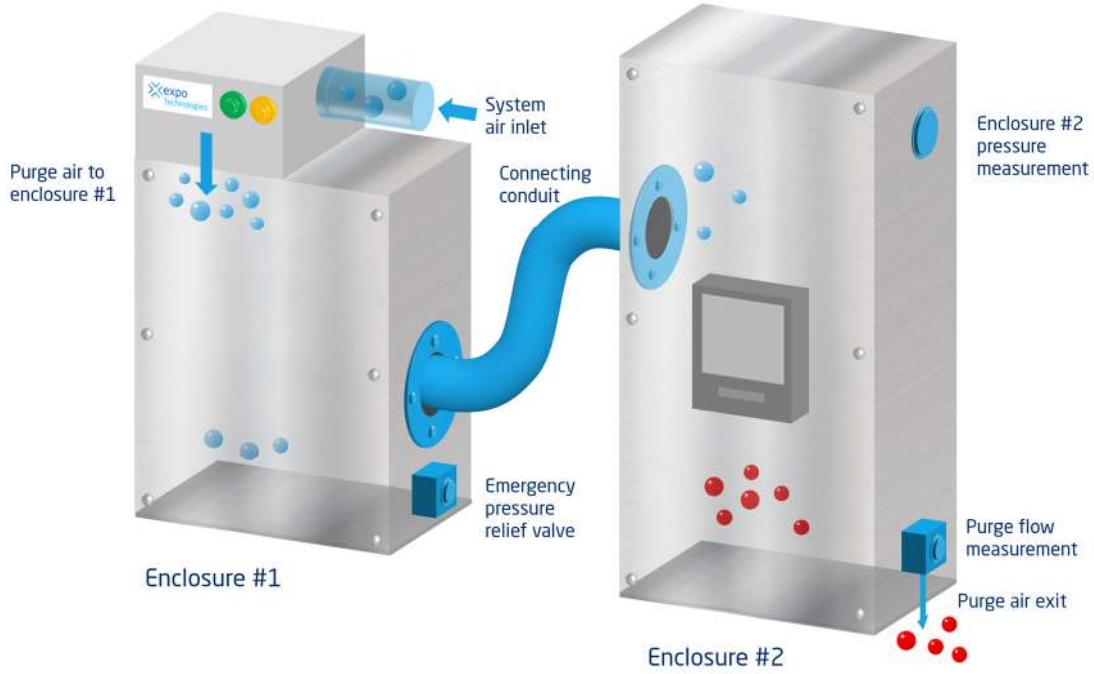
Application Note

Purge & Pressurization for multiple enclosures in series

When designing a purge & pressurized system, purging multiple enclosures in series is an option that may arise when:

- A single enclosure is impractical, for instance through overall size or potential problems with thermal management
- A complex piece of equipment requires separate interconnecting modules.

Purging & Pressurization of multiple enclosures in series is permitted under ATEX & IECEx (IEC/EN60079-2) standards. The diagram & notes below give general guidance and illustrate a typical system configuration with two enclosures, however we advise that the application should be discussed with your local Expo representative to eliminate potential issues.



Guidance notes

1. Select enclosures with a high sealing capability to minimise leakage rates (IP66, NEMA 4X).
2. Install the purge controller on Enclosure #1. This enclosure should also have a high pressure relief valve (RLV), which should not open during normal operation. If the enclosure sizes are different, then the purge gas should enter the smallest enclosure first.
3. The purge system RLV should be installed on the last enclosure of the series, as this functions as the purge gas outlet valve. The purge flow measurement signal from this RLV, as well as the enclosure pressure measurement signal, should be connected back to the purge controller. Expo recommend no more than 3 enclosures in series.
4. A connecting conduit is required between enclosures for purge gas flow. The internal diameter (ID) of this conduit should be no smaller than that of the system outlet—this minimises potential issues of back-pressure on intermediate enclosures causing flow restriction, which may result in an extended purge time, or failure to correctly complete the purge cycle. If the conduit also contains wiring or other items, then the ID should be increased to compensate. The conduit should be as short as possible, of a minimum IP40 rating, and routed to avoid sharp bends. Conduits must be metallic or, if alternative materials are used, ATEX/IECEx certified.
5. Once installed, the system pressures and flows may require balancing to ensure correct performance. If technical assistance is required, consult Expo.

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