

CASE STUDY

Manifold-Based Design Achieves Leak Point and Footprint Reductions and Optimized Flow Path

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The Challenge

An engineer at one of the biggest semiconductor Fabs was tasked with achieving significant reductions in the company's chemical distribution box footprint and leak points. The goal of the new solution was to enable the manufacturer to save valuable equipment space and improve equipment uptime.

The Saint-Gobain Collaborative Design Services Solution

To start, our design team received images of the fabricator's existing solution as a reference. This reference was used to create a preliminary design proposal that aimed to reduce the footprint and leak points by at least 50%. We proposed a manifold-based solution, which is designed for space-limited semiconductor applications.

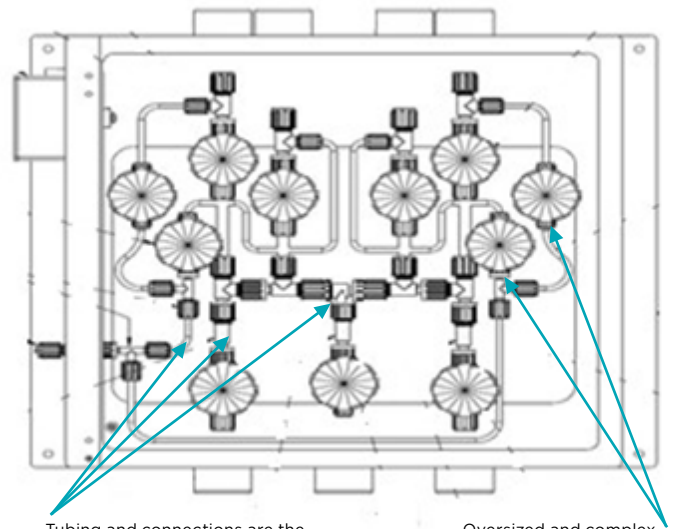
Collaboration between Saint-Gobain and the customer began with creating P&ID. The technical engagement between the two teams ensured that the desired flow path and functional requirements were met. Upon confirmation of the product specifications, a final drawing was created and submitted for customer approval.

Key design considerations included optimizing the fluid transfer path to reduce dead legs and connection points between each valve. Moreover, our proposed design would enable the customer to speed up installation and testing as a result of virtually no plumbing requirements between discrete valves. Additionally, reduction in dead legs further mitigated contamination risks which could be caused by stagnant media. Throughout the design process, achieving a reduced footprint and fewer leak points was primary and of critical importance.

Customer Experience

In the end, Saint-Gobain's new manifold design not only helped the customer to achieve a 65% footprint reduction but it also reduced the number of connections from 52 to 8. Furthermore, our proposed solution yielded significant operational benefits through relatively quicker installation and reduction in inventory. This solution positively impacted the manufacturing process and gave the customer additional confidence in our co-development capabilities.

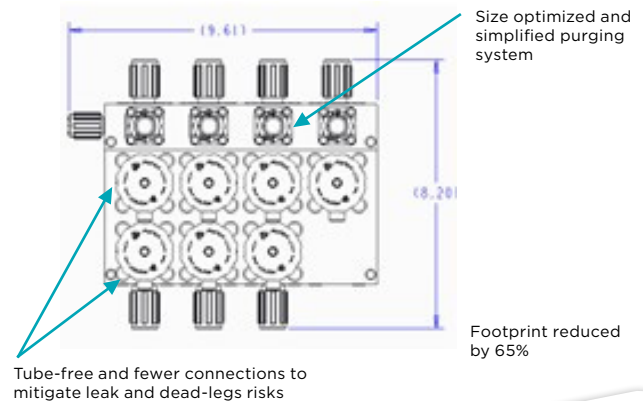
Existing Solution



Tubing and connections are the sources of dead-legs and leak points

Oversized and complex purging system

New Solution



Size optimized and simplified purging system

Footprint reduced by 65%

Tube-free and fewer connections to mitigate leak and dead-legs risks