FEBRUARY 2025 - MAY 2025

SUMMARY:

TechConnect's client, a multinational corporation, sought new technologies for managing industrial dust hazards with a particular focus on silica dust. While they already have several dust management technologies in operation, they wanted to uncover new options to minimize or eliminate silica dust generation and spread.

COMPANY DESCRIPTION & MISSION:

The client operates in 35 countries where 60,000 employees are working to find better ways to provide the materials the world needs. Their portfolio includes iron ore, copper, aluminum and a range of other minerals and materials needed for people, communities and nations to grow and prosper, and for the world to cut carbon emissions to net zero. They are continuously searching for new projects that can support the energy transition, currently exploring for eight commodities in 17 countries.

The client has more than 150 years of mining and processing experience guiding our work. Today, their business relies on technology such as automation and artificial intelligence to help run safer, more efficient operations and leave a lighter footprint.

TIMELINE:

Challenge launch: **February 26, 2025** Submission deadline: **March 25, 2025** Virtual meeting with select respondents: **May 2, 2025**

RESULTS AND BENEFITS:

Through the Technologies for Silica Dust Management Sprint, our client sought next-generation dust management technologies for controlling silica dust in its facilities. TechConnect successfully positioned this project for the global community of technology providers across numerous sectors.

With this project successfully completed, the client has begun conversations with two respondents and has information about multiple other technology providers with whom they could collaborate in the future. Additionally, while not selected for engagement on this project, an additional respondent was identified for other needs with the client.

In all, TechConnect was able to provide its client with a range of technology options that it was unaware of prior to this project. Moreover, TechConnect was able to establish direct connections between its client and top-ranked respondents.



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THE CHALLENGE:

The motivation for this project was two-fold.

First, the client knew that its operations to transport and pulverize mineral ores generated significant amounts of silica dust, a known respiratory hazard for workers. Consequently, they already had several systems in place for minimizing its generation and spread within the workplace. However, the client believed that new, more effective technologies could be available in the marketplace.

Additionally, recent federal actions modified the permissible exposure regulations, reducing the level at which companies were required to take action to protect its workers from silica dust exposure. To ensure that their operations meet the new threshold, the client sought to identify and implement additional safety measures.

THE OPPORTUNITY:

As a major operator within the minerals extraction and processing industry, the client has well-established relationships with major equipment providers for its dust management technologies. The client viewed the prospect of new regulatory requirements on exposure limits as an opportunity to expand its equipment supplier network by actively seeking out new dust management technologies and providers.

THE SOLUTION:

The client identified multiple key locations within its facilities that are prone to silica dust contamination. Additionally, they knew that it would likely require a combination of approaches and technologies to meet regulatory requirements as well as their own internal limits.

Consequently, the Technologies for Silica Dust Management Sprint took an expansive approach, indicating that the client for the Sprint was interested in a broad range of technologies for an array of environments.

By positioning the project in this manner, TechConnect was able to attract the attention of many equipment manufacturers who approached dust management concerns from a variety of perspectives from detection to containment to mitigation.



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THE PROGRAM:

Challenge Design

As is standard operating procedure, all public-facing Sprint content was developed by TechConnect with editorial insight and approval by Rio the client to ensure correct messaging and intent. The TechConnect team primarily consisted of project and program management experts while the client was represented by the technical point of contact for the project.

Submissions

The submissions received for this Sprint proposed technologies for filtering silica dust out of the work environment, binding technologies for minimizing the spread of silica dust, filters, sensors and more.

Evaluations

The client's technical point of contact reviewed all eligible submissions to determine which ones were of sufficient interest to warrant an invitation to a virtual meeting. Of the 15 companies that responded to this Sprint, we invited five to present to the client directly.

Preliminary Program Consultation

As this was not the first innovation project between TechConnect and this client, the two teams were able to immediately begin exploring the technical details of the technologies sought as well as the parameters of the work environment where proposed technologies might be deployed.

Opportunity Scouting

Conducting research for potential solvers for this Sprint focused on several key sectors including sensors, filtration and separation, air flow systems and dust suppression platforms. Many of these sectors were reflected in the submissions received.

Request for Innovations

Outreach for this Sprint via email was sent to individuals and organizations already part of the TechConnect network, as well as new contacts with potentially relevant technologies identified during the scouting process. Numerous LinkedIn posts were made to solicit additional attention and interest. Furthermore, the open innovation project manager responsible for the content of this Sprint also conducted several one-on-one meetings with potential respondents.

Opportunity Evaluation Support

Following the close of this Sprint to new submissions, TechConnect reviewed all submissions to confirm compliance with non-confidentiality requirements. Additionally, this review allowed TechConnect to highlight those responses that appeared to best align with the intent and interests of the client.

Web Conferences

On May 2, 2025, we invited five companies to participate in a virtual meeting with the client to discuss their proposed technologies. Each company was given approximately five minutes for their presentation and prepared remarks followed by roughly 25 minutes for questions and answers with the client.



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CHALLENGE OUTCOMES AND METRICS:

The Technologies for Silica Dust Management Sprint generated 15 submissions. Most respondents were commercial entities, in keeping with the client's stated interest of pilot-scale testing prior to the end of the calendar year. Technologies included sensors, dust collection devices, and novel filter applications, among many others.

The client intended to conduct pilot-scale testing no later than Q4 2025, so the strong showing of technologies that were at or near commercial readiness (10 of 15 proposed technologies) suggested that such an aggressive timeline was possible.

