HIGH-PERFORMANCE PPE FOR EXTREME ENVIRONMENTS SPRINT

FEBRUARY 2025 – APRIL 2025

SUMMARY:

Our client operates a smelter facility at one of its locations in the United States. Workers in the immediate vicinity of this smelter are exposed to high levels of heat and noise. Through this Sprint, our client sought to identify next-generation technologies for thermal management and communication to protect the welfare of their workers.

COMPANY DESCRIPTION & MISSION STATEMENT:

Our client operates in 35 countries where 60,000 employees work 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.

They have 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 14, 2025**
Submission deadline: **March 13, 2025**
Virtual meeting with select respondents: **April 23, 2025**

6 MINORITY-OWNED

2 VETERAN-OWNED

28 UNIQUE ORGANIZATIONS

2 AREAS OF INTEREST

23 FOCUSED ON THERMAL MANAGEMENT

30 SUBMISSIONS

5 WOMAN-OWNED

7 FOCUSED ON COMMUNICATIONS TECHNOLOGIES

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THE CHALLENGE:

Working in minerals extraction can be a hazardous occupation. Consequently, companies like our client's provide their employees with technologies and equipment to mitigate or eliminate risks, improve overall comfort and enhance operations.

For workers in the vicinity of a smelter, the risk from high levels of noise and high temperatures requires an array of thermal management and communications gear such as aluminized suits, hard hats, gloves, goggles, and radios. Additionally, each new component of safety gear must not negatively impact any other component while also delivering vital safety performance.

The High-Performance PPE for Extreme Environments Sprint was a two-phase project with two areas of interest: thermal management technologies and communication systems. In phase one, we invited interested organizations to submit a high level, non-confidential response describing their technology for one of those two focus areas. Our client reviewed all eligible submissions to determine initial level of interest for a given technology and company. For phase two, our client selected top ranked respondents for TechConnect to engage via virtual pitch meetings. During those meetings, respondent companies were able to share an overview of their company and technology and our client asked questions directly about the proposed technologies and how they might incorporate into existing safety systems. Representatives from our client then used those meetings, along with the original submission information, to determine which companies were most strongly of interest, leading to formal introductions by TechConnect.

THE OPPORTUNITY:

Our client, as a long-established company, was already aware of major providers of personal protective equipment (PPE). In fact, the provider of their aluminized suits creates them exclusively for the client. The purpose of this anonymous Sprint was to discover potential new equipment providers with promising thermal management or communication technologies that might be suitable for usage near the smelter facility.

The motivation for keeping the Sprint anonymous was to broaden the pool of potential respondents beyond those that operate in support of the mining industry.

THE SOLUTION:

Given that the client was simultaneously interested in identifying new technologies for their safety equipment loadout and in remaining anonymous for the initial phase of the project, TechConnect's Sprint service was well-aligned to meet the needs and concerns of the client.

By keeping the Sprint anonymous, TechConnect was able to attract the attention of thermal management and communications providers that operate in similar industries as well as ones that were tangential to or unrelated to the mining industry. In that way, TechConnect was able to solicit viable technologies that were wholly new to the client.

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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 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

With the broad scope of potential technologies of interest, this project generated a significant number of responses. The submissions covered many of the in-scope technologies identified by the client.

Evaluations

The client's technical point of contact reviewed all eligible submissions in order to determine which ones were of sufficient interest to warrant an invitation to a virtual meeting. Of the 28 unique companies that responded to this Sprint, six were invited to present.

Preliminary Program Consultation

As this was not the first innovation project with the client undertaken by TechConnect, 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

While the smelter environment is a challenging one, identifying companies that might have relevant technologies for it was not. Companies operating in a diverse range of industries were rapidly identified and contacted, including ones in first response equipment, miltech, high-performance athletics and many more.

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. Moreover, this review allowed TechConnect to divide submissions into two broad categories: thermal management technologies and communications technologies. This was done to aid RTC in its evaluation of submissions.

Web Conferences

On April 23, 2025, six companies were invited to participate in a virtual meeting with the client to discuss their proposed technologies. Each company was given approximately 5 minutes for their presentation and prepared remarks followed by roughly 25 minutes for questions and answers with the client.

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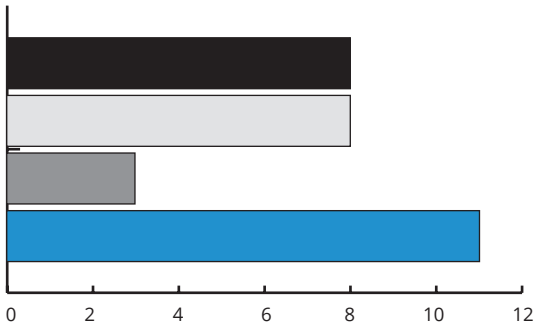
RESULTS AND BENEFITS:

The High-Performance PPE for Extreme Environments Sprint was successfully completed and generated new and actionable information for the client. The Sprint provided the client with an extensive list of organizations with a broad range of potentially interesting technologies for them to consider, both now and in the future.

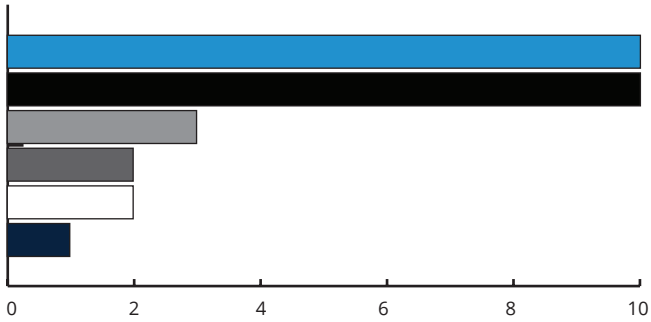
Through this project, the client will soon be able to pilot test several new technologies in its smelter operations, providing its employees with effective safety equipment that will, hopefully, enhance their comfort and safety in a challenging work environment.

TECHNICAL MATURITY:

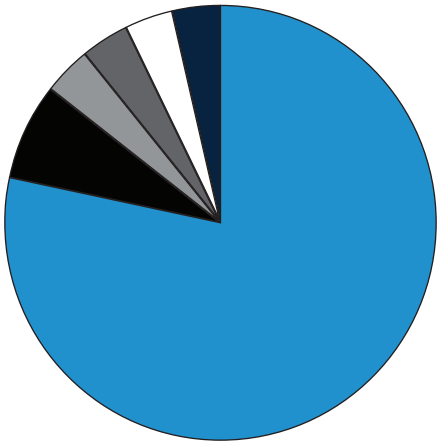


- Commercial Product (11)
- Prototype (8)
- Ready to Market (8)
- Proven Manufacturability

ORGANIZATION TYPE:



- Early-Stage Startup (Seed) (10)
- Mid-Stage Startup (A or B) (2)
- Small-to-Medium Enterprise (10)
- Academic/Government Lab (2)
- Corporation (3)
- Commercial Startup (C+) (1)



COUNTRIES:

- United States of America (22)
- Canada (2)
- Japan (1)
- Saudi Arabia (1)
- Sweden(1)
- United Kingdom (1)

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