MP Corrosion Innovation of the Year Awards Nomination Form for 2021

Additional Nominee's Name:

Job Title:

Organization:

Mailing Address:

City: State: ZIP/Postal Code: Country:

Telephone:

(If outside the United States and Canada, please include country code)

E-mail:

Is this the primary contact for the Award program? ☑ Yes ☐ No

Additional Nominee's Name:

Job Title:

Organization:

Mailing Address:

City: State: ZIP/Postal Code: Country:

Telephone:

(If outside the United States and Canada, please include country code)

E-mail:

Is this the primary contact for the Award program? ☐ Yes ☐ No

NOTE: The above contact information will not be made public except the nominees' names, job titles, and organizations. However, all information submitted on the following pages will be submitted to the panel of corrosion experts and posted on the MP Corrosion Innovtion of the Year Awards web site.

2021 Award Nomination

Title of Innovation: **Cold Fusion Concrete FP250**
(insert title here—no more than five words)

Nominee(s): **Mark Gerhardt - Geopolymer Solutions, LLC**
(insert Name[s] and Organization[s])

Web site: **www.geopolymertech.com**

Summary Description:

Cold Fusion Concrete FP250 is a cementitious Spray Applied Fireproofing (SFRM) that contains no Portland Cement, and inhibits corrosion as well as or better than galvanizing, intumescent IFRM's, or corrosion resistant paints and primers. FP250 is also made of industrial waste and accordingly, significantly reduces the carbon footprint of all other SFRM's and IFRM's.

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Full Description
(Please provide complete answers to the questions below. Graphs, charts, and photos can be inserted to support the answers.)

1. What is the innovation?

The innovation is the first significant increase in cementitious SFRM technology in the past five decades. The innovation is the first cementitious SFRM that is not only designed for fire protection, but extreme corrosion inhibition.

2. How does the innovation work?

The glassy constituents in FP250 are embedded into steel pores through an elevated pH condition, and through the use of sodium tetraborate that acts as a penetration enhancement. The products' bond strength, compressive strength, and glassy nature provide a durable corrosion protection second to no other SFRM or IFRM. The absence of attachments and metal lath are afforded through a chemical adherence to steel substrates, further enhancing corrosion inhibition.

3. Describe the corrosion problem or technological gap that sparked the development of the innovation. How does the innovation improve upon existing methods/technologies to address this corrosion problem or provide a new solution to bridge the technology gap?

FP250 was developed due to the ever increasing industry awareness of Corrosion Under Fireproofing (CUF), directly similar to Corrosion Under Insulation (CUI). IFRM's have a tendency to crack in cold environments due to relatively high thermal coefficients thereby exposing the substrate to the environment, and SFRM's have a high tendency to promote CUF due to permeability issues, and the presence of lath that tends to create voiding under the SFRM. FP250 mitigates both of these

4. Has the innovation been tested in the laboratory or in the field? If so, please describe any tests or field demonstrations and the results that support the capability and feasibility of the innovation.

FP250 has successfully navigated Underwriter Laboratories UL1709, UL263, and UL 5th Edition environmental testing. Further, FP250 passed the 10,000 hour ASTM B117 Salt Spray Test procedure. FP250 has undergone up to 3-hours of pipe and box testing using the Jet Fuel procedure without reaching maximum temperature, and undergone and passed the Hose Stream test procedure and setting new records at the laboratory for the low temperature measured on the back of the panel.

5. How can the innovation be incorporated into existing corrosion prevention and control activities and how does it benefit the industry/industries it serves (i.e., does it provide a cost and/or time savings; improve an inspection, testing, or data collection process; help to extend the service life of assets or corrosion-control systems, etc.)?

The vast majority of structural steel elements constructed world-wide require some sort of fire protection. This includes commercial, residential, petrochemical, oil & gas, and just about every industrial scope. On many projects, the fire protection is either SFRM's or IFRM's. On many projects, galvanizing is the choice of corrosion protection.

6. Is the innovation commercially available? If yes, how long has it been utilized? If not, what is the next step in making the innovation commercially available? What are the challenges, if any, that may affect further development or use of this innovation and how could they be overcome?

FP250 has been available on a commercial basis since 2017. Frankly, there are no challenges to it's use. It utilizes conventional existing industry equipment to be applied, just like any other SFRM. Like other manufacturers, we are constantly innovating to reduce thicknesses and improve the product, but it's very special and dynamic as designed and produced today.

7. Are there any patents related to this work? If yes, please provide the patent title, number, and inventor.

Cold Fusion Concrete - Mark Gerhardt
Patent dateIssued Feb 5, 2019 Patent issuer and numberus 10,196,310

Fire Resistive Coating - Mark Gerhardt
Patent dateIssued Apr 17, 2018 Patent issuer and numberus 9,944,560