

Seeking Novel Innovations for Self-healing Refractories

Refractories are materials that are resistant to decomposition by heat, pressure, or chemical attack, and retain strength and form at high temperatures (> 1200°C). They are made mainly of oxides (e.g., MgO, Al₂O₃ and SiO₂), with a fine matrix and grains up to a few millimetres depending on the product line. Various binders are also used depending on the product line and application.



Current examples of self-healing refractory technology include oxidation induced healing (e.g., using additives such as SiC and B₄C), material expansion (e.g., *in situ* Al₂O₃-MgO spinel formation), and liquid refractory interactions (e.g., slag splashing to coat and protect the refractory lining). **RHI Magnesita** is looking for innovative solutions for refractory products in which damage mechanisms trigger the complete recovery of functionality, and additives which block/prevent wear mechanisms from growing.

Approaches of Interest:

- Main damages to tackle are **cracks opening due to impact and thermal shock loads, and corrosion of the fine matrix by slag attack**
- Target impact includes **prolonging product lifetime, enhancing performance, higher reliability, and reducing maintenance, inspection intervals and machining**
- **Open to self-healing technologies from other industries** (e.g., ceramic and aerospace) if applicable to refractories

Out of Scope:

- Innovations that include the use of toxic materials, changing of a customer process (e.g., changing the processing parameters for the steel fabrication) or ideas that are already present in industry practice

Stage of Development:

- Technology readiness level at TRL 1-3 is of interest. Technologies at TRL 4 and above are still of interest if they are innovative to the refractory industry






Submission Information:

Submission of one page, 200-300 word briefs are encouraged, along with any optional supplementary information e.g., relevant publications and patents. In submitting to this campaign, you confirm that your submission contains only non-confidential information. Please note that submission of academic expertise must include some information of how the academic partner can work with RHI Magnesita on this proposal.

Opportunity for Collaboration:

RHI Magnesita is open to a range of collaboration opportunities, with the most appropriate outcome being decided on a case-by-case basis. Example outcomes include licencing assets, research collaborations, and project/PhD funding.

Opportunities sought

-  Technologies
-  Academics and expertise
-  Centres of excellence
-  Research projects
-  Spinout companies

Submissions

Please submit relevant, non-confidential opportunities online via: discover.in-part.com

Deadline: **7th November 2022 - 11:59 pm GMT**

Have any questions?

Contact our team at discover@in-part.co.uk



