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NGK Corporation
Kyoto Fusioneering Ltd.

Kyoto Fusioneering and NGK Announce Strategic Partnership to Develop Molten Salt FLiBe Technology for Fusion Power Plants

Partnership brings together Kyoto Fusioneering's unique fusion plant engineering expertise with NGK's beryllium handling and refining knowhow to build the industrial foundation for global fusion energy

NGK Corporation(hereinafter, “NGK”) and Kyoto Fusioneering Ltd. (hereinafter, “KF”) today announced a strategic partnership to jointly develop and commercialize FLiBe — a molten salt of lithium fluoride and beryllium fluoride — and related FLiBe circulation systems for fusion power plants and associated experimental and demonstration facilities. Through this partnership, the two companies will build the technological foundation needed to bring fusion energy into commercial use.

Fusion energy is advancing rapidly worldwide as a next-generation energy source that can help reconcile decarbonization with energy security. Bringing fusion to commercial reality depends on far more than the plasma-confinement technology at the heart of a reactor: developers must also solve how to extract heat from the plasma, how to breed and recover the tritium fuel that fusion reactions consume, and how to engineer the surrounding circulation systems that tie the whole plant together.

FLiBe has emerged as one of the leading candidate materials for this role. As a molten salt, it can simultaneously carry heat away from the reactor and breed the tritium fuel needed to sustain the fusion reaction — a combination that makes it attractive for a range of fusion plant designs, including higher-field, more compact concepts now being pursued across the industry. Realizing that potential, however, requires mastering the safe handling, purification, and quality control of beryllium, a rare and technically demanding material, along with the engineering of circulation systems that can operate reliably with molten salt over the long term.

NGK has supplied and manufactured beryllium-containing materials since 1958, when it became the first company in Japan to industrialize beryllium copper. For more than six decades, NGK has built deep expertise in the safe handling, quality control, and refining and analysis of beryllium.

KF is a specialist in fusion plant engineering. From plasma heating systems to plant-wide system design, thermal-hydraulic analysis, and tritium breeding and recovery systems, KF has built some of the world's foremost expertise in the field, and provides technology and knowhow through partnerships with government agencies, research institutions, and organizations around the world.

Through this partnership, the two companies will advance FLiBe-related technology for fusion plant applications with an eye on future commercialization and supply-chain development that reflects the needs of Japanese and global customers. By working together across the full chain — from material manufacturing and refining, to real-equipment application including circulation systems, to specification design based on customer requirements — NGK and KF aim to build the industrial foundation needed to bring fusion energy into practical use.

Under the partnership, KF will lead the engineering design — including engineering, procurement, and construction — of the FLiBe production and refining facility which will be hosted at NGK's world-class beryllium facility. NGK will contribute its beryllium safety and handling-related expertise and will be responsible for raw material sourcing and operation of the FLiBe production and refining facility. KF, drawing on its close engagement with the fusion research community and deep understanding of fusion industry requirements, will guide the partnership in developing low-activation, low-corrosion FLiBe suited for the long-term operation of fusion power plants. KF will also evaluate the resulting fusion-grade FLiBe using its dedicated FLiBe Research Japan Advanced (FREJA) Loop, ensuring the material meets the rigorous performance and quality standards required for fusion applications.

Together, KF and NGK aim to establish a commercial-scale supply chain for fusion-grade FLiBe that fusion power plant developers can rely on as they move toward commercial deployment.

Key quotes:

Takeshi Otsu, Vice President, Head of NV Business Development, NGK Corporation

"Under our Long-Term Management Plan 2026–2035, NGK has positioned 2035 as the midpoint toward our 'NGK Group Vision: Road to 2050,' and we remain committed to research, development, and societal implementation aimed at future commercialization in the carbon-neutral space. This strategic partnership with Kyoto Fusioneering is an important step in that direction: by applying NGK's safety management and technical knowhow in beryllium handling, together with our FLiBe-related technology, we are taking on the challenge of creating new technological value that supports the practical realization of fusion energy in the carbon-neutral field. We will continue to advance technology development toward the societal implementation of FLiBe-related technology and contribute to making fusion energy a reality."

Kiyoshi Seko, President and COO, Kyoto Fusioneering Ltd.

"At Kyoto Fusioneering, we are working to establish fundamental technology needed to bring fusion energy into practical use at the earliest possible stage. FLiBe is a critical material in that effort, serving multiple functions — breeding, cooling, and tritium recovery. Because it contains beryllium, handling it safely calls for advanced safety management and refining technology. By combining the beryllium-handling expertise NGK has built over many years with the system-integration knowhow we have accumulated through fusion plant design, we aim to accelerate the industrial foundation for FLiBe-related technology and take an important step toward the societal implementation of fusion energy."

About NGK Corporation

Founded in 1919, NGK is a ceramics manufacturer active across a wide range of fields, including mobility, energy, IoT, and industrial applications. Its principal products include ceramics for semiconductor manufacturing equipment and automotive components, and the company continues to strengthen its presence as a global business, with overseas sales accounting for roughly 80% of revenue and overseas employees for roughly 60% of its workforce. Since setting out its vision in 2021 to contribute to a carbon-neutral, digital society through its ceramics technology, NGK has accelerated the transformation of its business portfolio, and in April 2026 changed its corporate name from NGK Insulators, Ltd. to NGK Corporation. Guided by the NGK Group mission — "New Value for a Better Future" — the company continues to pursue a more comfortable and sustainable society through the delivery of new products and services.
https://www.ngk.co.jp/

About Kyoto Fusioneering Ltd.

Kyoto Fusioneering is a Japan-based fusion energy plant engineering company founded in 2019. With group operations in the United Kingdom, the United States, Germany, and other countries, the company works closely with research institutions and industrial partners worldwide to advance technologies for the commercialization of fusion energy. Kyoto Fusioneering is engaged in the research, development, and engineering of key equipment and systems essential to fusion power plants, including gyrotron systems for plasma heating, blanket technologies for heat extraction and tritium breeding, and thermal-cycle and fuel-cycle systems. Through the development of the supporting equipment and systems necessary for the operation of fusion power plants, the company is helping accelerate the deployment of fusion energy and contribute to the realization of a carbon-neutral society.

https://kyotofusioneering.com/

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Beryllium copper products: https://www.ngk-global.com/product/becu.html