

Aus dem AKEN Aktionskreis Energie und Naturschutz 28.12.25 übermittelt von T.K.

zur Unterstützung jedweder Initiative in Richtung Kugelbettreaktor („pebble-bed“) und ggf. auch anderer Kernreaktor-Technologien der sogenannten 4. Generation finden Sie bitte beigefügt zwei Dokumente aus dem Reich der Mitte. China ist auf diesem Weg bereits einige, große Schritte vorausgeeil. Leider versucht auch die jetzige Bundesregierung nicht, aufbauend auf der noch vorhandenen Expertise in Deutschland diese Option der flächen- und ressourcensparenden, inhärent sicheren, wetterunabhängigen Energieversorgung zu nutzen.

Zitate aus den Dokumenten:

1. „High-Temperature Gas-Cooled Reactor Modern Industrial Chain Alliance established“ (Press Release CNNC vom 18.12.2025):

„On December 11, the High-Temperature Gas-Cooled Reactor (HTGR) Modern Industrial Chain Alliance, initiated by Chinergy, a subsidiary of CNNC, was established in Beijing. The alliance is committed to building a strategic community with shared goals, responsibilities, benefits, and values, marking a key milestone in the industrialization and collaborative innovation of China's fourth-generation nuclear energy technology.

[...]

The alliance brings together more than 60 core organizations across the upstream and downstream segments of the industry chain. It focuses on six critical areas: R&D and design, fuel manufacturing, equipment manufacturing, construction, installation and commissioning, operation and maintenance, and overseas markets. In parallel, it provides integrated support in standard systems and intellectual property development, digital and intelligent transformation, and the improvement of experience feedback mechanisms.

[...]

By pooling industry strengths, the alliance aims to advance HTGR technology from single-purpose power generation toward diversified applications such as heating and hydrogen production. Priority will be given to breakthroughs in areas including petrochemical coupling and nuclear-based hydrogen production, accelerating the development of a "nuclear+" zero-carbon integrated energy system. These efforts will provide HTGR-based solutions for China's carbon peaking and carbon neutrality goals, supporting green energy transition and industrial upgrading. As a fourth-generation advanced nuclear reactor, HTGR features inherent safety, multipurpose utilization of electricity, heat, and steam, and flexible multi-module configurations. China has now fully mastered the complete HTGR technology chain—from design and manufacturing to construction, commissioning, operation, and fuel cycle—along with all core intellectual property rights, achieving a transition from a follower to a global leader in this sector. Building on this foundation, the alliance will further strengthen its upstream and downstream collaboration, remove industrial barriers, establish strategic partnerships, and comprehensively enhance the integrity, safety, advancement, and resilience of the HTGR industry chain.”

2. „Loss-of-cooling tests to verify inherent safety feature in the world’s first HTR-PM nuclear power plant“ (Zhang et al. 2024, published in “Joule 8”, pages 2146-2159):

„The loss-of-cooling tests performed on the two reactors of high-temperature reactor with pebble-bed module (HTR-PM) nuclear power plant show for the first time that commercial-scale nuclear fission reactors can be cooled down naturally without emergency core cooling systems.

[...]

The world's first demonstration plant of a high-temperature reactor with a pebble-bed module (HTR-PM) entered its commercial operation on December 6, 2023. Two safety tests were conducted on the two reactor modules of the HTR-PM plant, each at a power of 200 MWt. During the tests, the active power supply was totally switched off to see if the decay

heat can be removed passively. The responses of nuclear power and temperatures within different reactor structures show that the reactors can be cooled down naturally without active intervention. The results of the tests manifest the existence of commercial-scale inherent safety for the first time.

[...]

The HTR with pebble-bed module (HTR-PM) was invented by Prof. R. Schulten in Germany. The basic physical principles and safety features of the pebble-bed reactor were intensively researched at the Research Center Juelich under the leadership of Prof. R. Schulten and Prof. K. Kugeler. The 15-Mwe pebble-bed experimental reactor AVR and the 300-MWe THTR demonstration plant were developed and operated in Germany from the 1960s to the 1980s. Dr. H. Reutler and Prof. G. Lohnert of SIEMENS/Interatom proposed the module concept. Throughout the 1980s and the 1990s, significant progress was made in the research and design of modular HTR demonstration plants, such as the 200-MWt pebble-bed reactor HTR-module in Germany by SIEMENS/Interatom and the 350-MWt prismatic reactor MHTGR in the US by General Atomics.”

3. Wikipedia (https://en.wikipedia.org/wiki/High-temperature_gas-cooled_reactor):

“A high-temperature gas-cooled reactor (HTGR) is a type of gas-cooled nuclear reactor which uses uranium fuel and graphite moderation to produce very high reactor core output temperatures.^[1] All existing HTGR reactors use helium coolant. The reactor core can be either a "prismatic block" (reminiscent of a conventional reactor core) or a "pebble-bed" core. China Huaneng Group currently operates HTR-PM, a 250 MW HTGR power plant with two pebble-bed HTGRs, in Shandong province, China. The high operating temperatures of HTGR reactors potentially enable applications such as process heat or hydrogen production via the thermochemical sulfur–iodine cycle. A proposed development of the HTGR is the Generation IV very-high-temperature reactor (VHTR) which would initially work with temperatures of 750 to 950 °C.”