

Cold test facilities for fusion magnet at ASIPP

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Cold test is crucial to mitigate the operation risks for the fusion magnet system. In order to fit the test requirements for the next generation fusion device BEST under construction at ASIPP, a series of SC magnet testing facilities are being built to perform the large-scale SC magnet research on mechanics, thermology and electromagnetics properties and evaluate the SC magnet system compatibility, reliability, stability, and magnet safety in fault state. Two cryostats with square section will be used for BEST TF coils tests, and up to 4 coils can be tested at once. One is with dimension of $\sim 25\text{m} \times 15\text{m} \times 10\text{m}$ and the other is $\sim 14\text{m} \times 8\text{m} \times 9\text{m}$. Other two cryostats with circle section will be employed for BEST CS and PF coils tests with diameter of $\sim 7\text{m}$. The current capacity for each test system will be no less than 60 kA and each coil will be tested with operation current at 4.5 K cooled by supercritical helium. All the test facilities will be ready in 2025 based on the BEST magnets manufacture and assembly schedule.

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