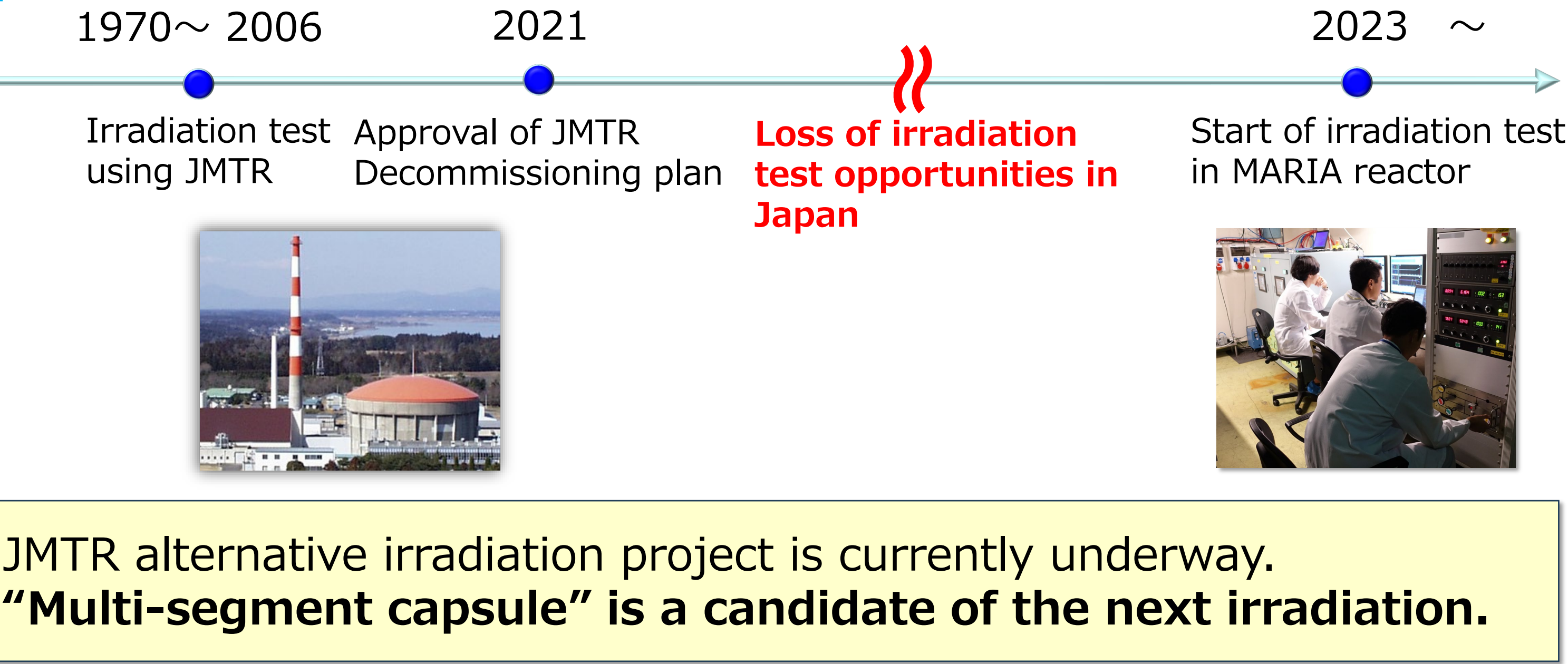


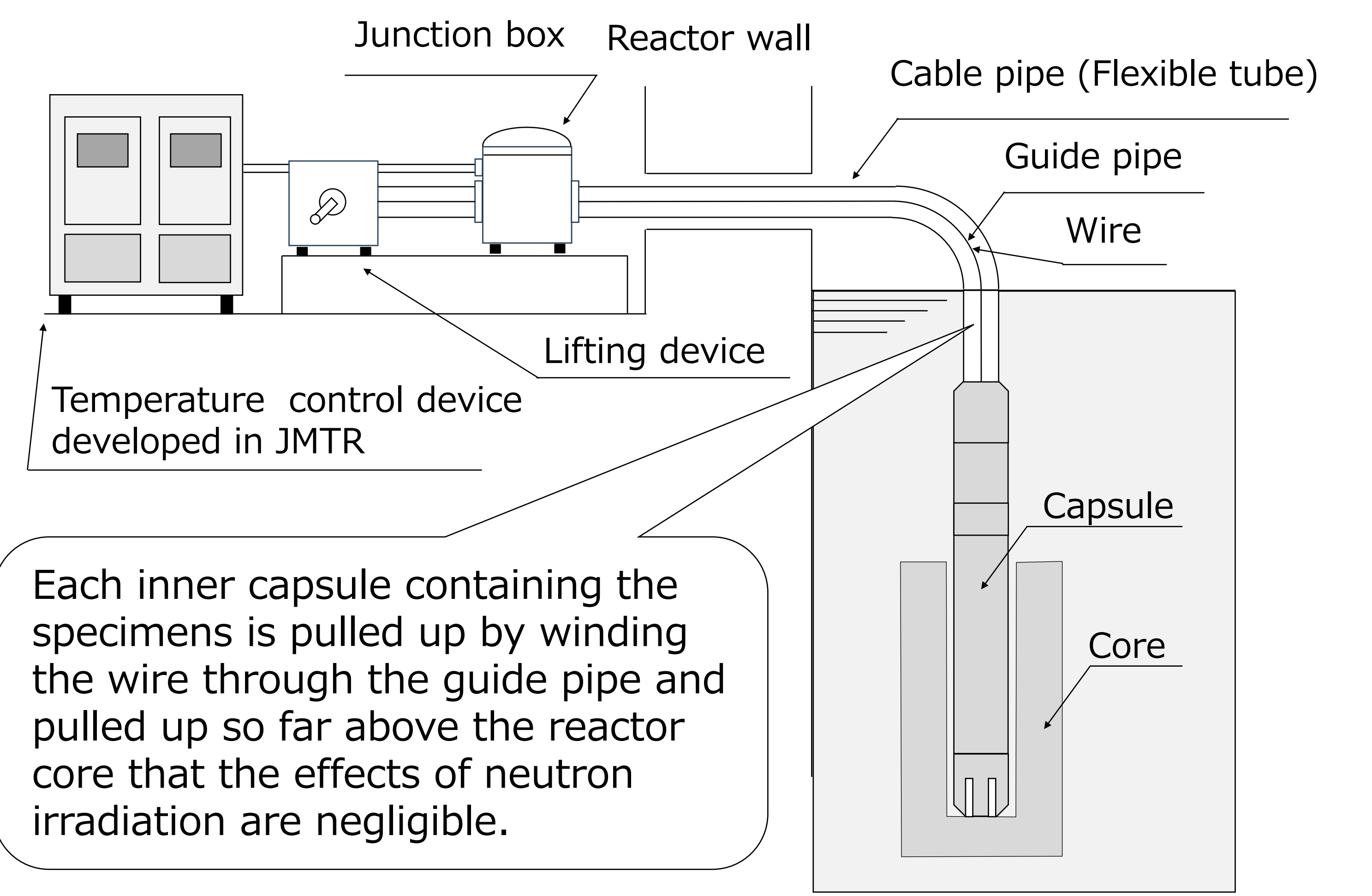
## 1. Background and motivation



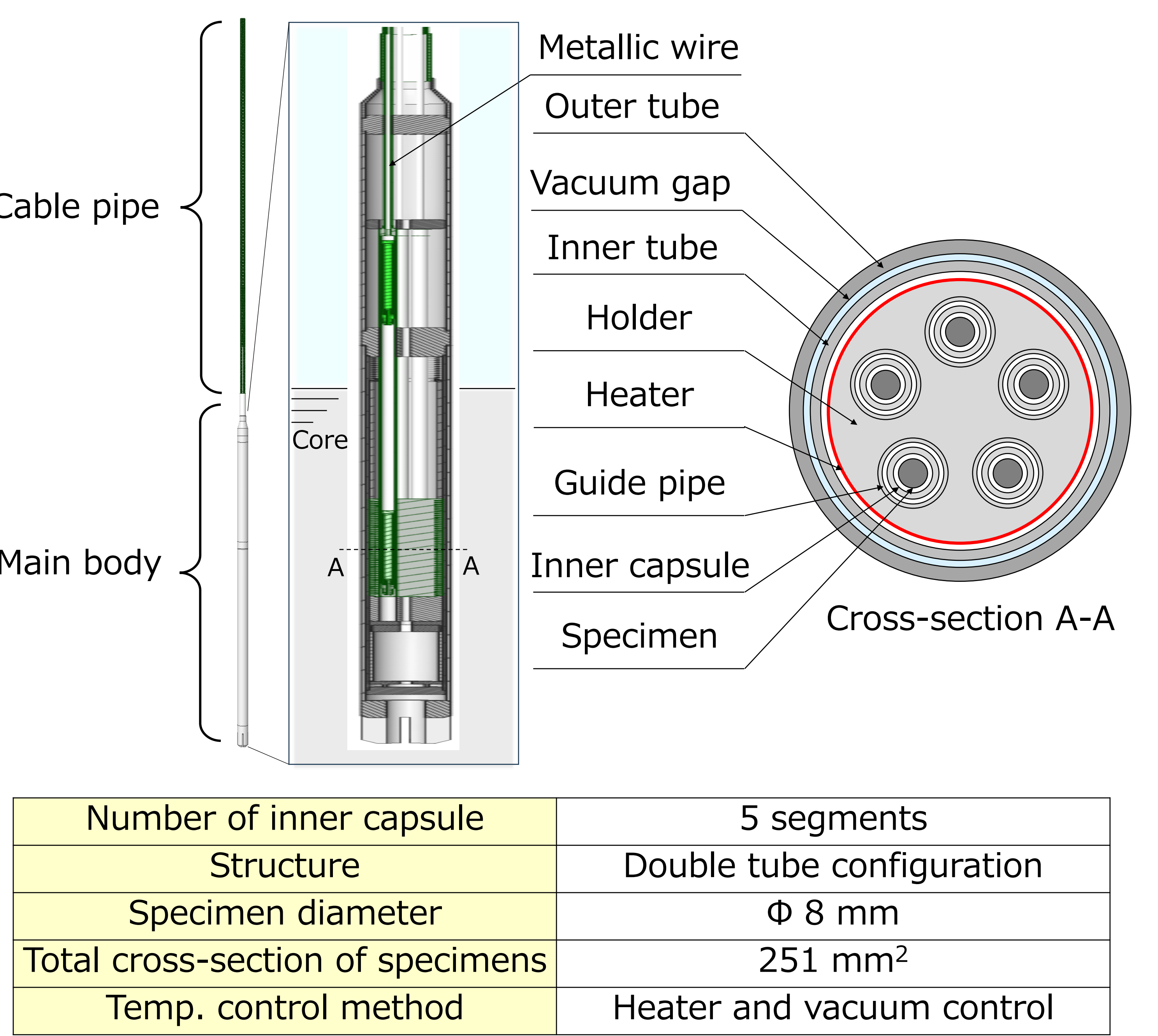
## 2. Conceptual design

### 2.1 Test system by multi-segment capsule

Reproducible testing often requires varying only a single condition while maintaining all others unchanged. **The multi-segment capsule enables the acquisition of irradiation data at multiple neutron fluence within a single irradiation with same flux, spectrum, and temperature.** A similar capsule was previously developed at JMTR and served as a reference for this conceptual design study on the premise that it conduct in MARIA reactor.

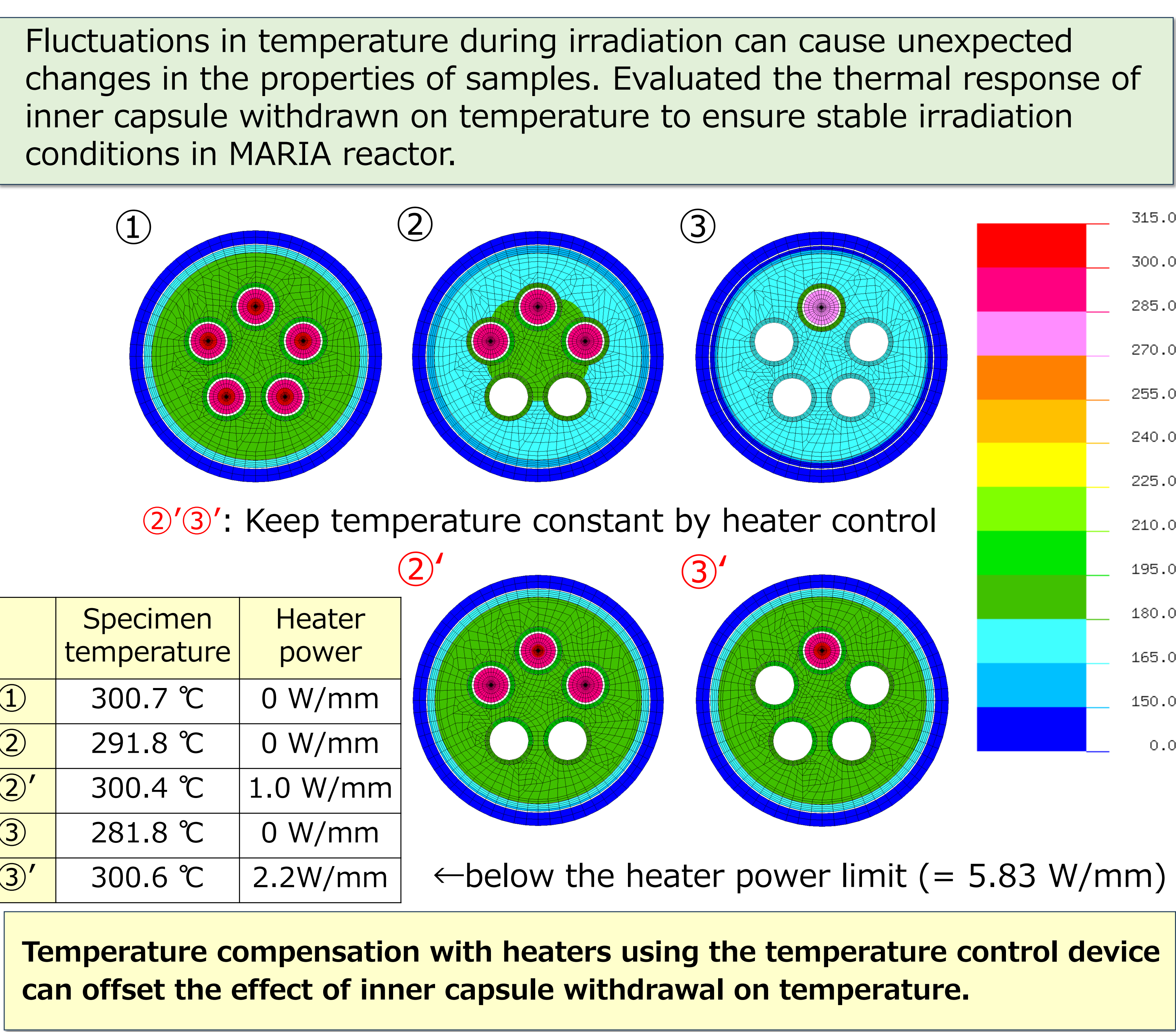


### 2.2 Structure of multi-segment capsule

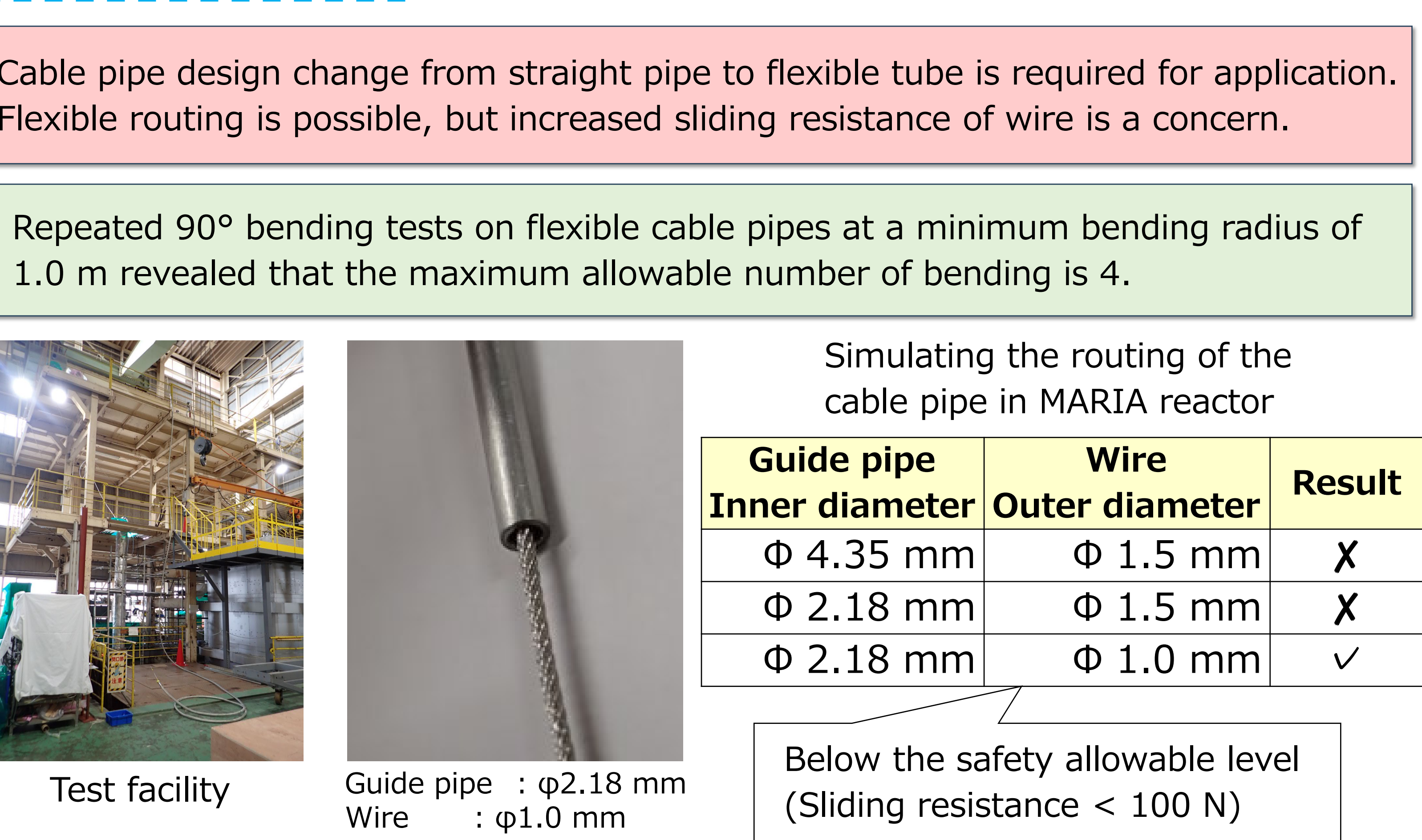


**This structure ensures to vary neutron fluences for up to five conditions in a single irradiation test.**

## 2.3. Thermal evaluation

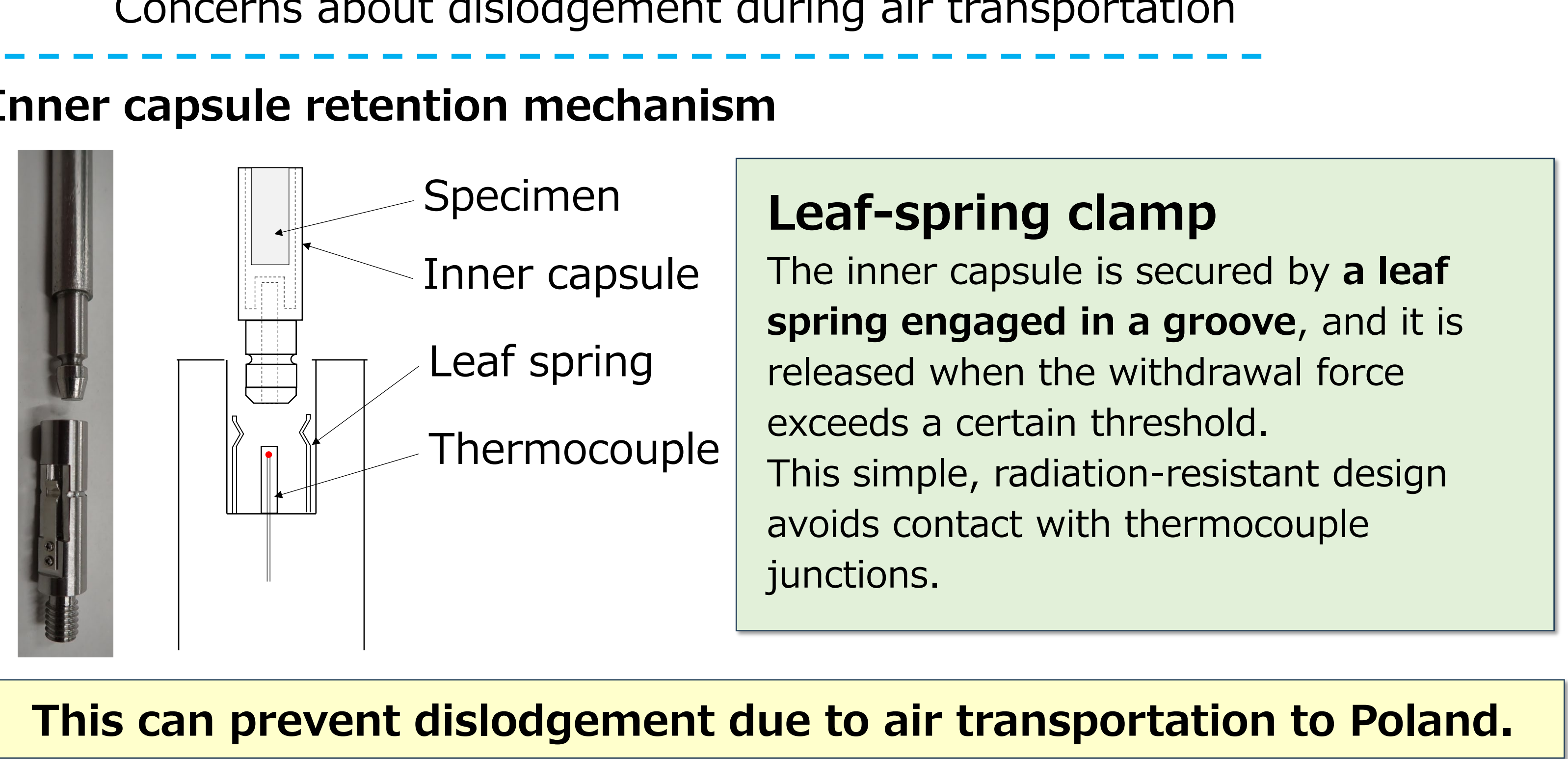


## 3. Mock-up test



**A mock-up test simulating the wire arrangement in the MARIA reactor confirmed successful withdrawal using a guide pipe with an inner diameter of 2.18 mm or less, in combination with a Φ1.0 mm wire.**

## 4. Examination of retention mechanisms



## 5. Conclusions

**The conceptual design of multi-segment capsule was completed, with mock-up tests confirming resolution of concerns about pulling-up.**