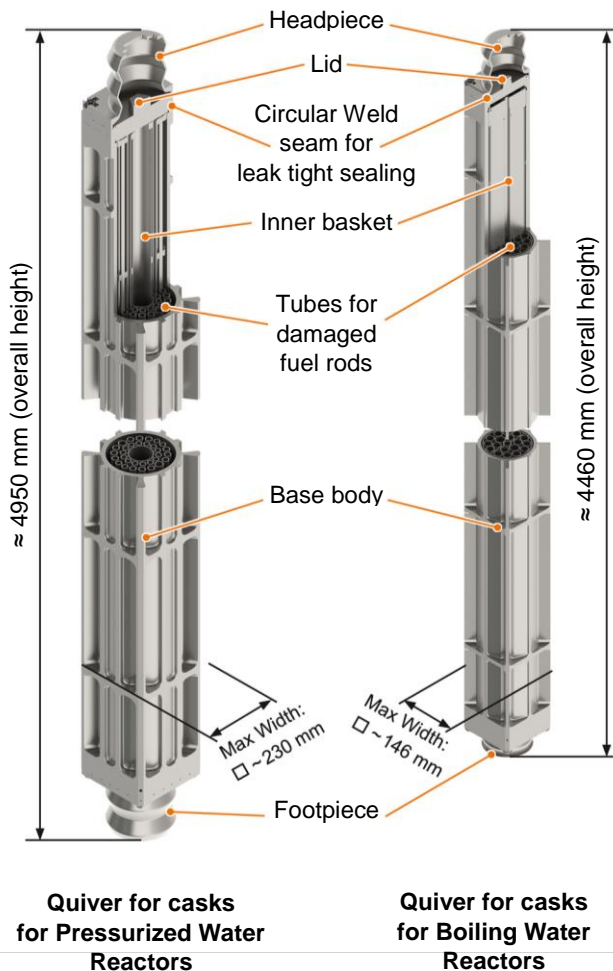


GNS IQ[®] Quiver

The Integrated Quiver System for Damaged Fuel



Dimensions for German NPPs – Quivers are customized for individual requirements.

DESCRIPTION

The GNS IQ[®] Integrated Quiver System is a versatile tool for the disposal of damaged fuel rods from both PWR- and BWR-NPPs. The Quivers can safely accommodate up to 65 fuel rods and – featuring the same dimensions as complete fuel elements – fit into the standard basket positions of the transport and storage casks for PWR-FA and for BWR-FA respectively.

The Quivers are designed like a “second cladding” to accommodate large varieties of fuel rods with defects, e.g. in terms of deformations and defect morphologies, and also leakers. Their robust design provides sufficient margins for safety requirements.

The Quiver consists of:

- a forged stainless steel base body
- an inner basket for the damaged fuel rods, customizable and available in different variants
- a forged lid, bolted and welded to the base body, to provide a leak-tight sealing
- a load attachment point at the top end of the Quiver

HANDLING AND DISPATCH

The dispatch is performed on the reactor floor, which significantly increases process stability.

The dose rate during dispatch is minimized according to the ALARA principle and comparable to the dispatch of transport and storage casks with spent fuel.

All necessary handling and dispatch tools have been manufactured. Several tools have already been tested and approved by German authorities.

LOADING CAPACITY

- Various loading positions with different dimensions (up to 65 fuel rods per Quiver), depending on the individual requirements of the customer
- Uranium or MOX fuel from PWR-NPP and / or BWR-NPP with high enrichments and high burn-ups
- Modular system, customizable to the demands of the customer

GNS IQ[®] Quiver

The Integrated Quiver System for Damaged Fuel

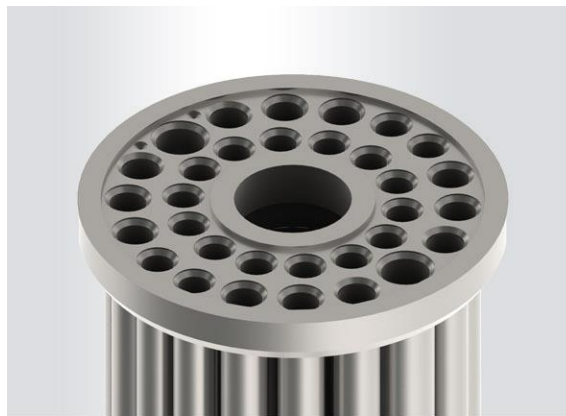


LICENSES

The GNS IQ[®] Quiver has the type B(U)F transport license “Quiver in CASTOR[®] V” for PWR-NPPs as well as for BWR- NPPs.

REFERENCES

In November 2018, the first campaign was completed with the dispatch of three PWR-Quivers in the Unterweser nuclear power plant (KKU) and the following loading of these Quivers into CASTOR[®] V/19 casks in February 2019.



Dimensions for German NPPs – Quivers are customized for individual requirements.

TECHNICAL DATA

	Type of NPP	
	PWR	BWR
▪ Overall height:	≈ 4950 mm	≈ 4460 mm
▪ Maximum width:	≈ 230 mm	≈ 146 mm
▪ Maximum weight: (loaded with fuel)	≈ 880 kg	≈ 332 kg

