



CANFLEX—A New Generation of CANDU Fuel

Atomic Energy of Canada Limited (AECL) and the Korea Atomic Energy Research Institute (KAERI) have redefined CANDU fuel bundle design with CANFLEX—CANDU FLEXible Fuelling. It is designed to further enhance fuel performance, reduce both capital and operating costs, and as a vehicle for the introduction of fuel cycle options into current and future CANDU reactors. Initially, utilities will be able to use CANFLEX with natural uranium (CANFLEX NU), and later with other CANDU fuel cycle options.

Increased Operating Margins

Designed for the CANDU pressure tube, the 43-element CANFLEX fuel bundle, has two element sizes and two principal benefits—enhanced thermalhydraulic performance and a more balanced radial power distribution, providing CANDU plant operators with greater operating flexibility through improved operating margins.

Enhanced Reactor Performance

Lower Ratings:

In existing reactors, at current power levels, the maximum linear element rating in a CANFLEX bundle is 20% lower than the 37-element bundle, improving the ability to achieve higher fuel burnup, and reducing the consequences of most design-basis accidents.

CANFLEX has undergone extensive testing and analysis throughout all stages of design and manufacture.

Higher CHF:

Studies and testing have also resulted in a unique, patented arrangement of non-contacting appendages on the bundle, which increase turbulence around the elements. These appendages enable a higher bundle power before critical heat flux (CHF) occurs, leading to a net gain in critical channel power (CCP) of up to 8% over the 37-element fuel.

Analyses to date also show that the CANFLEX NU bundle increases the safety margins with respect to channel integrity and radiological doses.

