2003 J.S. Hewitt Team Achievement Award
AECL's Hydrogen Recombiner Development Team

In the unlikely event of a serious accident in a nuclear reactor, hydrogen can be generated from reactions between water and hot components, and from water radiolysis. If not controlled, this hydrogen can threaten containment systems. Staff at AECL have developed a passive device that recombines hydrogen and oxygen in a controlled fashion: the AECL Recombiner. This device represents a novel application of catalyst technology originally developed for use in heavy-water manufacturing processes.

Bringing the device to fruition required the concerted efforts of a multidisciplinary team. Specialists were challenged to find a catalyst that would be active over the desired ranges of temperature and other environmental conditions, and to develop a portable tester to demonstrate its continued performance in-service. Experts in hydrogen behaviour (and in the associated experiments) provided guidance to the product development. Performance was demonstrated under representative conditions. Input from experts in containment engineering, project management, mechanical design, and overall management ensured that the recombiner was engineered to appropriate specifications.

The success of the AECL Recombiner has been demonstrated through its recognition as a technologically significant new product with an R&D 100 Award, and through commercial success with orders from Fortum in Finland and a partnership with Alstom to supply recombiners to Électricité de France.