

Norman R. McCombs
Senior Vice President
AirSep Corporation (Buffalo, NY)
Recipient – 2007

For the development of pressure swing adsorption technology which led to the invention of the first portable oxygen concentrator, resulting in a worldwide industry that eases the suffering and extends the life of millions, and subsequently opened the door for hundreds of thousands to airline travel.

Mr. McCombs began his career at Fedders Corporation (1956-63), where he made significant contributions to the development of central air conditioning systems. He moved to the research laboratories of Linde Division of Cabride (1963-72), progressing from research assistant to project scientist and project manager. His charter was to investigate non-cryogenic methods of air separation. This involved, among other things, ultra-thin films of plastic and metal, chemical oxygen systems, and thermal and pressure swing absorption (PSA) using synthetic zeolites; of these, PSA was the most promising. McCombs proceeded to develop the adsorbent and process technology of PSA to the point of designing, installing and start-up of the first non-cryogenic tonnage oxygen plant in the world. This resulted in new worldwide industry, making available much needed safe, cost effective, mid-to-low range on-site oxygen plants for use in such applications as wastewater treatment, metal cutting, glass forming, fish farming and hospitals, to name a few.

Perceiving a general need for small, on-site oxygen plants suitable, for example, for metal cutting in automotive shops or medical use in veterinary clinics, McCombs founded Xorbox Corporation (Tonawanda, N.Y.) to improve upon and extend the application of PSA technology. This was the beginning of another new industry to supply safe, dependable oxygen systems to a myriad of applications worldwide.

In 1990, McCombs joined AirSep Corporation (Buffalo, N.Y.) and is currently senior vice president. Continuing his innovative path, McCombs is perhaps best known for inventing the portable medical oxygen concentrator, an electrically driven appliance that delivers oxygen demand. This device eliminated the need for the use of dangerous, often inaccessible, oxygen to those experiencing a wide range of respiratory ailments, and it has eased the suffering and extended the life of literally millions worldwide.

McCombs recently invented a breakthrough, battery-operated ambulatory oxygen concentrator weighing less than 4.5 pounds. It is ideally suited to use in automobiles and on aircraft. The Federal Aviation Administration has approved its use and thus opened the door for hundreds of thousands of supplemental oxygen dependent people to airline travel.

In addition to the aforementioned benefits to mankind, McCombs has created jobs for thousands of people in western New York and around the world.

An ASME Fellow, McCombs is also a member of the Society of Automotive Engineers.

To date, McCombs has been granted 40 U.S. patents. Among his other honors are the University of Buffalo Engineering Alumni Association's Engineer of the Year Award (2007), a Distinguished Alumni Award (2006) from Erie Community College, a Lifetime Achievement Award from the Intellectual Property Law Association (2005) and nomination to the National Inventors Hall of Fame (2004).

McCombs earned his associate's degree in electrical engineering at Erie Community College (Orchard Park, N.Y.) in 1958 and his bachelor's degree in mechanical engineering at the University of Buffalo, N.Y., in 1968.