

CTC Engineers File Patent Application for Composite Electrode for Flow Battery

Composite Electrode has the Potential to Increase Efficiency of Flow Battery

[Concurrent Technologies Corporation \(CTC\)](#) has filed a patent application with the [United States Patent and Trademark Office \(USPTO\)](#) for a composite electrode for a flow battery. CTC engineers discovered how the efficiency and cost of a redox flow battery (RFB) can be significantly affected by the electrode selected for scale-up.

The patent applicants are Paul Brezovec, Principal Process Engineer and Engineering Research Fellow; Tim Kennedy, Principal Mechanical Engineer; Dan Markiewicz, Senior Principal Electrical Engineer; and Michel McCluskey, Principal Design Engineer.



The patent applicants were recognized by CTC leadership for their application. From left: Dan Markiewicz; Tim Kennedy; Dr. Vicki A. Barbur, Senior Vice President & Chief Technical Officer; Paul Brezovec; and Ed Sheehan, Jr., President & Chief Executive Officer. Absent from photo: Michel McCluskey.

Traditionally, carbon felt has been used as the electrode in flow batteries; however, there is a tradeoff between achieving good electrical properties and good flow properties. Electrical properties are increased as the felt is compressed against the bipolar plate, but this increases the pressure drop and results in increased pumping pressure and power. CTC's invention focused on the results derived from testing various prototype alternatives to the homogeneous carbon felt, which identified novel configurations of foam and felt composite that were useful to lower pressure drop through the cell.

Testing by the inventors showed that the composite electrode has advantages over the felt and confirmed that the composite electrode has the potential of increasing the efficiency of the flow battery.