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General Information on Testing:

Is stack testing (rather than single-cell testing) a faster way to get statistical data about my MEA?

No. When evaluating a Membrane Electrode Assembly (MEA), the questions of interest are, for a given set of operating conditions:

- What are the mass transport characteristics?
- What is the activity of the catalyst?
- How good is the catalyst-membrane interface?
- How well does the membrane conduct ions?

A stack, by nature, is not a well-controlled environment. Gases are typically fed from a parallel manifold and extreme temperature gradients may exist on a cell to cell basis. The goal of stack testing is to evaluate how uniform your operating conditions are by measuring how similarly each cell performs.

In MEA testing, we want to know the exact operating conditions to learn how that particular MEA performs under the different operating conditions. So, a well-controlled, single cell test environment will save you time, in the long run, because you will be focusing on how the cell performs under known conditions.

What is BekkTech's favorite diagnostic for MEAs?

Cyclic Voltammetry (CV) on a full Membrane Electrode Assembly (MEA). With hydrogen on the counter electrode and nitrogen on the working electrode, this diagnostic can tell you:

- how much hydrogen crossover you have
- how much electrical shorting is occurring
- and, give an idea of the membrane's conductivity.

If platinum is the catalyst, there is a wealth of information regarding single crystal platinum that can be applied to understand the data collected. Active surface areas can be calculated, oxidation states can be deduced, and much more.