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EDITORIAL

Science or Engineering

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It is always an interesting question. Ask a "metallurgist" whether or not they are a scientist or an engineer. The answer, in my informal study, breaks reasonably along the lines of whether or not the respondent is licensed, and because of that is a roughly 50/50 split. It depends less on the undergraduate education (Materials Science vs. Materials Engineering) than it would seem to depend on other factors, many of which have to do with the context of when the question is being asked.

The relevance to failure analysis is paramount. Perhaps like no other sub-discipline, failure analysts are forced to operate with incomplete and imperfect information when conducting most investigations. This information gap is made up by applying relevant scientific knowledge and engineering analysis to the problem at hand, with the hopes of letting the physical evidence speak through the most accurate context it can so that we can answer particular questions of significance to that investigation. Though processes in any particular case may differ, it is often not very difficult to see the long-known scientific method at work in our failure analysis processes. Clearly, at least this is something even the engineering respondents in my survey will happily admit they learned as fledgling scientists or at least in science class.

So why does it matter? Aren't we all just scientists applying our trade in the engineering world? The difference, in my opinion, comes when approaching the data we have available as *purely* a scientist. Unfortunately, there are almost never perfect scientific answers. There is often some level of scientific unknown. Call it the last 1% (or 0.1%), but that final amount of scientific certainty can quickly derail engineering matters. The engineering approach allows for considerably more practicality and tolerances, for lack of a better description, when approaching our work. As engineers, we must embrace the inherent scatter and variance in data that we use all the time. These variances can be confounding and wholly unsatisfying to failure investigations approached from a strictly scientific perspective.

Even though we live in a world today where the application of scientific investigative tools abound, I am emphatic in saying that I am an engineer, and I approach problems like an engineer. I would encourage you to take a moment and thinks about this perspective during the course of your next failure investigations. Take stock of how you view the importance of variance in available data, test outcomes or other observations. From an engineering perspective, these things should be embraced, not fretted upon to the point of totally sidetracking your investigative process—even if that process looks a whole lot like the scientific method!

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