



Senior Manager Laboratory and
Diagnostic Services at SDMyers

Interview with **Jason Dennison**

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Jason Dennison



Alan Ross, our Editor in Chief spoke with Jason Dennison, Senior Manager of the SDMyers Laboratory and Diagnostic Services in Tallmadge, Ohio, where he oversees the largest transformer fluids testing lab in North America.

Transformer Technology: Jason, when you graduated from college with a degree in Chemical Engineering, did you ever think you would be doing what you are doing now?

Jason Dennison: I really never focused on the electrical world, even in the slightest, so coming out with that degree I wasn't really sure where I was going to end up, but the Chemical Engineering degree can open a lot of doors. I started in the rubber industry and got some exposure and training there as well as Project Management with several companies. It all has culminated into this role with SDMyers and this phenomenal lab environment that we have. It's an interesting blend of chemical engineering and industry knowledge and even the software and systems that underly everything. While it wasn't my career plan, it's been really interesting to see. The depth of my exposure to the electrical world was that I'd walk into a room and I'd flip the light switch on, and the lights came on.

TT The same is true for me with a background in Mechanical Engineering. What were some of your early challenges?

JD To come here and have an opportunity to try to understand what a transformer does, how is it built, how it works and what are the other assets in the substation that are around it; all of that was the biggest challenge. How does that all manifest itself? And how does that all work so that the lights do come on when you flip on the switch?

I had to marry that with learning about how to know whether a transformer is reliable or not. Additionally, we have this lab and this

diagnostics group who do all of this testing and then they would put together recommendations to present to customers in a way that they can make sense of it and take some action. I think those were my biggest challenges early on.

Through that whole process, you realize this is a really interesting industry. It's a very interesting engineering kind of problem to solve. How do we do this all well? It has proven to be very, very interesting and very satisfying. We talk with people who are very passionate and who care about transformers because that is what they do, but it is just one thing on a long list of things that they have to take care of.

TT So many professionals see those transformers behind a fence and see that they have been functioning that way for 50 years, so why should I care about it now?

JD It's something I never really thought about actively, but now it's just very satisfying and just a great industry with a lot of great folks in this industry who care.

TT You mentioned something about this incredible lab. I am familiar with SDMyers lab. What is it that makes it so unique?

JD Most labs are going to tell you a few of the same kinds of things: We follow applicable standards.



We do all this to get high quality analysis and results out. While I don't say that to minimize it but that is a bare minimum competency, I think. Some things do make the SDMyers lab unique and the first that comes to mind are the people. We have a group of people who have created this culture that they are very passionate about doing lab testing and they are very passionate about doing things the right way. That is one of the things that was so interesting for me to step into this area of the business.

As we look to continuously improve ourselves. It's very satisfying to be able to talk to people and say, "Here is what we'd like to do. Here's is a goal we'd like to accomplish," and then just watch them be active in that process because they care. They have also been a big help to me personally. There is so much knowledge in this team that makes it very satisfying.

TT Jason, I think I know the difference between diagnostics and analytics and then sometimes I think, isn't it just one thing? Tell me the difference between lab diagnostics and analytics.

JD The analysis is creating the test data itself. The diagnostics are looking at that data and saying this data suggests something about the condition or the health of an asset. When we look at that diagnostic process, let's say for example we want to run a Karl Fischer test for moisture content in a liquid. You could read the method, learn how to do it since it's a fairly simple test and you can easily say "there are 15 parts per million of water in this liquid" and call it a day. That's an analysis. You've got to do it right. There's some nuance to it, but you can do that pretty easily. What is difficult and what is complex is to describe how moisture behaves inside a transformer.

Since the solid installation is cellulose, therefore polar, and the water molecules are also polar, they like to be in the cellulose instead of in the oil. Asking "where is the water?" which is dependent on time and dependent on temperature is the question. At the end of the day, what does that mean with respect to the reliability of the transformer? So the analysis portion in some ways is a little bit easier because there are published methods you use, you can buy the instrument, you can run the test, but that wisdom, that knowledge of what does it mean, I think, is the differentiator.

I had to marry the learning about transformers with learning about how to know whether a transformer is reliable or not. And then once you've done the testing, how do you put together recommendations to present to customers in a way that they can make sense of it and take some action? Those were my biggest challenges early on.



TT I know that you were instrumental in working with On Now Digital, developing a dashboard that SDMyers uses to take all of this data and now you're working with a whole different world. You are not in a lab environment anymore, you are in a completely different world working with a group of software developers, right. Talk about that experience of sharing the diagnostics through software development and come out with something that I can actually use as an owner of a transformer.

JD Developing the Dashboard was a pretty wild experience for me. That was early in my time at SDMyers and the genesis of it learning about transformers, learning about the lab, learning about diagnostics and, critically, learning about the systems underneath that are all serving the purpose of "How do we present a result?" was tremendous for me. What we do has a lot of complexity to it because when you look at a batch of results and you say, "This transformer can be tested again in 12 months," or, is there something imminent, something urgent that we believe you should look at based on the analysis? So how we get that information to somebody who needs it, for decision making, is what the Dashboard is all about.

We have to give it to them in a way that allows them to separate the wheat from the chaff so that they know "this is where I have to spend my time." Because for everybody, time is at a premium. Thinking back to that, it was very interesting because it was a very big learning experience for me.

And in software, sometimes it's difficult, because you want to do everything. The answer in software development is almost always yes. It is all dependent on how much time and money do you have, right? What I think was big for us though is we had a purpose that we still have today and that we want to take things that are pretty complicated and make them simple. How we do that was a good vision that we kept throughout that whole project. It was a very gratifying experience because the feedback that we got after going through that whole process was just tremendously positive.

TT People want to know that what they do matters. When the person who runs the Karl Fischer realizes that somebody is looking at that data, making a decision, keeping a plant running, keeping a city running, and keeping the lights on; that has to be pretty gratifying. That's a unique skill set for you to have both the software and lab connection.

I want to switch gears a little bit now. There is a whole world that is changing in terms of the fluids that you are testing. Talk to me about what you've seen with this, with the whole synthetic and natural esters world; what challenges does that give you as a lab to be able to process them?

JD We have historically seen mineral oils and their variants as the primary liquid that we test. They are a big part of the testing that we do. They are well known diagnostically and so we know they are a good dielectric liquid. We also see some silicones and those are usually special applications where you require the high flammability (performance). We see them in indoor transformers where mineral oils will have a flashpoint in the neighborhood of 140°C; silicones have a flashpoint over 300°C. Silicone is also more expensive.

We do see the growth of esters as a general category and as you've mentioned, on a year over year basis. We see both natural and synthetic esters. There are some subtle differences between them.

We've developed a Dashboard to help us take all of the data and present it in the right way to those who need it for decision making.



TT Give me a general rate of growth, is it growing 10% a year or 1%?

JD Over the last 10 years or so it has been 2-3% a year. So, what we see is a little bit less in mineral oil and a little bit less silicone. There is a trade-off, but the esters as a general statement, without getting into the particulars, have very excellent flammability and they have the other benefit that they are made from “green” materials and that they are more environmentally friendly.

It's a lot like a vegetable oil in some ways. And I think the other thing is they generally will have a better viscosity at high temperature, which makes them better at cooling. So, I think over time, especially in those kinds of specialized applications, we do see esters growing.

TT Again, switching gears for a bit, tell me about the effort it took to get ISO certified. Every test has to be ISO certified, correct? Talk a little bit about the challenges of bringing that about in your lab.

JD Yes, the ISO effort for us has been exciting, which is a word I would never have thought I would use.

TT It's not a word that I thought you would use either. Exciting! I thought you were going to say it has been a major chore.

JD It was that too. For us it's fundamentally a continuous improvement effort. We don't have people beating down our doors saying, “you shall be compliant”. It is that we are looking at ourselves and sit across the table from people and say, “how are we going to do this better?” How do we make ourselves better all for the purpose of making sure that we can safely and accurately do what we do? It has been a challenge for sure. With over 50 years of experience, this is the fun part of our culture. Sometimes it also meant that we had 50 years of baggage as we try to navigate how do we do the right thing and how do we do things better. ISO 17025 is the standard for labs, and I am proud of my team and of those who came along side and helped that happen. I think it brought all of us together even more.

Since we have gone through that it can be looked at in two parts. One is the overall quality management system, which asks, “do we have all the processes in the business process to do a good job?” The second part is, you mentioned is that each test area gets its own basic qualification and certification for ISO. And so that has been a big initiative for us that I think has been really successful as it's just continued to improve the quality of the work that we do.

It is exhaustive because we go through our own internal quarterly audits and we go through annual audits with a third-party certification. They are basically making sure we do what we say we do, that we are meeting our commitments. That is one way we look internally in the lab and allow iron to sharpen iron. It aligns with this idea of reliability that we talk so much about externally, with customers. There is this element of reliability that requires doing the right things repeatably, so it has been a very large effort. Most critically, it has been supported from the very top of the organization and for an initiative this large, I think that's crucial. It has been very well supported and very well received. I think it's done nothing but improve what we do.

TT I know too that an effort like that helps create even more passion in the people that are part of making it happen.

Jason, I know you are a man of many talents and that you have had a great deal of other transformer related experiences we haven't talked about here. Thank you for sharing your lab experience with our readers.



Today our lab is ISO certified. ISO 17025 is the standard for labs, and I am proud of my team and of those who came along side and helped that happen.