

Painting the Lab of the Future: How Data and AI Are Transforming Coatings R&D

In this Coatings World Q&A, Kerry Pianoforte interviews Ken Kisner, Co-Founder of Albert Invent, about the exciting changes in store for R&D teams in the Coatings industry as digital, data, and artificial intelligence (AI) march their way into the labs.

Kerry Pianoforte, *Editor*

Q: *You started in Coatings and then founded a data-driven Materials Science company. How did that happen?*

Ken Kisner: My dad owned a regional paint factory, so I grew up on the floor of a paint company doing all kinds of jobs from payroll in the fourth grade to labeling paint cans when I was 15. I got to see every aspect of a Coatings business. After college, I caught the entrepreneurial bug and parlayed my pigment knowledge into starting several businesses, including industrial inkjet and 3D printing businesses, which both grew quickly and were sold.



Ken Kisner, 30+ years industry experience

As I continued in the roles of President and CTO, I paid much attention to R&D and noticed there were certain elements of lab life that were outright painful, and they didn't have to be. Tools and processes were incredibly outdated, slowing the entire innovation cycle down. Skilled scientists were so bogged down dealing with data scattered across siloed systems that their time to actually innovate was limited. Nick Talken (Albert's Co-Founder and CTO) and I often called it the "sneaker-net" because of all the walking a scientist would have to do to carry flash drives from device to device.

We knew we weren't alone in our frustration and there must be a better way for Chemistry and Materials Science companies to harness data in their innovation. Without anything on the market that could address the unique needs of R&D in this industry, we decided to build the R&D data platform ourselves, which is how Albert started. This was over six years ago, before the big push into AI—which has only heightened demand. Today, we have thousands of scientists around the world who are innovating better and faster because of Albert.

Q: *Speaking of AI, how do you see that shaping the Coatings industry?*

Kisner: AI and machine learning (ML) are changing the game across all businesses, but the impact on R&D within this industry will be huge. Not only can they analyze vast amounts of data and identify patterns among seemingly unrelated variables, but they can also propose innovative solutions to complex problems—well beyond what the human brain is capable of.

AI and ML are best when you don't realize they're there, and that's how they will show up for R&D employees. They'll become the quiet but industrious lab companion of the innovator, the always helpful safety assistant for the technician, and the insightful guide for the manager. If Coatings companies play their cards right and establish a digital twin of their lab and a foundation of clean and structured R&D data now, they will be ahead of the game in leveraging and growing the value of AI- and ML-powered predictive engines, which only get better as data sets grow. For example, AI and ML could tell you the specific experiments you should complete to develop a best-in-class formula, predict how concentrations of each chemical will impact target properties, and determine the impact of different raw materials on sustainability and safety. This means fewer batches and tests. It also means chemists will become more and more synonymous with data scientists, spending equal time in the lab and analyzing and leveraging data.

Q: *What is the bottom-line impact of digitizing the end-to-end Coatings R&D process?*

Kisner: Customers can see a huge impact. One of our customers is saving more than \$90 million—or roughly 20%—a year by moving to an end-to-end R&D platform. They're doing this through a mix of productivity, better resource allocation, improved collaboration, direct cost savings, as well as improved sales and revenue with a faster speed-to-market and more competitive offering.

While that's impressive, what's most important is that they have the power to invent faster. These are companies that are inventing products that change our lives—from essentials like coatings, cleaning products, and adhesives - to future-facing innovations for solar panels and batteries. In today's rapidly changing consumer environment, improving speed-to-market is critical to staying competitive.

Q: *What is the process to get us there?*

Kisner: It's a journey, especially for this industry, which has been slower to embrace digital. Today, most R&D organizations are bogged down by the same scenarios I described earlier—disconnected and outdated systems. The temptation is to go digital in a patchwork approach, implementing electronic lab notebooks (ELNs), lab information management systems (LIMS), and other software piece by piece. While you may gain benefits from each, you will pay the price down the road when trying to take

advantage of all that AI and ML has to offer. To reap the transformative benefits of AI, you need to connect all your R&D data from end to end. For example, let's say a scientist needs to replace a raw material to make a product more sustainable. In a patchwork approach, it would take weeks to collect inventory, formula, property measurement, and pricing data across your lab systems and resources. But if you had an end-to-end approach, alternatives could be identified with the click of a button.

So, the place to begin is to find a platform that can support your entire R&D landscape. Then, you'll want to do some housekeeping on your data to make sure it's clean and structured—meaning it's carefully organized, formatted, and processed in a way to ensure accuracy, consistency, and relevance. Once you have the data foundation, then you can layer productivity and automation tools, like AI and ML. But it must all start with that all-important end-to-end data ecosystem.

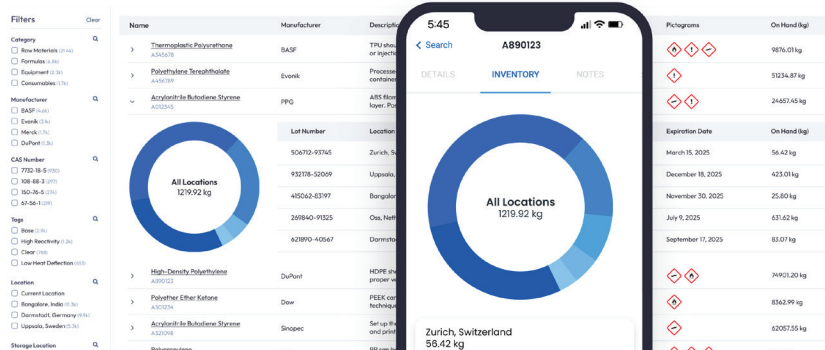
Q: Can you describe the ways an end-to-end R&D platform could change how Coatings R&D employees work?

Kisner: Absolutely. There are many.

Today, searching for the right materials to use in an experiment often involves many time-consuming hunts for information. Albert allows innovators to quickly search a pre-loaded chemical library with up-to-date hazard information, as well as 50,000 commercial raw materials, empowering them to find the right material faster and know if the material will meet regulatory requirements from the beginning. And if a material is out of stock, Albert provides recommendations on alternatives with similar properties.

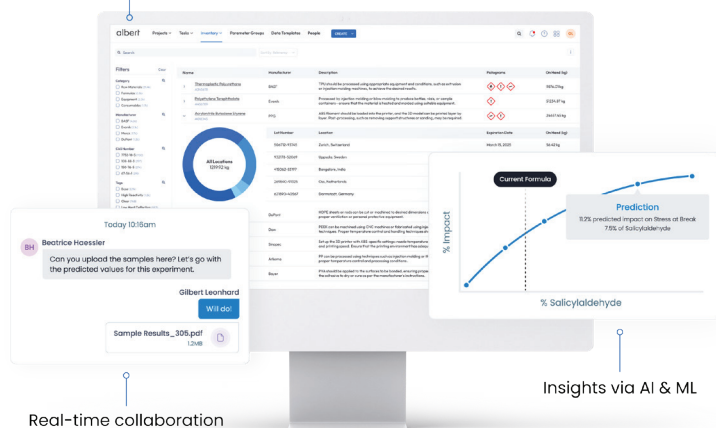
Another big one is during experimental design, which traditionally involves a lot of educated guesswork based on chemist knowhow. Albert empowers scientists to easily draw from past and current experiments, so they can design experiments that are more likely to produce actionable insights faster.

Albert also allows scientists to have visibility into all the work in the lab and assign every step of the experimentation process to the “just right” person or location. This enables better usage of resources, makes



Removing barriers of disconnected and silo systems, the Albert end-to-end platform manages inventory, formulations, experiments, regulatory compliance and more.

End-to-end R&D platform



The Albert platform enables digital transformation throughout the entire R&D process.

it easier for colleagues to take over when someone is out sick or leaves the company, and empowers scientists to allocate experiments to colleagues collocated with the appropriate instruments so they are no longer limited to the equipment in their location.

There are many more examples, but I would be remiss without mentioning that Albert can produce Safety Data Sheets and inventory labels within seconds, shaving weeks off the time it takes to ship GHS compliant samples to customers.

Q: There are many technology companies out there. What questions should companies ask potential partners?

Kisner: There are three main questions.

1. Is your solution secure and fully integrated from end to end, even beyond the lab? As we discussed, end-to-end integration is crucial. Additionally, security is paramount for storing precious IP data.

2. What experience do you have with

R&D data? The data generated by R&D is very different from other parts of the enterprise due to the massive volume, sparsity, and pace of ever-changing discrete data. Your partner should know how to handle that.

3. What experience do you have in change management? Without adoption, the system will mean nothing.

Q: Why Albert?

Kisner: While the power and intelligence of our end-to-end R&D platform is impressive enough, Coatings companies can feel confident in Albert as a partner because we understand their struggles. We all have firsthand knowledge about R&D in this industry, making us uniquely capable of addressing the bottlenecks hiding in R&D's systems and liberating data and insights in a way that will empower companies to invent faster and better. Learn more by visiting: www.AlbertInvent.com. **CW**