Henkel

How Henkel's Automated Lab Helps Multiply Productivity and Unlock Innovation for Every Chemist

Henkel

Case Study | Albert

The Quantifiable Impact of Automation

When Henkel’s Inspiration Center Düsseldorf (ICD) opened in 2021, it launched with an ambitious goal for the future: establish an end-to-end digital collaboration platform and transform routine sample testing into a centralized, automated, data-driven process. The numbers today speak volumes about just how successful that vision has been.

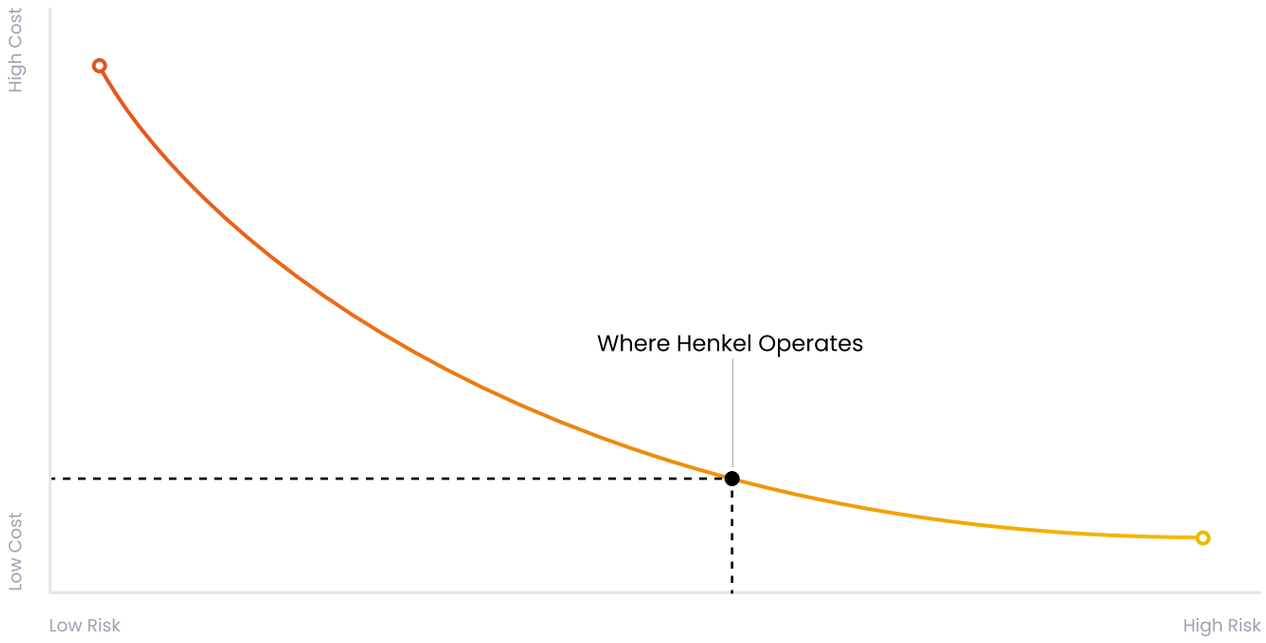
During the first three years, Henkel's automated testing lab has multiplied the annual throughput by a factor of 6. On a typical day, the lab processes 200+ samples with an average turnaround time of 5–6 hours—compared to the 3+ week timelines scientists were previously accustomed to.

The lab also doesn’t stop overnight or over the weekends; scientists submit their samples via Albert and return the next morning with the results at their disposal. This expansion isn’t just about speed. The lab has significantly improved:

- **Standardization** across test methods and equipment
- **Data quality and reliability**, including image and video capture of failure surfaces
- **Scientist satisfaction**, with a Net Promoter Score of 64
- **Experimental scale and speed**, allowing individual scientists to test 50+ new formulations each week

The Result

The result is more than operational efficiency—it's creative freedom. Scientists now explore broader design spaces, pursue "crazy formulations," and iterate faster on formulations with real commercial potential. This fundamentally shifts the cost vs. risk profile of innovation:



High Cost of Innovation

Drives companies to increase processes to reduce risk in order to have certainty in success. Increasing process drives up the cost of innovation. The outcome is low risk innovating and competing with all other large and small companies in the space.

Low Cost of Innovation

Allows companies to take more risk. Innovators given more freedom to solve issues. Company willing to take projects that have higher potential reward, even with increased risk.

It unlocks a broader exploration of ideas, including those with lower initial confidence but higher potential upside. Henkel's scientists can explore unconventional formulations, pursue multiple hypotheses in parallel, and follow hunches they might have previously dismissed—knowing they can test, learn, and iterate in a matter of hours, not weeks.

"With automation, I can work more efficiently—freeing me to explore new directions and unexpected formulations."

Karen Midori, Product Development Technologist
Henkel Thermal Adhesives

How Henkel used Albert to Build a Scalable Innovation Engine

Henkel's Adhesive Technologies business unit is no stranger to ambition. In 2021, the division brought digital transformation to its more than 2,800 scientists with Albert Invent, ultimately cleaning and structuring millions of data points within Albert's platform. With Albert in place as the structured, digital source for their experimental data, Henkel recognized the opportunity to further extend their scientists' innovation capabilities by centralizing and automating sample testing.

The automated lab launched with just two machines and a handful of internal customers. Lab personnel manually typed in test parameters, retrieved results by USB, and fielded questions via Teams messages. Turnaround time was unpredictable, and standardization across 50+ incoming labs was difficult. Each team brought their own processes, expectations, and definitions of "the usual."

“Every lab had its own test method, its own quirks. If two teams had problems—say, one with sample prep and one with instrument calibration—they might not catch it unless they happened to talk. By centralizing these procedures, we remove that risk.”

Martin Altrock, Automation Lead
Henkel

The core idea was to create one shared laboratory where routine mechanical tests—especially lap shear and tensile—would follow a standard approach, run on calibrated equipment, and rapidly return reproducible results. That vision required both culture change and automation.

A key moment came when internal engineers began building connections between Henkel’s automated machines and Albert, the company’s data platform. Soon, test parameters were entered once, within an Albert Task, and automatically routed to the machines; results flowed back to scientists automatically with AlbertSync in structured, context-rich formats—including measurement graphs, summary PDFs, photos of failure surfaces, and direct uploads into data templates.

This seemingly small shift triggered a cascade of process improvements:

> Sample handoffs moved from ad-hoc conversation to structured barcode tracking, where each set of samples has a unique ID and barcode that correspond to the test parameters and results.

> Lab technicians reclaimed hours per day previously lost to manual file management

> Engineers gained end-to-end visibility into sample handling and test performance

What emerged wasn’t just a faster lab—it was a reliable, invisible extension of every R&D team’s workflow.

Empowering Scientists to Explore and Innovate

For Henkel's scientists, the biggest shift has been not in the tools they use, but in the scale of experimentation they can individually pursue. In the past, developing new formulations under tight development timelines required hard trade-offs: which variables to test, which hypotheses to prioritize, how many repeats were feasible.

Now, scientists can innovate without compromising. Technicians like Karen Midori, working in thermal adhesives, routinely submit 50 formulations a week, and receive results fast enough to incorporate learnings into the next design cycle within the same week.

> "We can test more materials, get more results, and explore more areas. That's what's most exciting—the speed to insight."

Karen Midori, Product Development Technologist
Henkel Thermal Adhesives

Automation has also revealed outcomes that previously would have gone undiscovered. Karen cited several examples of formulations with unexpected ratios of raw materials that delivered outstanding performance—precisely the sorts of combinations she wouldn't have been able to test without the time and throughput unlocked by the automated lab.

These gains have also freed up scientific capacity. Instead of focusing on executing routine tests, chemists can now concentrate on experimental design, formulation logic, and interpretation—the core work of innovation.

“We’re not replacing scientists. We’re letting them focus on what they do best—coming up with creative new hypotheses based on their historical data,” said Robin Walter, Automation Engineer at Henkel.

And critically, trust in the lab is now widespread and users have observed an improvement in data quality. Robin described a few examples of issues that automation can reduce, such as the way a dog bone can heat up when held manually or how a manually loaded sample can be slightly crooked.

Automation has also enabled new opportunities for advanced image analysis, such as to determine the precise overlap area for more accurate stress calculations. Image analysis can also be used to identify where the adhesive is located after break and better understand the failure mechanism.

Early skeptics, many of whom had run their own testing for decades, became champions once they experienced the new system’s accuracy, consistency, and speed firsthand. The internal adoption curve followed a classic path: slow start, followed by exponential growth.

Looking Ahead: Expanding Scale and Integrating AI

Henkel's automated lab is no longer an experiment, it's infrastructure. The centralized model has demonstrated not just operational efficiency but scientific leverage: it enables Henkel to pursue more ideas, more rigorously, with less friction.

As demand continues to grow, the lab is now scaling up its hardware capacity, extending hours of operation, and exploring broader test types like peel and compression. Regional automated labs are also being set up to further expand automated testing. Meanwhile, Henkel scientists are beginning to combine automation with AI-powered formulation design through Albert Breakthrough, further compounding their innovation throughput.

"The combination of automation and AI is what really excites me. I just started working with the Albert Breakthrough team and I have high expectations. I'll be able to run a first round of tests, let the AI learn from the results, and have it suggest what to test next. It's like having a teammate that's constantly analyzing the data to guide us toward better outcomes, faster."

Karen Midori, Product Development Technologist
Henkel Thermal Adhesives

As tools and workflows continue to evolve, the goal remains unchanged: to deliver superior solutions to Henkel's customers through faster, smarter innovation.

Curious what this would look like in your lab? See Albert in action.