

CAC and Kodak Graphics Communications Group

Engineering breakthrough: a research collaboration pays off for Kodak.

How do 10,000 print toner particles behave at the microscale level and at nearly nanoscale resolution?

Finding the Answer

Kodak researchers turned to CAC to reduce printer product simulations from weeks to hours.

Engineering breakthrough: A research collaboration pays off.

Kodak Graphic Communications recognized that working with CAC could speed-up their development of parallel codes and improve research insights.

Improved Research

Research Metrics

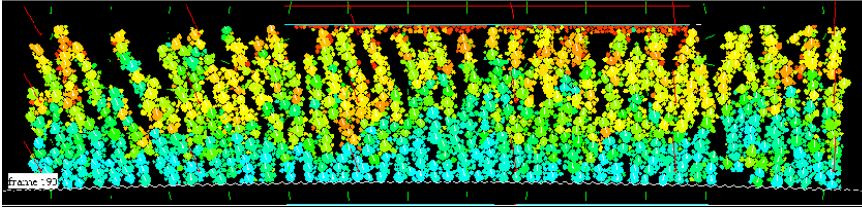
- Speed: Tune parallel code for optimal speed and efficiency.
- Quality of insight: Produce higher resolution simulations.
- Cost: Reduce costs by leveraging large-scale HPC systems and staff expertise at CAC.

Research Challenge

The demand for high-quality commercial printing products is escalating. Using computer simulations is essential if Kodak is to bring better digital printing products to market faster. One essential element in digital printers is toner quality. Simulating the behavior of toner particles is exceedingly difficult because of particles size, number, and location. Kodak ran toner simulations serially on in-house workstations, however, the average simulation took over 3 weeks running 24x7.

Solution

Kodak turned to CAC for the help it needed. CAC ported Kodak's toner particle application and helped to parallelize it for use on high-performance computing clusters. After scalability tests on up to 100-processors, application tuning and optimization, CAC reduced Kodak's simulation runs from 3 weeks to hours. "We know, with far more accuracy than ever before, how our printers work and how to control key parameters," said Dr. Eric Stelter, Senior Scientist.



Kodak toner particle simulations

Using these simulations, Kodak identified rate-limiting factors and improved printing press products in development.

The Client

Kodak Graphic Communications Group

- Leading provider of digital print products
- Products include Kodak NexPress color presses
- A strategic business unit at Kodak

The Collaborative Relationship

“The relationship with CAC consultants was key. They helped us conceive the problem in a way that could be parallelized, write the parallel code, and debug the system ... CAC offered first-hand experience that accelerated the process.”

Dr. Ulrich Mutze
Senior Scientist
Kodak

“The performance improvement has been significant, because the collaboration with CAC has allowed us to generate insights that we’ve been able to use in actual, physical devices. We’ve seen results, and anticipate that the collaboration will continue to help us gain an even greater competitive advantage.”

Dr. Eric Stelter
Senior Scientist
Kodak