

# The Huntsville Times

## Great minds thinking for 20 years at CFD

**Firm's computer models aim to prevent problems**

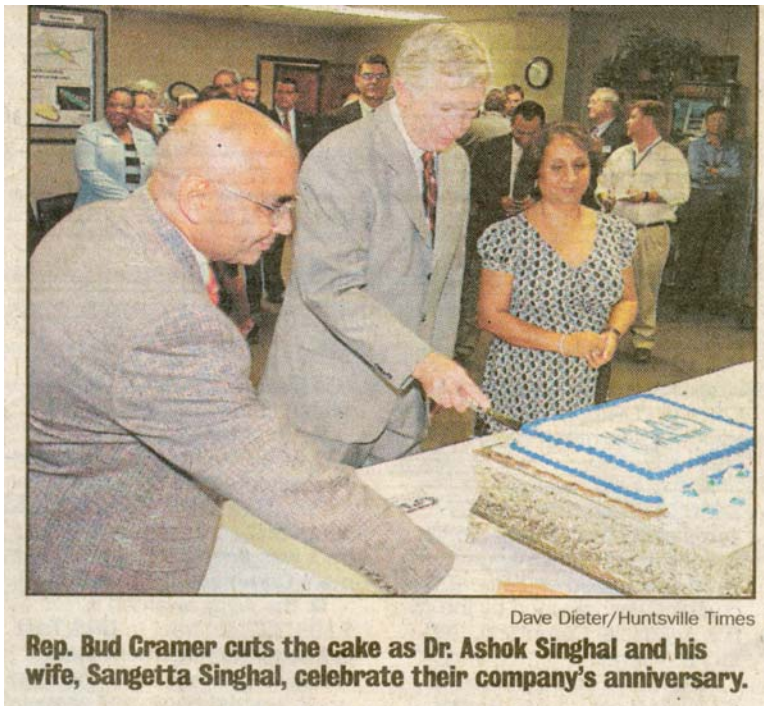
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To get an idea of the IQ at work at CFD Research Corp., consider that the company's principal founder and President Dr. Ashok Singhal began with the goal of harnessing the phenomenal power of "physics-based computing."

That was in 1987, when the Mac was still a pretty new idea for most people. The company's founding trio - Singhal; his wife, Chief Executive Officer Sangeeta Singhal; Dr. Andrzej Pizekwas, chief technology officer - started with the idea that simulations at every stage of work, to aid design and production and solve problems would fundamentally improve the way jobs were performed.



To understand the company's work and more about "physics-based computing" it is useful to consider that CFDRC seeks to hire the "best of the best" in fields as diverse as aerospace, biosciences, chemical and mechanical engineering and computer science.

The point is to give exceptionally bright people chances to work on computer modeling. They test new ideas or improvements or concepts, and measuring things like "fluid flow, heat transfer, chemical reactions, mechanical, electrical, optical and biological phenomena," the company said.

Ashok Singhal said the company's success is a direct reflection of a tremendously talented and hardworking work force. That also gets to the company's other founding principle, as Singhal described it during the company's 20th anniversary party last week. The company began aimed at recognizing "the phenomenal power of bright minds in the right environment."

Both principles have been validated, Singhal said, as the company has been making steady progress with profitable growth over 20 years. He called Huntsville an oasis for engineers and said the environment has been key to recruiting top minds.

CFD employs around 100 people and works with aerospace, defense, biomedical, life science and homeland security companies.

It started with about six months of pondering by Singhal over whether he wanted to work for NASA, a university, a large company or strike out on his own. The Singhals moved to Huntsville from London in 1978, working for an English company that did simulations.

Ashok Singhal decided that what he wanted was to make an impact and the best way to do it would be through a small company.

"It was mostly scary before we started the company," he said. "All the hard thinking was at that time. Once you have committed, you just go." The company started with the three founders in a small room, and targeted established fields such as aerospace and automobile manufacturing. One of the challenges was helping a designer or executive understand and accept that, through a CFDRC computer simulation, problems and possible areas of improvement had been identified.

The company was committed to objective analysis, Singhal said, but it took a little time for the world to catch up. "It was very hard 20 years ago to get people to accept the value of a simulation at the beginning of the process, rather than as an afterthought," he said. "We tried to encourage using simulations at an early stage." If it was tough to convince an aerospace engineer of the value of computer simulations, picture trying to persuade a banker to loan money to help that business.

Sangeeta Singhal has handled the non-technical end of the business from its inception, from finance to legal to personnel. She recalls talking to area bankers, who kept asking what sort of equipment the company had. Finally, she said, a young banker asked her to sit down and explain the business. The company got its first \$50,000 line of credit. She said she didn't worry when her husband decided to start his own company. She said her family had been convinced he would always be able to provide for her, given his technical skills. And, she said with a laugh, they were young enough to believe they could make it work and were a bit oblivious to the risks.

CFDRC has assisted with reviews of the Challenger disaster and NASA's return to flight after the Columbia tragedy, which was the kind of company impact that Ashok Singhal hoped for when it all started.

The company has numerous patents, but Singhal's vision has been to successfully license technologies. The company collaborates with some 30 universities with the focus on business, not patents and papers, he said. The company grew to more than 150 employees, but Singhal said the culture of innovation he wanted to maintain needed a smaller operation, so the company spun off its commercial software products division in 2004. Singhal said the company has allowed itself to be carried by the wind in terms of emerging industries it works with. Today those include biotechnology and nanotechnology, quite a distance from the company's initial focus.

The range of endeavors allows the company's employees to learn other disciplines, as the simulations consider various problems. That environment of continual growth is among the things that Singhal takes pride in. "They learn a lot from each other," he said. "When we are recruiting, we know that the real learning starts when they join here."

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