

## Samsung construction project is big in size and ambition

By [Kirk Ladendorf](#)

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Ray Naizer has worked on some big projects in his career, but nothing quite like the big electrical control room at Samsung's manufacturing campus in Northeast Austin.

The enormous room is crammed with transformers and other electrical gear that take high-voltage current coming to the fabrication plant and convert it to the voltages required for use inside.

"The amount of equipment in that room is amazing. It is the heart of the electrical distribution for the new fab," said Naizer, a 36-year veteran of the electrical contracting business who is CEO of Las Colinas-based JMEG Electrical Contractors. "It is the largest electrical distribution room I have ever seen."

**Naizer and his workers are part of a massive team of nearly 3,000 people working on the expansion of Samsung's plant, including adding equipment and capacity to the control room.**

Almost everything about the project that Samsung calls Saturn is big.

**When the work is done, sometime in the second half of next year, Austin will have one of the biggest chip manufacturing complexes in North America.**

**The price tag for the expansion — \$3.6 billion — makes it the most expensive construction project in Austin history.**

Samsung — already the biggest electrical customer for Austin Energy — estimates its annual bill will rise by \$45 million a year when the project goes into operation.

And the plant is part of Samsung's ambition to become the biggest chipmaker in the world, unseating Intel Corp.

Naizer has pulled some 300 of his company's best electricians from Austin and elsewhere in the state to work on the project, putting in 10 to 12 hours a day, six days a week.

Naizer himself moved from his headquarters to the Samsung site for the duration of the most active work. "Samsung is that important of a client to us," he said. "There are so many decisions that have to be made, and it was important that I be here. But I'll be home for Christmas."

"It is a unique project, and we are proud to be involved with it," Naizer said. "Our company looks forward to keeping this relationship with Samsung for a long, long time. You take Samsung out of the equation, and 2010 would have been a very lean year for most of these suppliers."

**As big as the Saturn project is, it fills only the back half of Samsung's enormous factory complex, which is as big as nine football fields. The shell of the entire factory and the first production phase were completed in 2007 at a cost of \$3.5 billion.**

Now comes the building of the second manufacturing area, with a clean room production area of 220,000 square feet, which is the largest by far ever built in this part of Texas.

**The number of workers at Samsung in Austin will climb to 1,600 once the new expansion is in full production. That doesn't count a few hundred employees of equipment and materials suppliers who will be permanently assigned to the factory.**

The latest expansion brings Samsung's total investment in Austin to more than \$9 billion since the company located its first factory here in 1996.

The first part of the expansion — construction of the electrical and piping systems to support the new factory — is largely completed. A pure water treatment plant and a larger gas distribution plant also have been built.

Now comes the second, more time-consuming phase, which involves installing and testing hundreds of multimillion-dollar pieces of equipment needed to turn silicon wafers into nearly finished microchips, before they are sent to South Korea for final processing.

The work on the project will extend well into next year.

Hundreds of pieces of equipment will be moved into the fab. Teams of six to eight electricians will spend up to four weeks connecting, operating and testing each piece of equipment. Then comes the start of pilot production, where the manufacturing process will be tuned and adjusted to achieve the certification the factory needs to start commercial production, sometime in the second half of next year.

Contractors say they are pushing hard to meet Samsung's aggressive schedule to get the new factory built and production-ready.

That schedule has created some spats between contractors under deadline pressure who were anxious to get work done in the same area of the factory at the same time.

"Sometimes it got a little tense between my company and some of the other contractors trying to get right of way," Naizer said. "It's part of the challenge of working in an intense situation."

His comments are echoed by Jeff Henkener, Austin operations manager for Dynamic Systems Inc., which is doing much of the gas distribution piping systems for the factory. His company also has more than 300 workers on the project.

The pace is "incredibly aggressive," Henkener said. "It has been raising the bar, no question."

The key to his company's involvement in the project, he said, are the 15 managers on the site who "are tune with what Samsung management is expecting."

"It is very important to have these foremen in the field who are pushing the work."

Successful contractors have to learn how to do the job the Samsung way, which sometimes adding more workers to meet the company's rules.

## Exacting work

The gas delivery systems Henkener's company installs are tested carefully to make sure they meet Samsung's exacting specifications.

The system is just part of the painstaking, methodical system that Samsung uses to gauge construction work and factory operations.

"We call it rule- and system-based operation, RSBO. We drive that very hard," said Burton "Buddy" Nicoson, Samsung's Austin vice president for fab engineering.

"RSBO is applied to everyone, no matter who you are," Nicoson said. "And that tends to bring everyone together. There are no inequities. It is real. There is meaning behind it. We mean what we say here, and we are pretty consistent about it."

All chip companies push to get more production and high-quality products from their factories, but Samsung has a reputation for pushing harder than most.

"They have tough management," said analyst Fred Zieber with Pathfinder Research. "They are a relentless, cost-driven company."

Nicoson is one of the top managers involved in getting the new factory up and running quickly and efficiently. But he said there is no extra pressure on him, because at Samsung, the focus is on the team.

"It is about the success of the whole unit rather than the individual," Nicoson said. "You don't think about the pressure on you as an individual. You think about the collective body of work involving everyone."

## Apple polishing

Samsung doesn't give many clues about the business strategy behind its massive investment in Austin, but industry analysts say much of it boils down to pleasing one very important customer: Apple Inc.

Apple relies on Samsung as a key supplier of both memory and integrated processors for its fast-selling mobile devices, including tablets and smart phones.

The Austin factory will provide both those kinds of chips. Some analysts believe that Samsung produces the A4 processor that Apple uses in the iPad and iPhone, and that is the sort of chip that analysts expect will be made in Fab 2.

Another big customer for the Austin fab could be Samsung's own mobile products business, which makes both smart phones and tablets.

To be successful, analysts say the new fab will have to produce annual product revenue that is equal to or larger than its production cost.

Risto Puhakka, president of the VLSI Research consulting firm in San Jose, Calif., said Apple wants a reliable second manufacturing location for its key components that is well away from Samsung's main chip production operations in South Korea, which are less than 40 miles by air from the country's troubled border with North Korea.

The Austin project, analysts say, is just part of Samsung's long-term goal of becoming the world's top supplier for chips in mobile devices. After that, it wants to move up in the worldwide semiconductor rankings, where it currently is second behind Intel.

Gartner Inc. estimates Samsung's chip revenue will top

\$28 billion this year, up nearly 60 percent from a year ago.

"Samsung has never lost sight of the fact that they want to be No. 1," said analyst Will Strauss with Forward Concepts Inc. in Tempe, Ariz.

**Courtesy of JB Goodwin**