A FLOPHOUSE GETS A $32M FACELIFT

BRETT LANDES' MONDO MEDIA ROOM

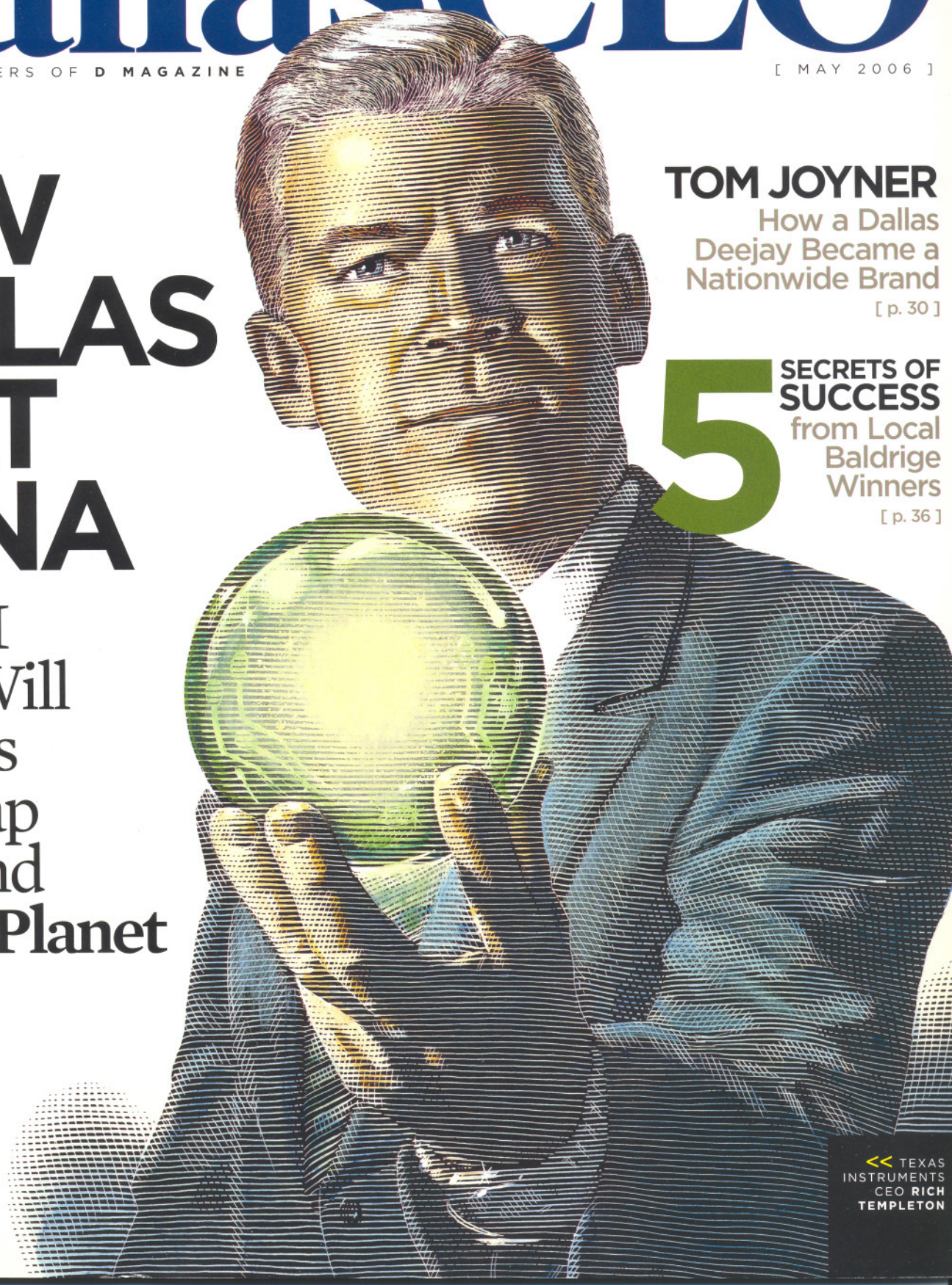
DallasCEO

FROM THE PUBLISHERS OF D MAGAZINE

[MAY 2006]

HOW DALLAS BEAT CHINA

A New TI Factory Will Keep Jobs Here, Reap Profits, and Save the Planet



TOM JOYNER
How a Dallas Deejay Became a Nationwide Brand
[p. 30]

5 SECRETS OF SUCCESS from Local Baldrige Winners
[p. 36]

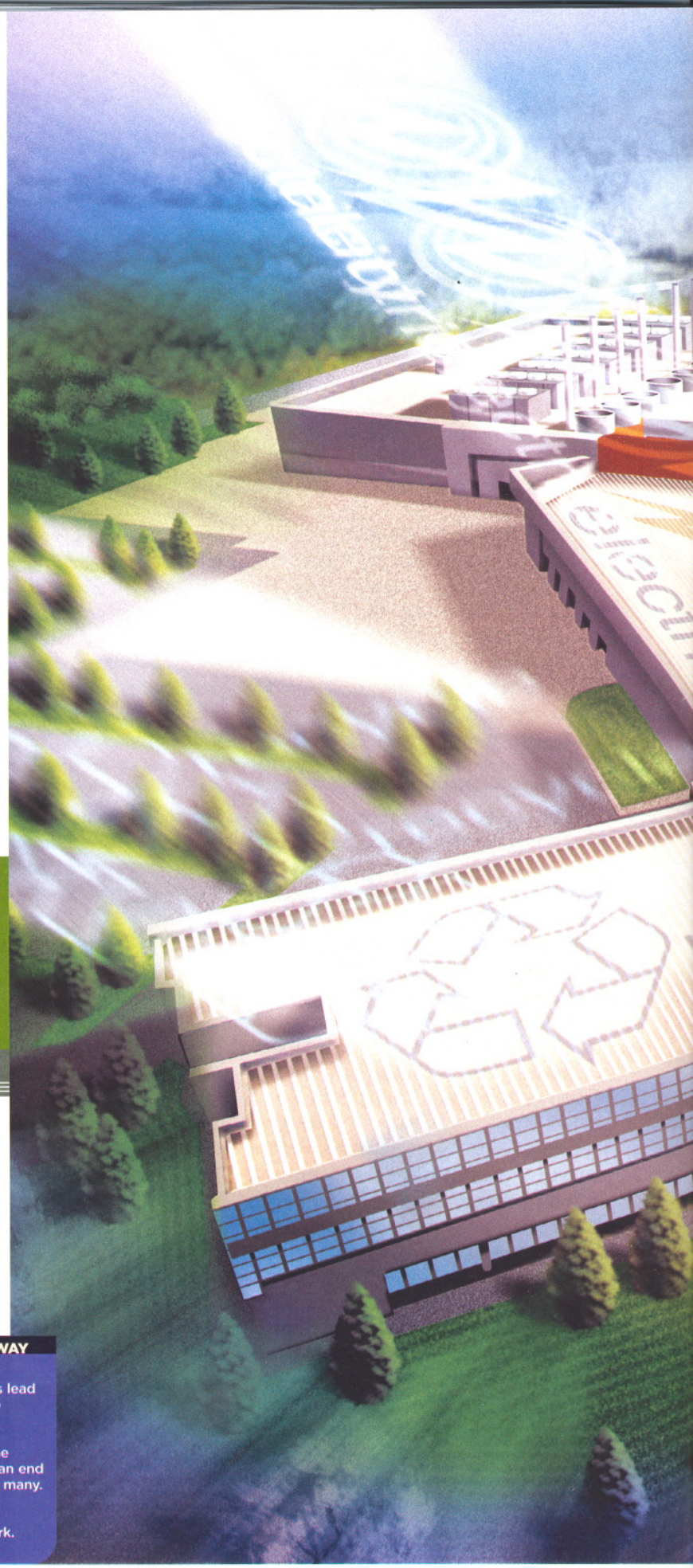
<< TEXAS INSTRUMENTS CEO **RICH TEMPLETON**

MAY 2006 $4.95

0 74470 28573 1

WWW.DMAGAZINE.COM

How Dallas Beat China



Texas Instruments said no to cheap overseas labor and placed its bet on building a radical, sustainable plant just down the road in Richardson.

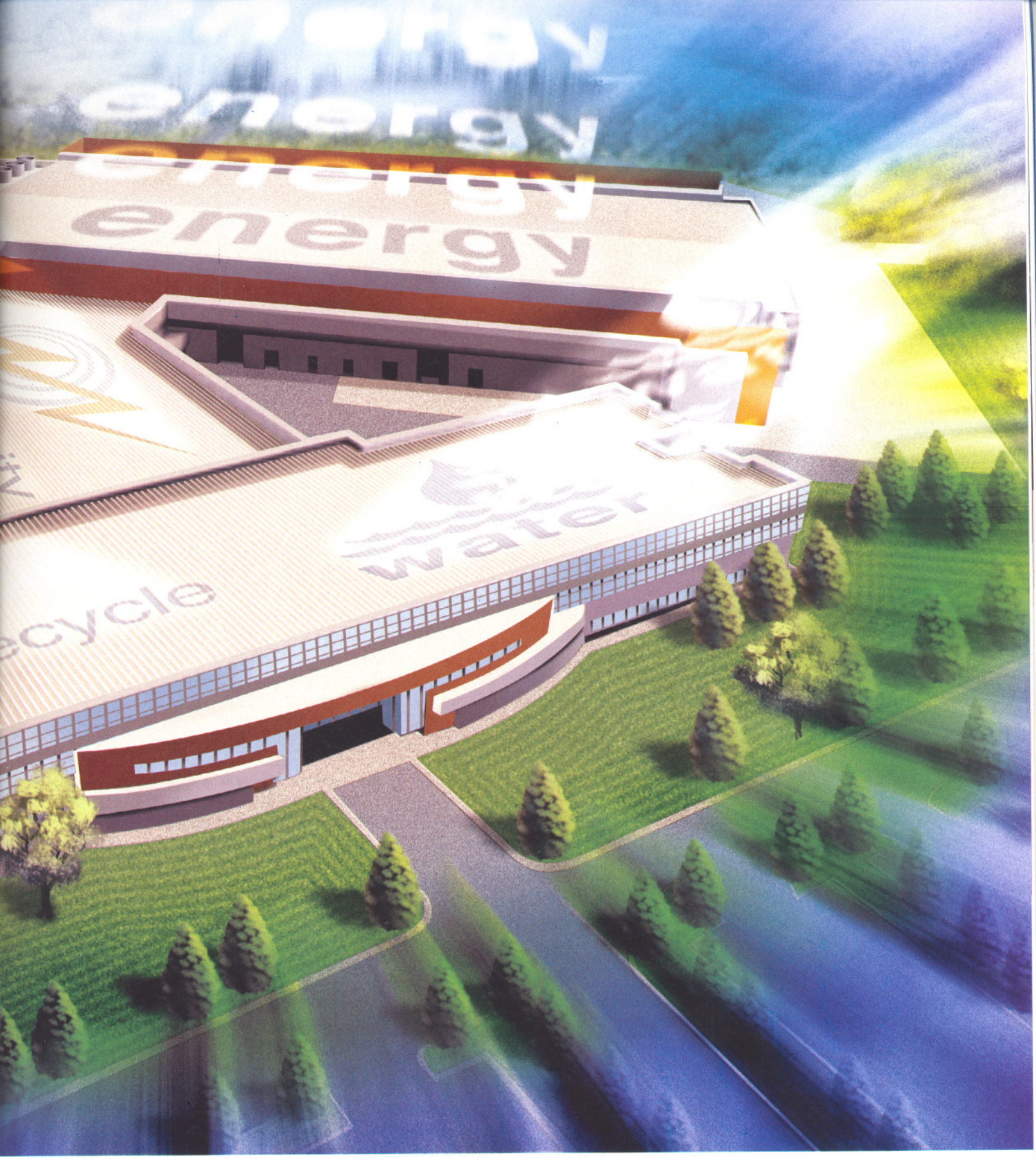
BY **ADAM McGILL** ILLUSTRATION BY **CLARK MITCHELL/5 CREATIVE**

Paul Westbrook is a slender guy who wears his enthusiasm on his sleeve. He's the kind of guy who articulates every syllable when he talks and can say "goofball" in casual conversation without irony. He plays alto sax in a jazz band with fellow Texas Instruments engineers. He drives a Prius, charting his gas mileage on his personal web site, and he's the 10-year co-captain of TI's track and field team. (He's a sprinter who's been inducted into the U.S. Corporate Athletics Association Hall of Fame.) He is, in short, an unassuming, likable, multitalented nerd.

He is also, arguably, the reason Texas Instruments' latest semiconductor plant has garnered the attention and admiration of everyone from *New York Times* columnist Thomas Friedman to

»THE TAKEAWAY

1. Budget constraints lead to creative solutions.
2. Solving one problem can end up solving many.
3. Waterless urinals work.


energy
energy
energy
water
ecycle

chipmakers in China. The 1.1-million-square-foot wafer plant, also known as a fab, could have been built by cheap labor overseas. Westbrook, a 23-year veteran with the company, was one of many TI engineers to argue for building closer to home. A facility could be cheaper here and run more efficiently if it followed the principles of conservation, recycling, and alternative energy sources, they said. Westbrook had the proof.

"On the engineering level, we realized there was a lot of really good, doable stuff. Then we realized we needed some managerial support," Westbrook, 45, says. So on a Saturday afternoon in the early fall of 2003, Westbrook gave some higher-ups a tour of his house in Fairview, Texas. He showed them the solar plate used to heat water in the winter and the overhangs used to shade living areas in the summer. He pointed out the ground-source heat pump, the two 1,600-gallon rainwater collection tanks, the argon-filled windows, and dozens of other energy-efficient doodads. Lastly, he showed them his utility bills. In the 10 years he and his wife have lived in their two-story, 2,713-square-foot house, the average monthly electric bill has been $64.

"Do these really scale up?" one of them asked.

"Yes," Westbrook said. "The principles scale up."

There was a pause.

"Great. What do you need to make this happen?"

Of course, it wasn't that simple. Yes, the TI execs were starting to warm to the idea of the new semiconductor plant being built just six miles up Central Expressway from headquarters, provided it made financial sense. Over the years, the company has enjoyed a good relationship with local government officials who are eager to help when they can. Good government relationships make it easier to do business. Plus, the plant workers wouldn't have to pack up and relocate—not an inconsiderable expense and inconvenience. More importantly, TI research and development would be down the street from production. The only problem? The research and development in Dallas isn't what it could be.

"Dallas is the ninth-largest city in America, but it lacks a top-50 engineering school," says TI spokesman Phil Ritter. "In our minds, as we were looking at the site selection, that was a huge deficiency. We asked the state to consider that in terms of their response and their proposal to us to build the plant here."

The state responded. Governor Rick Perry put together a $300 million package for the nearby UT Dallas engineering school with the intention of making it a Top-50 engineering school in five years. The $300 million will primarily go to research facilities, the recruitment of top faculty, and scholarships for top students. According to projections, the investment will be well worth it. The Perryman Group estimates the economic impact of the plant on the Dallas-Fort Worth area to be 74,000 permanent jobs and $12 billion in spending.

GRANTED WISH: "Dallas is the ninth-largest city in America, but it lacks a top-50 engineering school," says TI spokeman Phil Ritter. TI hopes to change that.

Upper management wanted the Richardson plant to cost 30 percent less than their previous one.

With site selection completed and cost-competitiveness in mind, Westbrook and his fellow engineers set out to design TI's next semiconductor plant. It would not be easy. Upper management wanted the Richardson plant to cost 30 percent less than the most recent one, built in the mid-'90s.

"We all said, 'Crazy, goofball management. What are they thinking?'" Westbrook says. But the stringent budget forced the design team to question everything and constantly look for a better, more efficient way to build and operate.

"On the engineering level, we realized there was a lot of really good, doable stuff. Then we realized we needed some managerial support."

<< PAUL WESTBROOK

"Cost reduction became a huge friend of sustainable design," Westbrook says. "It really did."

No one knows about that friendship more than Amory Lovins. Whereas Westbrook is a cheerleader for sustainability, Lovins is the starting quarterback. The head of Rocky Mountain Institute, Lovins is one of the foremost energy consultants in the world. In 1999, Lovins co-authored *Natural Capitalism: Creating the Next Industrial Revolution* with his wife, Hunter, and Paul Hawken, the environmentally conscious entrepreneur.

In December 2003, Lovins and about a dozen members of his think tank met with about 30 TI engineers in a windowless room on the ground floor of a TI office building at headquarters for a three-day charrette. After introductions and a short lecture on natural capitalism and "tunneling through the cost barrier," the group broke up into smaller groups, five or six brains tackling architecture, water process, heating and cooling, and more. Classic rock music played in the background, but the low rumble of communal brainstorming soon overwhelmed it.

By the end of the first day, the room was papered with Post-It Notes offering broad suggestions about water reclamation or the need for natural grass or porous concrete. On day two, the theoretical gave way to the tactical, as formulas and equations accompanied the big picture ideas. Possibility begat creativity and vice versa.

On occasion, the groups toured their neighbors, sharing their likes, concerns, and suggestions. It was mass chaos, but synergy often is. It was also wildly successful. J.D. Bryant, the facilitator of the charrette, has been coordinating group sessions like this one for 10 years. "It was unlike anything I've ever seen," he says. By day three, the group had laid the groundwork for the largest sustainable building in North Texas at the time, putting Texas Instruments in the midst of the next Industrial Revolution.

Big businesses are realizing that resource management isn't just about hugging trees. It's about watching the bottom line. When people were relatively scarce and nature was abundant, a

TI MONEY-SAVERS

By "going green" (being environmentally sound), TI's new plant saves natural resources as well as cold, hard cash. Here are some of the ways—and amounts—they saved:

Electricity

$30,000 per year
Rotating the administrative building 45 degrees to avoid western sun exposure

$1,000 per year
Solar water heating used for hand-washing sinks

$250,000 per year (capital savings)
Gravity-driven waste streams instead of pumps

Water

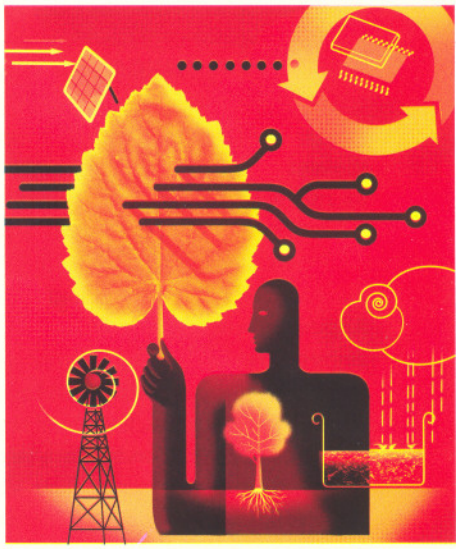
$150,000 per year
Native plants and reclaimed water for irrigation

$4,000 per year ($200/urinal/year)
Waterless urinals

Recycling

More than 85 percent
Amount of construction waste recycled

More than 20 percent
Total amount of recycled materials



Heat

$300,000 per year (operating/maintenance)
Improved insulation
Reflective roof
Window overhangs
Light shelves for natural daylight
Energy-efficient light fixtures
LCD monitors instead of CRT monitors

PORTRAITS: ALLISON V. SMITH; ILLUSTRATION: STUART BRIERS

TI BOARD OF DIRECTORS

JAMES R. ADAMS
Chairman of the board of the company, 1996-98. Group president, SBC Communications Inc., 1992-95; president and chief executive officer of Southwestern Bell Telephone Company, 1988-92.

DAVID L. BOREN
President of the University of Oklahoma since 1994. U.S. Senator, 1979-94; Governor of Oklahoma, 1975-79. Director, AMR Corporation and Torchmark Corporation; chairman, Oklahoma Foundation for Excellence.

DANIEL A. CARP
Chairman of the board of Eastman Kodak Company, 2000-December 2005; chief executive officer, 2000-May 2005; director, 1997-December 2005. President of Eastman Kodak, 1997-2001, 2002-2003; chief operating officer, 2002-2003. Director, Norfolk Southern Corporation.

CARRIE S. COX
Executive vice president and president of Global Pharmaceuticals at Schering-Plough Corporation since 2003. Executive vice president and president of Global Prescription Business at Pharmacia Corporation, 1997-2003.

THOMAS J. ENGIBOUS
(Chairman)
Chairman of the board since 1998. President and chief executive officer of the company, 1996-April 2004. Joined the company in 1976; elected executive vice president in 1993. Chairman, Catalyst; Director, J.C. Penney Company, Inc.; member, The Business Council; trustee, Southern Methodist University.

GERALD W. FRONTERHOUSE
Private investor. Chief executive officer of First RepublicBank Corporation, 1985-88. Chairman of the board and director, Hoblitzelle Foundation.

business was forced to increase labor productivity to be competitive. Now, nature is relatively scarce and people are abundant, so a business must increase resource productivity to be competitive. "Can you imagine if you can get 10 or 20 times more out of every unit of electricity than we do now? That is a revolutionary kind of concept," Westbrook says.

The estimated ROI in the first year from efficiency measures at the Richardson plant is $750,000. At full operation, TI expects a savings of more than $4 million a year, thanks to an estimated 20 percent cut in energy use and 35 percent cut in water. Below are but a few examples of how they did it:

SAVE YOUR ENERGY

>> **The best way to rid your building of unwanted energy—like, say, heat in the middle of August—is to prevent it from getting there in the first place.** The roof of the Richardson fab is made of a material that reflects 85 percent of the light that hits it. Westbrook estimates that alone saves about 100 tons of cooling. He tested the roof last summer. At 2 o'clock on an August afternoon when the temperature was 95 degrees, the Richardson plant's roof was 118 degrees. The roof on the plant built in the '90s—a light-gravel mix—was 140 degrees. A piece of tar paper got up to 152.

>> **Heat generation inside a fab is unavoidable, but you can't let it build unchecked.** Worker discomfort is one thing; faulty chip production is quite another. The clean room is a delicate, precise environment. "When this place is up and running, we'll be exhausting about 600,000 cubic feet a minute that we have to make up with clean air," Westbrook says. "And we have to keep it at 70 degrees plus or minus a couple of tenths, and 45 percent relative humidity, plus or minus 3 percent." But rather than exhausting that heat right away, the designers trapped the heat for reuse. Why make a big, expensive boiler do the job of something that's inadvertently doing it already? Plus, trapping the heat led to less water loss through evaporation. As Westbrook explains the cycle, he remembers another Amoryism: "You know

Q&A WITH
Rich Templeton

In May 2004 Rich Templeton succeeded Tom Engibous as CEO of Texas Instruments. Templeton first joined TI in 1980 in the sales and marketing department, having graduated from Union College in New York with a bachelor's of science degree in electrical engineering. He took over TI's semiconductor business in 1996 and took on the role of COO in 2000, helping guide the company through the worst downturn in the industry's history.

DALLASCEO: What were the market indicators that led you and others to believe TI needed to build another fab?
TEMPLETON: As TI's portfolio grows and demand for our products continues, we know we will need more capacity. Our strategy has been to be out front of that demand to be ready to ramp up production quickly.

When you and TI Senior Management were considering the 25 possible locations for the new semiconductor plant, what was the deciding factor that led to the Richardson fab?
I can't say there was one deciding factor, but more of a package of variables that came together, not the least of which was the decision for the state of Texas to designate $300 million for UTD and its engineering school. This decision alone will have far-reaching advantages for the entire region.

I've heard that TI leadership challenged the construction team to build the Richardson fab 30 percent cheaper per square foot than the previous fab. How realistic was that goal at the time?
TIers love a challenge, and this was certainly no exception. It was a team effort and a team win.

Do you anticipate the next fab will also be a sustainable building?
We expect [the Richardson fab] will meet our capacity needs for years to come. However, the valuable lessons we learned on sustainability are being implemented in TI fabs around the world.

What have been some of the challenges since you became CEO in May 2004 and how have you handled them?
Every day is a challenge trying to balance the needs of our customers and the demands of running a multi-billion dollar business. Fortunately for me, TI has a great team of leaders in place who have helped build the company into what it is today. So I may be the CEO, but our success is due to the efforts every day of TIers around the globe.

DAVID R. GOODE
Director of Norfolk Southern Corporation since 1992; chairman of the board, 1992-January 2006; chief executive officer, 1992-October 2005; president, 1991-October 2004. Director, Caterpillar, Inc., Delta Air Lines, Inc. and Russell Reynolds Associates, Inc.; member, The Business Council.

PAMELA H. PATSLEY
Senior executive vice president of First Data Corporation since 2000; president of its subsidiaries First Data International since 2002 and First Data Merchant Services, 2000-2002. President and chief executive officer of Paymentech, Inc., 1991-2000. Director, Molson Coors Brewing Company, Pegasus Solutions, Inc. and Tolleson Wealth Management, Inc.; national trustee, Boys and Girls Clubs of America.

WAYNE R. SANDERS
Chairman of the board of Kimberly-Clark Corporation, 1992-2003; chief executive officer, 1991-2002; director, 1989-2003. Director, Belo Corporation; national trustee and governor, Boys and Girls Clubs of America; trustee, Marquette University.

RUTH J. SIMMONS
President of Brown University since 2001. President of Smith College, 1995-2001; vice provost of Princeton University, 1992-95. Director, Pfizer, Inc. and The Goldman Sachs Group, Inc.; fellow, American Academy of Arts and Sciences; member, Council on Foreign Relations.

RICHARD K. TEMPLETON
President and chief executive officer of the company since May 2004. Chief operating officer of the company, 2000-April 2004. Joined the company in 1980; elected president of the company's Semiconductor Group and executive vice president in 1996. Director, Semiconductor Industry Association; member, The Business Roundtable.

CHRISTINE TODD WHITMAN
Director and president of The Whitman Strategy Group. Administrator of the Environmental Protection Agency, 2001-2003; Governor of New Jersey, 1994-2000. Director, S.C. Johnson & Son, Inc. and United Technologies Corp.

you're on the right track when you accidentally solve many problems by solving just one."

WATER WORLD

>> Typical fabs go through a lot of water: about two and a half million gallons a day are used for rinsing, cooling, and heating. Engineer and water-use expert Pablo Ruiz analyzed the water cycles and was able to find secondary and even tertiary uses for water that was previously destined for the "reject stream." Ruiz and the engineers cut the water usage by about 750,000 to 800,000 gallons a day—about the equivalent of a large water tower. Every day.

>> Much of that savings comes from reclamation. About 80 percent of the land on which the Richardson facility sits drains to the northeast. There the designers dug out a 2.7-million-gallon retention pond, with a capacity for another two million gallons during heavy rains. The water in that pond is then used for irrigation of the entire campus. A submerged air compressor powered by an above-water windmill sends bubbles up through the pond to keep it aerated.

>> The waterless urinals in the men's rooms attract perhaps the most curiosity and attention. Because the population of fabs is typically 75 percent male, there's a savings of about 40,000 gallons per urinal per year with the switch to waterless. Plus, they're not as expensive to install because you don't need to pipe water through the wall, and they save money on maintenance because there are no flush valves to get stuck.

>> The automated hand-wash sinks are innovative as well, and they happen to be one of Westbrook's favorite touches. "It's a little thing but I think it's so cool and good-thinking," he says. Instead of typical, electricity-powered sensors or even regular battery-powered ones, the new TI building has tiny water turbines in the stream. "So when you use a sink, it spins the turbine and recharges the batteries for you. It puts about an 8- to 10-year life on your battery. They're a little more expensive, but I'll pay for good engineering."

You know you're on the right track when you accidentally solve many problems by solving just one.

LET THERE BE (JUST ENOUGH) LIGHT

>> Lighting is the no. 1 cooling load in an office building, a necessary evil that gives off heat as a byproduct to illumination. Most office buildings have two options when it comes to light switches: on and off. At the administration building, the designers invested a little more money to save money. Ergolights have motion sensors to turn themselves off when not in use and can be networked. Each cubicle worker, through his or her computer, can dim their overhead light to a desired level.

>> The fab designers also used natural light to their advantage and mitigated its negative effects. By rotating the footprint of the administration building just 45 degrees, shielding a face of windows from harsh, western sun exposure in the summer, air-conditioning savings amount to about $30,000 per year.

LOVINS IS IMPRESSED. NOT AS MUCH BY THE technical, mechanical, and sheer common sense solutions at TI's new plant. More so by their implementation.

"Paul's most remarkable achievement was in timing," he writes in a recent e-mail. "When business is good in the chip industry, companies are frantically trying to build plants to get the next generation chip to market. Fab designers have no time to build anything other than a retread of what's been built before. When business is bad, there's no budget for designing, and by the time there is, it's too late.

"Paul somehow managed to slip through the crack between these two conditions. With astute technical insights and diplomacy, he persuaded his superiors at exactly the right moment that innovation was possible and indeed vital. I'd been trying to do this for a decade with various chipmakers, and he's the first one to pull it off. Now it's getting enough attention in the industry that I hope others will follow suit. If they don't, they'll lose market share." D