MEXICO

LOOK WHO'S PUMPING OUT ENGINEERS

The headlines are about low-wage illegals, but Mexico is swiftly upgrading its workforce

BY GEBRI SMITH

FOR YEARS THE MEXICAN workforce has meant one thing to multinationals: cheap, reliable labor, perfect for assembling cars, refrigerators, and other goods in the maquiladoras lining the border with America. More complex engineering and design work was better done elsewhere in the global economy—usually at company headquarters in the U.S., Europe, and Japan.

But as maquila-style assembly work migrated to cheaper locales, and India and China grabbed more sophisticated design and engineering assignments, Mexican officials knew they had to do something to stay in the global race. Quietly and steadily, they have. Over the past 10 years, the country's policymakers have been building up enrollment in four-year degree programs in engineering, developing a network of technical institutes that confer two-year degrees, and expanding advanced training programs with multinationals from the U.S. and elsewhere.

The result is a bumper crop of engineers. Currently, 451,000 Mexican students are enrolled in full-time undergraduate programs, vs. just over 370,000 in the U.S. The Mexican students benefit from high-tech equipment and materials donated to their schools by foreign companies, which help develop course content to fit their needs. Many of these engineers graduate knowing how to use the latest computer-assisted design (CAD) software and speaking fluent English.

This expanding workforce is changing the way multinationals view the country. They can now shift more complex production to Mexico, along with higher-skilled jobs. But it goes beyond manufacturing: Companies such as General Electric, General Motors, Honeywell, and Delphi have created large research and development centers employing hundreds of Mexican engineers to carry out sophisticated design modifications and handle the testing of everything from new car models to military and commercial jet engines. "In the past five years, Mexican engineers have become increasingly qualified and gained valuable experience," says Alfredo Juárez, a director at the country’s top engineering school, the National Polytechnic Institute in Mexico City. "We constantly have major multinationals here trying to recruit dozens of engineers at a time."

MEXICALI MECCA

ONE IS GE, which employs 550 engineers at a tech center in the colonial city of Querétaro to help design and test jet engines and energy turbines. It's one of a handful of Global Engineering Centers that the company has worldwide, including India, Poland, and Russia.)

Eduardo Lemini is a GE engineer at Querétaro. He spends his days huddled over CAD displays, making design changes and performance calculations, running tests on commercial and military jet engines, and working with his GE counterparts around the world. The 28-year-old holds a doctorate in engineering from the Institute of Science & Technology at the University of Manchester, England, where his research focused on computational fluid dynamics. Mexico’s National Council of Science & Technology footed the bill for Lemini’s studies abroad. Says Lemini, who was immediately hired by GE when he returned home: "This is a great time to be an engineer in Mexico."

And a great time to employ one. Companies are creating or expanding research and development and testing centers from Mexico City to Mexicali. The young
engineers being hired are capable, and they’re a bargain, earning on average one-third what their U.S. counterparts do. A newly minted engineer earns around $15,000 a year, and those with experience take home $25,000 to $35,000. Vladimiro de la Mora, director of GE’s R&D center in Querétaro, figures he’ll hire 200 new engineers this year, as GE’s Aviation and Energy divisions throw more work his way: “We’re growing because Mexico’s technical expertise is deepening, but also because it costs us 30% to 40% less to do the work here than in the U.S.”

The global aerospace industry is the latest to seek out Mexican expertise. Honeywell Aerospace recently broke ground on a $40 million systems integration and testing laboratory in Mexicali, along the border with Arizona. It will employ 300 Mexican engineers and run simulations for aircraft systems developed by Honeywell worldwide. Canadian aircraft maker Bombardier Inc., meanwhile, is relocating all electrical wire harness work for its planes to Querétaro from Montreal, Toronto, and Wichita, and shifting fuselage assembly to Mexico from Belfast. If all goes according to plan, the Canadian company will be assembling entire aircraft in Mexico in 7 to 10 years. To win the Bombardier investment, Mexico even pledged to build a new aerospace university nearby. “We’re impressed by the government’s commitment,” says Réal Gervais, a Bombardier vice-president who heads the Mexico operations.

A success story? Yes, but one with some caveats. As promising as the future is, Mexico’s engineering schools may be a few years ahead of the country’s industrial development curve, churning out too many professionals for current demand. While multinationals are taking the cream of the crop, the rest of Mexico’s engineers must compete against less educated but experienced, lower-cost technicians for a limited number of supervisory positions. Mexico has been educating these technicians in record numbers as well.

Electrical engineer Jorge Perez, 42, knows what this competition is like. Perez worked for Siemens’ medical equipment group for 12 years. He just completed Bombardier’s training course and hopes to work as a supervisor in the wire harness factory, a task for which he is probably overqualified. “An engineering degree doesn’t guarantee you a job in Mexico, even today,” says Perez. “I know a lot of underemployed engineers.”

Mexican officials hope that as more multinationals get hooked on the expertise of local technicians and engineers, they will keep sending more sophisticated work to Mexico, providing plenty of quality jobs for everyone and moving the country further up the ladder of development.

The youngest Mexican engineers fervently believe this will happen. Twenty-three-year-old Mayra Ponce holds an undergraduate degree in aeronautics engineering from National Polytechnic. She is about to wrap up a 12-week intensive training course that will put her first in line for an engineer’s job assembling aircraft fuselages for Bombardier. “I see this as a great opportunity to start at the bottom and learn how airplanes are made,” she says. Her goal: design aircraft someday, even though Bombardier has not announced plans to do such work in Mexico. A lofty aspiration, but also a sign that Mexico is still in the global race for the best jobs.