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High-Tech Japanese, Running Out of Engineers

By MARTIN FACKLER

TOKYO — Japan is running out of engineers.

After years of fretting over coming shortages, the country is actually facing a dwindling number of young people entering engineering and technology-related fields.

Universities call it “rikei banare,” or “flight from science.” The decline is growing so drastic that industry has begun advertising campaigns intended to make engineering look sexy and cool, and companies are slowly starting to import foreign workers, or sending jobs to where the engineers are, in Vietnam and India.

It was engineering prowess that lifted this nation from postwar defeat to economic superpower. But according to educators, executives and young Japanese themselves, the young here are behaving more like Americans: choosing better-paying fields like finance and medicine, or more purely creative careers, like the arts, rather than following their salaryman fathers into the unglamorous world of manufacturing.

The problem did not catch Japan by surprise. The first signs of declining interest among the young in science and engineering appeared almost two decades ago, after Japan reached first-world living standards, and in recent years there has been a steady decline in the number of science and engineering students. But only now are Japanese companies starting to feel the real pinch.

By one ministry of internal affairs estimate, the digital technology industry here is already short almost half a million engineers.

Headhunters have begun poaching engineers midcareer with fat signing bonuses, a predatory practice once unheard-of in Japan’s less-cutthroat version of capitalism.

The problem is likely to worsen because Japan has one of the lowest birthrates in the world. “Japan is sitting on a demographic time bomb,” said Kazuhiro Asakawa, a professor of business at Keio University. “An explosion is going to take place. They see it coming, but no one is doing enough about it.”

The shortage is causing rising anxiety about Japan’s competitiveness. China turns out some 400,000 engineers every year, hoping to usurp Japan’s place one day as Asia’s greatest economic power.

Afraid of a hollowing-out of its vaunted technology industries, Japan has been scrambling to entice more of its younger citizens back into the sciences and engineering. But labor experts say the belated measures are limited and unlikely to fix the problem.

In the meantime, the country has slowly begun to accept more foreign engineers, but nowhere near the number that industry needs.

While ingrained xenophobia is partly to blame, companies say Japan's language and closed corporate culture also create barriers so high that many foreign engineers simply refuse to come, even when they are recruited.

As a result, some companies are moving research jobs to India and Vietnam because they say it is easier than bringing non-Japanese employees here.

Japan's biggest problem may be the attitudes of affluence. Some young Japanese, products of a rich society, unfamiliar with the postwar hardships many of their parents and grandparents knew, do not see the value in slaving over plans and numbers when they could make money, have more contact with other people or have more fun.

Since 1999, the number of undergraduates majoring in sciences and engineering has fallen 10 percent to 503,026, according to the education ministry. (Just 1.1 percent of those students were foreign students.) The number of students majoring in creative arts and health-related fields rose during that time, the ministry said.

Applications to the engineering program at Utsunomiya University, an hour north of Tokyo, have fallen one-third since 1999. Starting last year, the school has tried to attract students by adding practical instruction to its theory-laden curriculum. One addition was a class in making camera lenses, offered in partnership with Canon, which drew 70 students, twice the expected turnout, said Toyohiko Yatagai, head of the university's center for optics research.

But engineering students see themselves as a vanishing breed. Masafumi Hikita, a 24-year-old electric engineering senior, said most of his former high school classmates chose college majors in economics to pursue "easier money" in finance and banking. In fact, friends and neighbors were surprised he picked a difficult field like engineering, he said, with a reputation for long hours.

Mr. Hikita and other engineering students say their dwindling numbers offer one benefit: they are a hot commodity among corporate recruiters. A labor ministry survey last year showed there were 4.5 job openings for every graduate specializing in fields like electronic machinery.

"We don't need to find jobs," said Kenta Yaegashi, 24, another electrical engineering senior. "They find us." He said his father, also an engineer, was envious of the current sellers' market, much less crowded than the packed field he faced 30 years ago. Even top manufacturers, who once had their pick of elite universities, say they now have to court talent. This means companies must adapt their recruiting pitches to appeal to changing social attitudes.

So, Nissan tells students they can advance their careers more quickly there than at more traditional Japanese companies. The carmaker emphasizes that it offers faster promotions, bigger pay raises and even "career coaches" to help young talent ascend the corporate ladder.

"Students today are more demanding and individualistic, like Westerners," said Hitoshi Kawaguchi, senior vice president in charge of human resources at Nissan.

On the more offbeat side, an ad for the steel industry features a long-haired guitarist in spandex pants shouting, "Metal rocks!"

One source Japan has not yet fully tapped is foreign workers — unlike Silicon Valley, filled with specialists in

information technology, or IT, from developing nations like India and China.

According to government statistics, Japan had 157,719 foreigners working in highly skilled professions in 2006, twice as many as a decade ago, but still a far cry from the 7.8 million in the United States. Britain has also been aggressively recruiting foreign engineers, as have Singapore and South Korea, labor experts say.

“Japan is losing out in the global market for top IT engineers,” said Anthony D’Costa, a professor at Copenhagen Business School, who has studied the migration of Indian engineers.

Companies are scrambling to change tactics now.

For instance, Kizou Tagomori, director of recruitment at Fujitsu, said the computer maker and its affiliates routinely fell about 10 percent shy of their annual hiring goal of 2,000 new employees. Fearing chronic shortages, the company has begun hiring foreigners to work in Japan.

Starting in 2003, Fujitsu began hiring about 30 foreigners a year, mostly other Asians who had graduated from Japanese universities. Initially, many managers were reluctant to accept them. Mr. Tagomori said they are now gaining acceptance.

Fujitsu’s 10 Indian employees in Japan won over some of their co-workers by organizing a cricket team, he said.

But Fujitsu remains an exception. In an economic ministry survey last year, 79 percent of Japanese companies say they either have no plans to hire foreign engineers or are undecided. The ministry said most managers still feared that foreigners would not be able to adapt to Japan’s language or corporate culture.

To combat these attitudes, the ministry began the Asian Talent Fund, a $30 million-a-year effort to offer Asian students Japanese language training and internships in order to help them find work here.

“If these students do well, they can change Japanese attitudes drastically,” said Go Takizawa, deputy director of the ministry’s human resource policy division.

Nonetheless, labor experts warn Japan may be doing too little, too late. They say the country has already gained a negative reputation as discriminating against foreign employees, with weak job guarantees and glass ceilings. Experts say Indian and other engineers will often opt for more open markets like the United States.

Indeed, a growing number of Japanese companies are having more success by building new research and development centers in countries with surpluses of engineers. Toyo Engineering, which designs chemical factories, said it and its affiliates now employ more engineers abroad — 3,000, mostly in India, Thailand and Malaysia — than in Japan, where they have 2,500 workers.

With corporate Japan still reluctant to accept foreigners, a half-dozen staffing companies have stepped into the breach by hiring Chinese and South Korean engineers to send to Japanese companies on a temporary basis. One of the biggest is Altech, which has set up training centers at two Chinese universities to recruit engineering students and train them in Japanese language and business customs. Of Altech’s roughly 2,400 engineers, 138 are Chinese, and the company plans to hire more at a rate of 200 per year.

One of the first it hired was He Xifen, a 27-year-old mechanical engineer from Qingdao University of Science

and Technology who joined Altech two and a half years ago. She said her friends back home envy her because she works with advanced Japanese technology, and earns three or four times more than she would in China.

While Japanese clients appear uncertain at first about how to deal with foreigners, she said, they quickly catch on and she usually feels welcome.

“Foreign engineers are becoming accepted,” said Shigetaka Wako, a spokesman for Altech. “Japan is slowly realizing that its economy cannot continue without them.”

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