

## BUSINESS

# Ancient foil maker wraps up mobile-phone market

Few high-tech companies celebrate links with the world as it was before about 1980 — never mind with traditions crafted 305 years ago. But a family firm that has been going strong since the end of the seventeenth century last week won a Japanese award for its work with metal films, most of which, these days, end up in mobile phones.

Fukuda Metal Foil & Powder started up in Kyoto in 1700 in a business not dissimilar to the one it runs today — putting intricate gold and silver patterns on luxurious folding screens and pottery. By keeping a close eye on technological progress and market changes, it has become a world leader in supplying rolled copper-foil components to the burgeoning mobile-phone industry.

“Fukuda has built up good expertise over its long history,” explains Osamu Nagashima of the business school at Ritsumeikan University near Kyoto, who knows the company well. “But more importantly and unusually, it has developed the ability to explore new technology.”

Privately owned Fukuda amassed sales of ¥36 billion (US\$323 million) last year and now employs around 1,000 people, mostly in Kyoto and Suzhou, China. It produces a huge array of metal products — 1,000 types of metal powder and 200 kinds of foil. They go into everything from car parts to food packaging. But the global market for copper-foil parts used in mobile phones — of which Fukuda claims a 40% share — is perhaps its most striking success.

The company received its award on 4 August from the Japanese prime minister, Junichiro Koizumi, in recognition of its outstanding craftsmanship, and its success in adapting traditional skills to the information age.

“Products we thought would sell well haven’t always been a success,” says Fukuda’s president Yasuhiko Hayashi. “A lot of our lines have grown unexpectedly with the advent of new demands. Our solid research base has enabled us to tailor our products to them.”

Before he joined the company, Hayashi, a chemical engineer, had been interested in metal powders but spent most of his career working on copper foil, acquiring the ability to judge a foil’s quality merely by shaking it in his hand. Now, he says, he is trying to



Traditional crafts have won Yasuhiko Hayashi’s company a niche supplying mobile-phone parts.

YOMIURI SHIMBUN OSAKA

realize his dream of inventing different types of powder.

“What matters is the size and shape” of the powder’s particles, Hayashi explains. The powders made by Fukuda can have particles ranging in diameter from 1 to 250 micrometres. Small differences in size and shape can greatly affect a powder’s properties, such as whether the particles will stick together when compressed and heated.

Fukuda’s scientists and engineers have an annual research and development budget of US\$7.3 million, and work with universities and research institutes throughout Japan. For example, together with Mitsuo Kawasaki, a surface photochemist at Kyoto University, Fukuda has recently produced nanoscale particles — less than 0.1 micrometres in diameter — in copper alloys. This involves a process in which the particles are suspended in an organic solvent and then broken up with a laser.

One cloud on the horizon, Fukuda’s managers say, is the competition with big Japanese corporations for technical staff. Growing competition is also coming from China, South Korea and Taiwan. Hayashi sees even faster product development as the key to the future, as well as energetic pursuit of new markets, such as in fuel cells. “We were getting into a rut,” Hayashi says. “We need to come up with new stuff.” ■

Ichiko Fuyuno

## IN BRIEF

**PORK BARREL** Two major food companies announced that they will start winding down the amounts of antibiotics fed to pigs and chickens used in their products. The North American arm of Compass Group, an international catering company with 400,000 employees, and Smithfield Foods, the world’s largest pork producer, based in Richmond, Virginia, said they would stop using medically important antibiotics to promote growth in pigs, and set up mechanisms to report and steadily reduce all antibiotic use. The agreement was developed with Environmental Defense, the New York-based green group. Antibiotic use in farm animals is thought to contribute to the growing human resistance to important antibiotics.

**SPECIAL RELATIONSHIP** Qinetiq, a British research company that runs former Ministry of Defence laboratories, has made two major acquisitions in the United States. The company announced on 3 August that it is to buy two information-systems contractors based in Virginia — Apogen Technologies for \$288 million, and Planning Systems for \$42 million. Both companies sell computer and security systems to the Pentagon, the Department of Homeland Security and other US government departments. The expansion of its US business comes as Qinetiq gears up for an expected public offering in which the British government will relinquish its share of the company.

**HYBRID OPTION** Japanese car giant Toyota says that it expects sales of hybrid vehicles — which boost fuel economy by combining a battery and a conventional engine — to soar over the next five years. The company’s North American president Jim Press says that sales of the vehicles could reach 600,000 a year in the United States alone by early in the next decade. The company, which plunged into hybrid technology more enthusiastically than its competitors (see *Nature* 435, 1026–1027; 2005), dominates the hybrid market and is on track to sell at least 100,000 of its popular Prius models in the United States this year.