

Manufacturing Advanced Manufacturing

Tamura Mariko profiles the "Project to Create Manufacturing Industry in Tokai Region" and introduces two sophisticated new businesses born of the Project.

The Chubu region has become a topical region in Japan. It is home to the recently inaugurated Central Japan International Airport and is hosting the 2005 World Exposition in Aichi. It is characterized by a high level of competitiveness, chiefly in its manufacturing industries, backed by a range of businesses and technologies that are associated with the region. One such industry is the automotive industry that is competitive internationally and has a strong level of production. On the other hand, an increasing number of manufacturing businesses are relocating overseas in pursuit of cost-cutting measures and the region has become concerned about the hollowing-out of the local manufacturing industry. The Chubu region is striving to establish a sophisticated platform for creating new manufacturing businesses based on its excellent manufacturing infrastructure.

The Chubu Bureau of Economy, Trade and Industry (METI Chubu), is taking the initiative in the "Project to Create Manufacturing Industry in Tokai Region."

"The Tokai District has accumulated a wide range of existing manufacturing industries, including those manufacturing automobiles, metal machine tools, and electronic components," says Okamoto Masahiro, head of the General Assistance Office for the Cultivation of Business, METI Chubu, by way of explaining the unique characteristics of the Tokai District. He identifies the objectives of the project, saying, "We are aiming to establish a sophisticated cluster of manufacturing industries to help establish large and small collaborative bodies that reflect the unique local characteristics and specific business types in sectors such as advanced precision processing, new materials, and information technology. Our aim is to launch a succes-

sion of new businesses that intend expanding into overseas markets.

Under the direction of its chairman, Hirano Shin-ichi, president of Nagoya University, the Tokai Manufacturing Development Conference acts as the facilitator of the project. Set up in June 2002, the conference now has 900 member companies, some of which are large. It enjoys the participation of universities, local governments, financial institutions, trading companies, public research institutes, and other support organizations in its efforts to create a wide-area human network and promote technology development and commercialization.

Its major activities include visiting specific companies, dispatching advisors, and organizing exhibitions and workshops. "Our staff members visit nearly 400 companies a year and, to date, the Conference has dispatched a total of about 90 advisors for assistance in management and skills," says a representative of METI Chubu. The conference actively tries to establish strong partnerships.

Among the range of exhibitions held, the Techno Fair exhibitions have proven highly successful. The objective of these exhibitions is to demonstrate the patents and technologies of major businesses, research institutes, and universities to link them with the needs of small to medium enterprises and business ventures. So far, nine companies, institutions, and universities have held exhibitions and some have resulted in commercialization.

Toyota Central R&D Labs, Inc., based in Nagakute-cho in Aichi-ken prefecture with Ishikawa Norikatsu as president, has been active in organizing its Techno Fairs every six months since February 2003. "Prior to the first fair, this lab had never revealed its research achievements to the public. The primary objective of its research activities used to be to supply technologies to the Toyota Group. It has a wealth of derivative technologies developed through its basic research on automobiles. If they are linked to the local industry, the economy of the Chubu region will be invigorated," says Okamoto, stressing the importance of creating opportunities for col-

laboration between businesses and between industry and academia.

TEPAC Porosity Calculator

Based in Kagamihara, Gifu-ken prefecture, Talk Engineering Co. is a manufacturer of image processing equipment and, under the leadership of its CEO, Sasaki Masakazu, is one of the business ventures that successfully achieved technology transfer through the Techno Fair.

It obtained a license for the technique for quantifying defects in aluminum castings, exhibited by Toyota Central R&D Labs in its Techno Fair. It subsequently achieved commercial production of the quantification system.

In September 2004, it released TEPAC, a portable calculator of porosity in aluminum castings that quantified the defects therein. Opening the way for the non-destructive inspection of automobile engine components, it is marketed at a price of 98,000 yen (880 dollars). The company expects to sell 1,000 units per year.

Sasaki explains that the key feature of the model lies in its technique of calculating to a high level of precision the true density of the components, which refers to the density in the defect-free state, in accordance with the chemical composition of aluminum alloy on the basis of previous measurements.

Katoh Mikiyasu, a director of the firm, explains the advantages of the new portable calculator: "With existing models, measurement of the true density required time-consuming processes, such as cross-sectional observations. The new device is so convenient that it returns the porosity as we enter the data into it."

According to Sasaki, "As it is designed to be used in the process of actual aluminum castings, it contributes to enhancing the quality and reducing the weight of aluminum castings."

Talk Engineering has exhibited strong performance with its imaging device in the factory automation system using the image processing technologies. Katoh highlights the technological superiority of his company, adding, "We have developed real tools for a successful business, namely software and hardware, staying abreast of the trend toward greater speed and precision. Our high-density pixel resolution camera that



Talk Engineering Co. CEO Sasaki Masakazu (left) and director Katoh Mikiyasu holding TEPAC, a portable calculator of porosity in aluminum castings that quantifies the defects therein



Sugiyama Mineo, head of the processing technology development team at Pokka Corporation Central Research Laboratory, with cans of the firm's "Driver Coffee"



and distribution.

The Japan Coffee Beverage Association reveals that some 40 percent of canned coffee consumers drink the beverage when they are in transit, such as in a car, rather than when they are at home.

In response to the drinking habits of people who drink canned coffee, Pokka developed some canned coffee products for drivers that featured a bitter yet rich taste and that

countered drowsiness. One such product is Pokka Coffee Driver Black.

In product development, Sugiyama explains that his company focuses on the circumstances under which consumers feel like drinking coffee, explaining that the canned coffee helps drivers who are feeling drowsy or stressed while driving, providing a comfortable sharpness produced by the natural caffeine inherent in the coffee beans and refreshment enhanced by the aromatic ingredient.


Now, there are various research projects investigating the different health benefits of coffee, including the anti-oxidation attribute and the benefit of preventing diabetes. "We will focus on researching these functions," says Sugiyama about the company ambitions.

These case studies indicate that the ef-

forts of the Techno Fair, which is the centerpiece of the Project to Create Manufacturing Industry in Tokai Region, enables the public to become aware of the technologies and expertise that had been confined to specific enterprises. It allows their potential to be fulfilled, rather than being overlooked even by the people who created them.

While METI Chubu believes that this project will bolster ambitious small and medium businesses as it accumulates successful cases, it is also aware of the challenges remaining to be addressed. "Material achievements have been made only by a limited number of companies. It will be necessary to continue to enhance the tangible support for the development of sales channels and fund procurement in addition to the provision of low-interest loans."

"A high degree of investment is essential for commercialization and product development. It is important for business managers to improve their ability to discern whether any of the technology provided is suitable for their business plans," observes Sasaki. Both technology providers and technology adopters have to be ready to make sustained efforts over the long term.

It is hoped that every attempt of this kind in the Chubu region will help establish a foundation for the development of new, advanced industries. 

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supports a maximum resolution of 16 megapixels is a good example. The actual cases of factory automation combine these solutions in various ways."

The company believes that the new calculator can in future find a wide range of applications, including fine pattern tests on semiconductors and liquid crystals as well as applications in the automotive, food, and pharmaceutical industries.

Driver Coffee

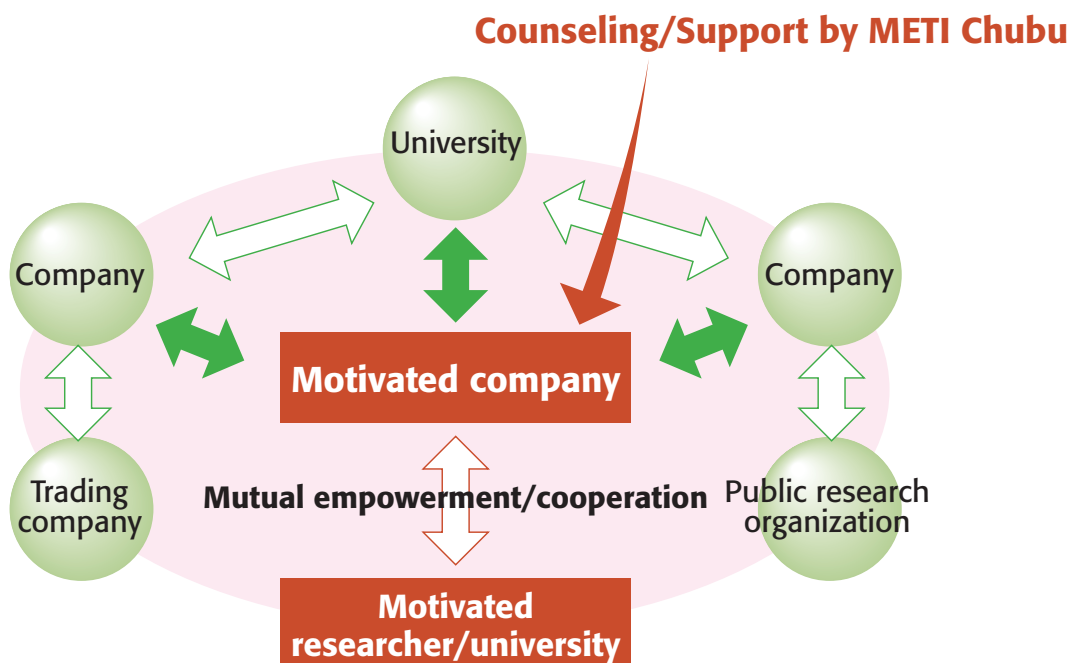
Toyota Central R&D Labs has also helped the Nagoya-based Pokka Corporation, with Naito Yoshiharu at the helm, to determine that its canned sugarless black coffee has the effect of reducing driver fatigue.

"It has been customarily said that coffee contributes to a feeling of relaxation, but its effect on driver fatigue had not yet been established. We used the technique developed by Toyota Central R&D Labs of measuring chromogranin A in the saliva to successfully quantify the stress caused by driving," says Sugiyama Mineo, head of the processing technology development team in Pokka Corporation Central Research Laboratory.

Since it released the world's first perfected canned coffee in 1972, Pokka has created many new coffee-making techniques including the far infrared roasting technique and the deoxygenized coffee-making technique.

Its flagship product, Pokka Coffee, has recorded consistently strong sales for thirty-two years since it was first released. According to Sugiyama, the company boasts its own integrated production system that covers the roasting of fresh beans, crushing, extraction,

Wide-area industry-government-academia human network created by "Project to Create Manufacturing Industry in Tokai Region"



Source: Tokai Manufacturing Development Conference