

Iwood Hopes for a Bite of the Wood-Panel Market

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ZURICH—Christoph Affentranger, chief executive of Swiss start-up company **Innovation Wood**, or **iwood**, aims to take a big bite out of the \$50 billion (€49.78 billion) wood-panel market with a substitute that is recyclable, high-tech—even edible.

"It was during a timber conference in the U.S. in the summer of 2000 when I started to think about the sawdust problem," says Mr. Affentranger, 37 years old. He specialized in wood constructions during his 10-year career as an architect before opening his own business in December 2001.

Sawmills alone produce 200 million cubic tons of sawdust every year worldwide and the bulk of it is used for heating purposes and offers little other use. Mr. Affentranger hopes his product will turn the valueless dust into cash.

The idea behind it is simple. Mix sawdust with yeast and water, knead it into a dough, bake it and out comes a new, recyclable building material. The starch-bound Lowdens wood-based panel, or

SLP, looks similar to pumice stone, smells like bread, can be used for isolation purposes and furniture making and promises to solve the timber industry's waste problem.

"I knew that wood is made of 20% starch. So I mixed it with yeast and put it in the oven," he explains. The first trials during Christmas 2000 looked like charcoal buns, but Mr. Affentranger felt that he was onto something and patented the idea.

Three months later, Switzerland's School of Engineering for Wood Industry, or SH Holz, in Biel jumped on the bandwagon, starting a joint research project that refined the "buns" into lean-looking panels. Mr. Affentranger also won the support of Juerg Gafner, a microbiologist specializing in yeast at the Swiss Federal Research Station for Fruit-Growing in Waedenswil, who is also honorary professor at Cornell University in New York.

"The latest research proves that the new material has advantages over fiber boards or particle panels as far as density or cross-tensile strength is concerned," says Frederic Pichelin, who does research for SH Holz. In addition, SLP is 100% recyclable because, unlike

with similar materials, no glue or other poisonous adhesives are used in the raw board, he explains.

Hold the Water

The only disadvantage—that SLP dissolves in water—can be solved by wrapping the material in a veneer cover. But researchers are also looking for enzymes that should prevent the dissolving process, Mr. Pichelin says.

Backed by a strong research team, Mr. Affentranger installed himself in a two-room loft in the small town of Baar, 30 minutes away from Zurich. He started to orchestrate the research between Biel, Waedenswil and Zurich and went on the lookout for investors.

In late 2001, Mr. Affentranger found 49-year-old Otto Hofstetter, a former entrepreneur-turned-private-equity investor, and together they founded **iwood** in November 2001.

Mr. Hofstetter, who has been in the start-up business since 1986 and has good ties to the banking industry, is still smarting from an investment in an Internet venture but recalls his success with a logging business he pushed in the late 1990s.

"I was really convinced about his idea because SLP really offers a solution to the sawdust waste problem," Mr. Hofstetter says. "What's more, it's ecological." Mr. Hofstetter says a friend of his had a dog that liked the smell of the material so much that he ate three cube-size pieces. "He obviously liked them," he says.

Urs Althaus, head of Switzerland's Commission for Technology and Innovation, or KTI, which awarded **iwood** 500,000 Swiss francs (€341,200) in fresh capital in August, is similarly upbeat.

"This is a great leap for the wood industry. And if it works out, **iwood** can tap into this multibillion-dollar market," Mr. Althaus says. In June, the company also received the 100,000 franc renowned Swiss W.A. de Vigier award for start-up companies.

"The base idea is simple, but the industrialization of the product needs high-tech know-how and that's why we invested," Mr. Althaus says.

Looking for Investors

Messrs. Affentranger and Hofstetter are proud of the prizes, but now the company needs international investors to push the start-up to the next stage.

Up to now, **iwood** concentrated on research and has produced no commercial panels, despite growing demand from house builders, who are interested in the product because of its ecological quality. A panel of 30 centimeters in length now costs several hundred francs but in two years from now, the company hopes this will have fallen below the level of particle board.

Messrs. Hofstetter and Affentranger are looking for companies in the machinery business or furniture makers to provide capital for building industrial plants.

But investor reluctance makes **iwood**'s capital-raising efforts difficult.

"The company is very interesting and the product looks promising. But, **iwood** is currently at a stage where it is too early for us to invest," says Lena Serk-Hansen, an analyst at Swiss private equity group Sustainable Asset Management. "But we will track the company."

Pilot Plant Next Year

Mr. Affentranger says that talks with potential investors are currently being prepared. He adds that the company is sticking to its business plan, which foresees a pilot plant in 2003 in Switzerland and the first industrial plant in 2004.

Thinking big, **iwood** targets a production of 27 million cubic meters in 2021. This would give the company a roughly 10% to 15% share of the world's wood-panel market.

But what if the industrialization of the panels should fail? "What we can think of is using the material in niche markets such as in the sound-suppressor business, where price sensitivity isn't that high," Mr. Hofstetter says.

So, despite the product's popularity with dogs, it looks like **iwood** is unlikely to ever turn into a pet-food producer.

Power Play

ager of combustion turbine technology at the Electric Power Research Institute, or EPRI, in Palo Alto, California.

Initially, Southside will target the growing and increasingly deregulated electricity sector, which the partners see as easier to penetrate than the aircraft industry. "As fuel costs become more important, the design of gas turbines has to change towards higher fuel efficiency," Dr. Feist says.

"Doping" the ceramic coating is a way to achieve the desired efficiency, while also improving safety standards and reducing carbon-dioxide emissions, Dr. Feist says.

The technology won Imperial College's inaugural Entrepreneurs Challenge in June 2001 and holds a European patent. It's also this year's winner of the Materials/Base Technologies category of the Journal's European Innovation Awards.

The advantages of the sensor coating, which can be applied to most types of turbines, include improving a power plant's reliability and availability by extending the life of gas turbines. That, in turn, maximizes the safety of turbines and reduces the risk of unscheduled plant outages, Mr. Angello says.

An increase in temperature of 50 degrees Celsius can improve efficiency by about 1%, Dr. Feist and his colleagues say. For a typical 500-megawatt unit, this could add up to \$1 million (€997,000) in savings a year, they add.

The ability to predict the lifetime of the turbine coating will reduce the amount of time generators have to shut their units for maintenance. Reducing



Joerg Feist and Andrew Heyes of Southside Thermal Sciences.

planned outage times by one day can save \$50,000 for a 500-megawatt unit.

The main disadvantage to the technology, Mr. Angello points out, is that it would be difficult to apply to existing components because it requires optical access to a turbine's hard-to-reach hot gas path.

Still, Dr. Feist has turned in his laboratory duds for pinstripes and wingtips and, along with Dr. Heyes and Mr. Dengel, is getting down to the business of marketing the technology to potential investors. Provided they are successful, a product should be ready to go within 18 to 24 months, they say.

"We know that there is a need for this technology," Mr. Dengel says.

Southside's sensor coating is unique

because it employs a UV beam to read the turbine coating, but it's not the only project on the drawing board. Both General Electric Co. and Siemens AG are developing similar technologies.

As for Dr. Feist, he's going in with both eyes open, despite the risks associated with starting a new business and competing with heavyweights like GE and Siemens.

"I can't tell you what really drives me to do this. The excitement about reaching milestones is not the only driver for me," says Dr. Feist, the father of a three-month-old daughter. "It's probably about my mother, who told me once that I should never give up. That's what I did for the last four years, but it is not always the easiest way."