

Washington Manufacturing Alert

The Newsletter
Of Washington's
Most Important Industry

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Revolving Funds: They're getting renewed attention for funding manufacturing. **Page 4**

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A thin film of gold is vacuum deposited on a 4-inch silicon wafer using a CHA electron-beam evaporator at the microfab lab. Photo courtesy Washington Technology Center

So What's On Your Mind? Survey Aims To Find Out

How are Washington's manufacturers doing? What issues matter most to them? What do they see as their greatest challenges?

You can get a sense of the answers to those questions through individual conversations with company executives, but it might be nice to have something more substantive than anecdotes to gauge the thinking and sentiment of the state's manufacturing community.

Impact Washington says a major survey of manufacturing executives it hopes to launch this summer, and continue in future years, will provide a

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Microfabrication Lab: Tiny Machines, But Big Potential For Manufacturing

BY BILL VIRGIN
Publisher and Editor

The next big advances in manufacturing technologies and products could be coming in very small packages.

Too small, in fact, to be seen with the naked eye – on the scale of microns (one-thousandth of a millimeter).

The cost of equipment needed to test concepts and design prototypes at that scale may be "loose change" to a big semiconductor company, but it's well beyond the reach of many small firms, says Keith Ritala, the business development director of the Washington Technology Center's Microfabrication Lab. A single system can cost as much as \$500,000, and "a startup company needs to do processing on a number of systems that are in that price range."

That's where the microfabrication lab comes in, providing the space (and, if needed, the personnel) for small companies to test and refine the ideas that provide the core for new products and technology.

The microfabrication lab, housed in Fluke Hall on the University of Washington campus, isn't a new facility, having been around for several decades.

But with an infusion of new equipment and the appointment of Ritala as business development manager, the lab is getting renewed emphasis as an economic-development engine for the micro-electronics industry.

Ritala isn't new to the scene either. He joined the technology center 19 years ago, after spending 20 years in the semiconductor industry. Ritala worked as a matchmaker between industry and university researchers, and managing and

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Microfab Lab: Tiny Machines, Big Potential

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marketing the lab. After departing to work in other offices on campus, he has returned “as purely the marketing guy for the lab to build up its business and user base because we’ve added a ton of capabilities since I worked here previously. We’ve had substantial expansion in first-class equipment, either through research grants to faculty or through our own organization that have added to our baseline capabilities and allowed us to do work at a finer scale, at a higher volume or just things we were physically unable to do in the past.”

The microfabrication lab currently generates \$1 million in annual revenue, Ritala says. Its user base, by headcount, is predominantly UW researchers, with 35 percent to 40 percent coming from the private sector or other research institutions.

“I believe this facility is capable of reaching at least \$1.5 million, possibly \$2 million in revenues that come in entirely from user fees,” he adds. Judging from what similar labs at other universities generate, “I think that would be well within our realm of possibility to expand the business by at least 50 percent if not double it in the years ahead.”

One driver behind that growth is the increased interest in nanotechnology. “On the scale of things, microfabrication really means microfabricating and machining structures that are somewhere between a micron and a millimeter in size,” Ritala says. “Nanotechnology takes that three orders of magnitude smaller.”

To do work at that level, researchers need a platform akin to a microscope slide, Ritala says. Work at the nanotechnology level (and the UW has a lab for that as well) is then performed on top of that.

Adjusting to and incorporating new technology waves into its research mission isn’t new for the microfabrication lab. For the last decade the hot topic has been microelectronic mechanical systems, which is (according to the MEMS and Nanotechnology Exchange Web site) “the integration of mechanical elements, sensors, actuators, and electronics on a common silicon substrate through microfabrication technology.” Some of the same techniques used to produce semiconductor chips are used to “selectively etch away parts of the silicon wafer or add new structural layers to form the mechanical and electromechanical devices.”

Says Ritala, “MEMS 10 years ago was kind of a

laboratory curiosity but has extended itself to a viable manufacturing technology.”

The microfabrication lab is equipped with a clean room, silicon wafer handling devices, photolithography tools, plasma etching and other equipment needed to construct those micromachines.

The facility has figured in some notable success stories of Washington companies. Microvision Inc., the Redmond company that recently launched its first consumer-market product, a pocket-sized projector, “is one of our prime clients,” Ritala says. “They’ve used the facility for most of the last 10 years. They are really developing interesting, commercially hot technology for projecting images for computer gaming.

“The MEMS scanner that forms the heart of that technology is one that was developed and further refined and optimized and continues to be addressed through the efforts of people at the lab”

Vancouver, Wash.-based nLight Photonics, “did a lot of initial prototyping and feasibility, developing optics that went into laser systems” the company makes. Micronics Inc. the Bothell company developing “a fluidics lab on a chip” for disease diagnosis and treatment monitoring, also used the microfab lab. The WTC says bar code scanners, fuel cells for laptops and cell phones, actuators, bioscreening devices, biocompatible implants, laser guidance systems, high-power diode lasers, digital switches, and microfiltration systems have all come out of work done at the lab.

The technology center is stepping up programs to see that more companies can use the lab to develop products. It’s currently running a program to provide small companies (fewer than 100 employees) up to three months of free lab access.

Having access to the sort of research capabilities the lab provides will be crucial in keeping American manufacturers, particularly small firms, competitive in MEMS and nanotechnology. Ritala says that if the presentations given by startups and research organizations marketing their technology for licensing is any indication, the U.S. is still a major player in that sector.

But keeping hold of that technology and manufacturing once products reach commercialization is an entirely different matter.

“As with anything that has a high technical compo-

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The Northwest Of Washington's Most Important Industry

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PACIFIC NORTHWEST RAIL NEWS

New Interest In An Old Financing Source: Revolving Loan Funds

Manufacturers looking for money to fund operations or expand their business, and finding conventional bank lending tough to come by, are turning to a long-established if sometimes overlooked source: revolving loan funds financed by the federal Economic Development Administration and operated by local organizations.

Washington has a dozen EDA-sponsored funds, with several of them specifically targeted at manufacturing.

The Northwest Economic Council in Bellingham operates such a manufacturing-oriented revolving fund. The program provides up to \$75,000 for any single project for land, building, equipment, expansion and working capital.

Borrowers must be located in Whatcom County, and projects must add jobs that pay above required minimum wages. Loans go to projects for which full conventional financing isn't available; the fund will provide up to 30 percent of financing for the total project amount.

"We like to see the business owner have 20 percent skin in the game," said John Michener, programs manager for the Northwest Economic Council.

For working capital, the revolving fund will provide financing for up to five years. For fixed assets, loans are limited to the useful life of that asset, and no longer than the term of the commercial loan used to finance the purchase.

Interest rates are set below prevailing rates in the area for loans of similar size, duration and purpose, the council's website says.

The fund currently totals \$280,000, of which \$115,000 is available to lend. But if pending applications are approved that will be down to \$20,000, possibly by the end of July.

Michener said the fund dates to the mid-1980s and has always been aimed at manufacturing. Since EDA's goal in providing money to local funds is to create family wage jobs, "If you can direct (loans) to manufacturing, it will provide those family-wage jobs you're looking for," he said.

Borrowers have included metal and machine shops, and makers of computer networking components, small engines and ammunition.

The Whatcom County fund isn't the only one that has been drawing increased interest. "With the downturn in the economy, we have had more requests than we can support," said Tani Gunn, of The Lending Network in Chehalis. "The good news is that the loans we have are paying back and the fund increases so that we will have more money to lend."

The Lending Network also offers funding from the U.S. Department of Agriculture, and the organization

Revolving Loan Programs In Washington

This is a list from the Economic Development Administration of revolving-loan funds in Washington, along with their areas of concentration and a website for further information (where available):

Benton-Franklin Economic Development District.

Richland. Focus on industrial, manufacturing and service in Benton and Franklin counties; www.bfcog.us.

Cowlitz-Wahkiakum Council of Governments, Kelso.

Downtown Longview and Columbia and Mint Farm industrial parks; www.cwcog.org.

Lending Network, Chehalis. Lewis and Cowlitz counties.

Mid-Columbia Economic Development District, The Dalles, Ore.

Includes Skamania and Klickitat counties; www.mcedd.org.

Northwest Economic Council, Bellingham. Manufacturing and family-wage jobs in Whatcom County;

www.nwecon.org.

Quest for Economic Development, Wenatchee. Chelan and Douglas counties; www.wenatchee.org.

Rural Community Development Resources, Yakima. Yakima County.

SIRTI Foundation, Spokane. Technology companies in Spokane, Whitman, Asotin, Columbia, Stevens, Ferry, Pend Oreille, Benton, Franklin and Garfield counties;

www.sirti.org.

Skagit Council of Governments, Mount Vernon. Skagit County; www.scog.net.

Tacoma, City of. Targeted sectors as listed in city's economic development plan and Downtown Tacoma Economic Development Strategy;

www.cityoftacoma.org.

Tri-County Economic Development District, Colville. Light manufacturing in Ferry, Stevens and Pend Oreille counties. www.teddonline.com.

Washington State Department of Commerce, Olympia. Clallam, Jefferson, Grays Harbor, Pacific and Wahkiakum counties; www.commerce.wa.gov.

has been awarded another \$750,000 to make loans to businesses in its service area. "These funds are actually more flexible and easier to use than the EDA funds," Gunn said.

More than 60 percent of the funds in The Lending Network's various programs have gone to manufacturing companies, she added. "The revolving loan funds are one of the best programs to help businesses in the economic development tool chest."

The state Department of Commerce operates several loan funds, including one for counties affected by declines in the fishing and timber industries (see above), and another to finance projects for small and medium-sized forest products companies.

Survey: What Do Manufacturing Executives Really Think?

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much better sense of what those making a living in the industry really think.

The Mukilteo-based organization, formerly known as Washington Manufacturing Services, is currently raising funds for the survey. John Vicklund, president of Impact Washington, says about \$50,000 of the \$60,000 needed to do the survey has been collected. The fund-raising has focused not just on manufacturers themselves but on companies that provide support and services to the industry, such as banks, law and accounting firms and insurance companies. "We're just about there," Vicklund says.

The list of survey participants will be drawn largely from Impact Washington's database of about 7,500 manufacturers from around the state. Vicklund wants to make sure that the survey not only has enough respondents for a statistically valid sample – the pollster says that would mean at least 400 responses – but that all sections of the state and all major industry clusters are represented so one segment such as aerospace isn't overweighted.

He also wants to make sure the survey represents the views of chief executives, founders, general managers and others who are the principal decision-makers in a company, "so it isn't handed off to the junior marketing intern for the summer."

The telephone surveys themselves will take about four weeks. Vicklund hopes to have that part wrapped up by Labor Day, with the results to be released in the fall (a later release would be too late to be of much use in the next legislative session).

Once the survey is completed and published, Impact Washington hopes to have a series of forums around the state, perhaps in conjunction with economic development councils and similar local groups, to discuss the findings. "We don't want it to be perceived as a Se-

attle-centric, Boeing-driven kind of thing," Vicklund says.

While Impact Washington is putting together a panel of government and business leaders to craft questions specific to this state, the survey will be modeled on one done for Enterprise Minnesota, a manufacturing extension partnership much like Impact Washington.

Enterprise Minnesota, like Impact Washington, had gone through a name change, and in the course of its rebranding it found that "people didn't understand what was happening with manufacturing or its impact on the economy," Vicklund says. The organization decided to commission a survey that asked participants about general economic conditions and the outlook, performance of and expectations for their individual companies, rankings of issues of concern (foreign competition, government regulation, taxes, employee benefit costs), factors in employee recruitment and retention and green business practices.

The survey "didn't uncover things you might not have expected," but it did raise awareness of issues and concerns with the manufacturing community and with legislators, and provide a base line against which changes in opinions can be measured.

Vicklund is hoping for the same experience in Washington. "I don't know what we'll find from it; it may be nothing spectacular," he says, but it should boost awareness of manufacturing among government and business leaders beyond the occasional story about Boeing or the loss of jobs to China.

Impact Washington provides consulting and training services to manufacturers on lean production techniques, quality programs, sales and marketing strategies, employee development and other subjects to make companies more competitive. Funding comes from the federal government and from fees paid by the companies that use the service.

The Manufacturing Calendar

June 22 Northwest Manufacturers Alliance, breakfast roundtable, 7 a.m., Red Lion Hotel, Olympia; www.thurstonedc.com.

June 23 Renew Northwest conference on lean/green manufacturing and entering the renewable energy supply chain, 1:30-3:30 p.m., Portland World Trade Center. Sponsors include Impact Washington and Southwest Washington Workforce Development Council; www.swwdc.org.

June 24 Center for Advanced Manufacturing Puget Sound, breakfast roundtable, 7 a.m., CenterPoint conference center, Kent; www.camps-us.com.

July 13 Technology Alliance Innovation Showcase, highlighting technologies ready for commercialization, 3:30 p.m., Rainier Square Conference Center;

www.technology-alliance.com

Aug. 12 Pacific Northwest Defense Symposium, Kitsap Conference Center at Bremerton Harborside; www.nwdefense.com.

Sept. 30 Gesa Smartmap Expo, TRAC Center, Pasco; www.tridec.org.

Oct. 7-8 Green Industrial Business & Career Expo, South Seattle Community College and Puget Sound Industrial Excellence Center; www.greenexpo-wa.com.

Oct. 22 Governor's Life Science Summit and Washington Biotechnology and Biomedical Association annual meeting, 7:30 a.m., Meydenbauer Center, Bellevue; www.washbio.org.

Nov. 18-20 Pacific Marine Expo, Qwest Field Events Center, Seattle; www.marineexpo.com.

Newswire: The Latest In Washington Manufacturing

RENTON: Barely a month after announcing one increase in the production rate of the 737 at its Renton plant, Boeing Commercial Airplanes has announced a second.

Boeing said it plans to build 35 of the planes every month beginning in early 2012. That's up from the 34-a-month rate announced in May, which had also been scheduled to begin in early 2012. The current production rate is 31.5 planes a month. The company did not disclose whether the increased production rates will have an impact on employment at Renton.

OLYMPIA: Manufacturing employment rose by 600 jobs from April to May, the Employment Security Department said.

Overall employment (not seasonally adjusted) for the sector remains 8,300 jobs below May 2009.

Food manufacturing, principally fruit and vegetable preserving, picked up 900 jobs from April to May 2010, while non-metallic mineral manufacturing added 200 jobs. The aerospace product and parts category dropped by 500 jobs from the previous month.

Total manufacturing employment for May 2010 was 256,300, according to preliminary data.

CAMAS: Logitech International plans to open a smart-phone accessories division in Camas. The announcement was made at a ribbon-cutting ceremony for Logitech's new 4,000-square-foot research and development facility at the Camas Meadows Corporate Center. The company said employment will eventually grow to 110. Logitech International is a Swiss company with U.S. operations based in Fremont, Calif.

OLYMPIA: Pacific Power has filed with the Utilities and Transportation Commission to raise electricity rates for its industrial customers by 21 percent. Pacific Power, owned by PacifiCorp, had 5,827 industrial customers in Washington as of December 2008. It operates in Kittitas, Columbia, Garfield, Walla Walla and Yakima counties, serving Yakima, Toppenish, Sunnyside, Selah, Pomeroy, Walla Walla and Dayton.

TACOMA: The registration deadline is July 9 for companies wishing to participate in the Evergreen Building Products Association and state of Washington at the Japan Home & Building Show in Tokyo in November. Information is available at www.evergreenbuildingproducts.com.

PORT ANGELES: Port of Port Angeles commissioners have approved a contract with an engineering firm to draw up plans for three new 25,000-square-foot buildings at the North Industrial Park. The additional space

would accommodate growth by Angeles Composite Technologies Inc. and other current and prospective manufacturing tenants. Westport Shipyards also has a cabinet shop and engineering offices at the industrial park. The port says conversations with tenants indicate additional space will be needed in the next two to five years. The contract was awarded to Zenovic & Associates of Port Angeles.

TUKWILA: AeroGo, which makes air casters for moving large and heavy objects, said two of its transporters were used in Chanzhou, China, to move the world's largest electric transformer, a unit weighing more than 700 tons.

BELLEVUE: Purchasing managers' reading on current economic conditions was little changed from April to May in the latest edition of the survey issued by the Western Washington chapter of the National Association of Purchasing Management. They were slightly more negative about conditions over the next 90 days, although the index remained above 50, indicating expectations that economic expansion will continue.

CONTRACT AWARDS

- Intermec, based in Everett, said Canada Post plans to deploy more than 8,000 of its CN50 mobile computers to letter carriers.

- Itron Inc., based in Liberty Lake, has been chosen by Spanish energy and utility group Iberdrola to develop a smart-meter program. In the initial phase of the program 100,000 smart meters will be deployed in Catelion, Spain. Itron is developing software for managing the system and will be one of the manufacturers supplying meters.

Microfab Lab

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ment, once it reaches the high-volume manufacturing stage, then the manufacturing engineers take a look at it and figure out how to wring out all the extraneous costs," Ritala says. "Labor is one of those. You can't argue that the low cost of labor overseas is one of the factors that are operating to the detriment of growing manufacturing in the U.S.

"But the stuff that has been made here still has a fairly high degree of technical complexity that requires the involvement of the engineers that helped develop it. Perhaps in another decade's time there could very well be a migration of these to manufacturing sites overseas, but at least at the same time we haven't been seeing much of what's happened in the semiconductor industry where so many of the wafer fab and certainly the packaging operations are located offshore."