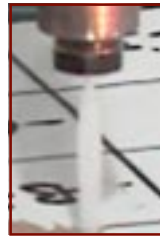




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# NEWSLINK

FEDERAL LABORATORY CONSORTIUM FOR TECHNOLOGY TRANSFER

FEBRUARY 2002 VOL. 18, NO. 2

## NIST MEPs Solve Small Business Problems, Boost Productivity

Around the United States, **Manufacturing Extension Partnerships (MEPs)** are available to help small- and medium-sized manufacturers—over 107,000 to date—succeed. Serving all 50 states, the more than 400 not-for-profit centers are networked through the Department of Commerce's National Institute of Standards and Technology (NIST). The numerous locations make it possible for even the smallest firms to tap into the expertise of knowledgeable manufacturing and business specialists nationwide—to improve their productivity, strengthen competitiveness, and increase profits.

Manufacturing creates wealth for the U.S. in the form of economic growth, increased jobs, and strong trade in world markets. The more than 361,000 small- and mid-sized manufacturers make vital contributions to the economy, often as suppliers to large firms. About 99% of the nation's manufacturers are small- to mid-sized—defined as having fewer than 500 employees. However, many of these smaller businesses have limited budgets and lack in-house expertise and access to the newest technologies and production

methods, creating a large productivity gap between large and small firms.

### MEP Experts

The NIST MEP manufacturing experts help close that gap and overcome production obstacles.

*"Small business is at the heart of our entrepreneurial economy. I am proud that through NIST's Manufacturing Extension Partnership, top-notch technical and business assistance is now available to smaller manufacturers in every state to create and retain high-quality American jobs."*



— former President Bill Clinton

Each year, through their thorough assessments and strategies for improving the products of smaller businesses, experts help thousands of smaller businesses throughout their various stages of research and development, solving their individual problems and improving their products. Each MEP center represents a unique blend of federal, state and local resources and offers broad variety of business solutions.

**For more info:** 800-MEP-4MFG, MEPinfo@mep.nist.gov, www.mep.nist.gov **NL**

## Resolutions for Small Business Manufacturers

To start off the year more effectively, the MEP Program encourages small businesses to make a New Year's resolution to invest in cost-saving and productivity-increasing measures. These investments "can lead to gains that can have a substantial impact on a company's bottom line all year long and for years to come," said **Kevin Carr**, MEP's Director.

MEP offers the top ten business New Year's resolutions for 2002. Useful for small businesses, these recommendations may also serve [in part] representatives in federal laboratories and customers, as well:

**1. Re-examine your marketing approach.** Many industry pockets are experiencing rapid growth. Have you identified these growth areas? A marketing assessment of your product and the markets you can sell your product to can help determine opportunities in growth areas that you might not have previously considered.

**2. Profile your best customers.** Make a list of your customers and focus on the ones that provide the best work at the best margin. Look for patterns or similarities. The result—a profile of your ideal customer—can be compared to marketing databases to find prospective customers ideally suited to your company/organization and services.

**3. Invest in sales training and technology.** Make the most of existing technology marketing databases and software to give your sales force the

Please see **MEP**, p. 7

**UPDATE YOUR BOOKMARKS -- [www.federallabs.org](http://www.federallabs.org)**



## FED LABS FLASH

*Technology transfer news, notes, and events  
within the federal lab community*

### **INEEL Hires Former Brigadier General for National Security Post**

Former Brigadier General Bob Summers has been appointed Director of Defense & Infrastructure Systems of the Department of Energy's Idaho National Engineering and Environmental Laboratory (INEEL) National Security Division.

Summers transitioned from the U.S. Air Force in 2000. His service included numerous assignments involving space and missile operations, teaching physics at the U.S. Air Force Academy, and leading several programs involved with the repair and maintenance of aircraft and space systems.

His most recent assignment was with the Defense Threat Reduction Agency, where he was the director for Combat Support. In this role, he directed analytical and operations support to the nation's senior military commanders with an emphasis on nuclear, chemical and biological threats.

**For more info:** Kathy Gatens, 208-526-1058, [kzc@inel.gov](mailto:kzc@inel.gov)

### **Directorate Signs Agreement to Produce Solid-State Lasers**

The Air Force Research Laboratory's Directed Energy Directorate (DED) recently signed an agreement with a Warwick, R.I., firm to produce high-power semiconductor diode lasers for commercial applications.

Laser Fare's Advanced Technology Group will deliver high-powered lasers to the DED's Laser Effects Research Branch under terms of the two-year Cooperative Research and Development Agreement.

"We're taking the lasers we've developed from the prototype to the manufacturing stage," explained J. Terence Feeley, president of the 20-year old research and development firm.

"This unique partnering agreement provides a mechanism to commercialize Air Force Research Laboratory technology while supplying the Laser Effects Research Branch with diode laser sources for laser effects

testing," explained Dr. William P. Latham, technical advisor with the Research Branch. Laser Fare's subsidiary, Infinite Photonics, Inc., will manufacture the lasers.

**For more info:** Conrad Dzewulski, 505-846-1911, [conrad.dzewulski@kirtland.af.mil](mailto:conrad.dzewulski@kirtland.af.mil)

### **ISR Faculty Part of Four Army Research Lab Awards**

Faculty at the Institute for Systems Research at the University of Maryland are involved in four new projects awarded by the Army Research Laboratory (ARL) Collaborative Technology Alliances (CTA) Program.

The CTA program is the follow-on to the successful ARL Federated Laboratory (FedLab) Program, which has been running for five years. The programs involve teams of researchers from industry and universities, led by industry, working very closely with ARL personnel.

First, the Communications and Networks Alliance project will develop significant enhancements in the Army's communication infrastructure. Second, Advance Sensors Alliance research will focus on developing affordable sensors that provide the Department of Defense with continuous situation awareness, rapid precise discrimination and targeting of all threats in all environments, and the ability to sense surroundings so as to navigate rapidly and defend oneself.

Next, the Power and Energy Alliance addresses overall reductions in battlefield usage of fossil fuels and compact power battery requirements, which in turn will enable substantial reductions in the deployment and logistic support footprint for the Army of the future. Finally, the aim of the Advance Decision Architectures Alliance is to provide Army warfighters with proof-of-principle solutions for conducting military operations on the 21st century digitized battlefield.

**For more info:** Rebecca Copeland, [rebeccac@isr.umd.edu](mailto:rebeccac@isr.umd.edu)

Please see **FLASH**, p. 3

## NEWSLINK

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## Finding What You Want

Need help finding a technology or facility at a federal lab? In addition to *NewsLink*, the FLC also offers this free service to help you navigate the federal lab system.

### Laboratory Locator

Our Laboratory Locator personnel will search the FLC network for the exact technology or facility you are seeking. All you have to do is submit a Technical Request Form describing what you need. To do this, go to [www.federallabs.org](http://www.federallabs.org) and click on LABORATORY LOCATOR, or call 856-667-7727 and ask for Frank Koos or Sam Samuelian.

## FLASH from p. 2

### Technology Symposium Issues Call for Papers

The Fifth International Symposium, scheduled from April 22-25, 2002 at the Naval Postgraduate School in Monterey, Ca., has issued a call for papers. This symposium, entitled "Technology and the Mine Problem," focuses on emerging, enabling technologies that potentially support application to naval mines and mine countermeasures, land mines and countermines, humanitarian demining, unexploded ordnance site remediation, and risk management.

Papers for plenary presentation will be selected on merit and the potential for application across more than one application area. A balance between land and sea applications will be another factor in plenary paper selection. All paper selections will be presented in parallel technical sessions held each afternoon of the symposium, which expects an attendance of approximately 300-350.

For more info: Dr. Clyde L. Scandrett,  
[clscandr@nps.navy.mil](mailto:clscandr@nps.navy.mil), [www.minwara.org/meetings.htm](http://www.minwara.org/meetings.htm)

### NIJ Issues Call for Information

The National Institute of Justice has engaged the Public Safety Technology Center (PSTC) of Westborough, Mass., to conduct a research project to identify the public safety technology needs for effective incident command systems and assess what technologies currently exist for managing critical incidents. This project will provide information on how technology can promote interaction, cooperation, and efficient and effective deployment of first responder personnel to enhance public safety.

The NIJ seeks manufacturers of technology related to critical incidents and response/recovery efforts, and is currently looking for innovative technologies that fall into the following categories: communication technologies, training technologies, organizational resource management software, officer safety technologies, intelligence/data collecting technologies, special purpose vehicles, and forensic technologies.

For more info: Tom Kennedy, 508-870-0042,  
[tkennedy@ctc.org](mailto:tkennedy@ctc.org) **NL**

## Sandia-MEP Establish Regional Manufacturing Base

Federal laboratories that develop manufacturing technologies are prime settings for Manufacturing Extension Partnership (MEP) offices. Together, laboratories and MEPs are an effective collaboration of complementary expertise, offering businesses just the kind of combined assistance they need to develop their manufacturing R&D. And, all benefit—the laboratories, MEP centers, and businesses.

In Albuquerque at Sandia National Laboratories, a Memorandum of Understanding (MOU) established a partnership between Sandia Corporation's Regional Alliance for Manufacturing Project (RAMP) and the New Mexico Manufacturing Extension Partnership (MEP) on manufacturing technology development and business assistance.

"The MEP-RAMP partnership focus is to build a manufacturing base in the region," said Cesar Lombana, RAMP program manager. RAMP serves to stimulate the growth and expansion of manufacturing companies through the use of advanced technologies and best business practices, while increasing Sandia's manufacturing technology capabilities to support its national defense mission. The MEP's role is to help local manufacturers increase their global competitiveness by identifying and adopting leading-edge technologies, primarily from Sandia. The MEP side also helps facilitate future business expansion and a positive economic impact.

Lombana is also the manager of Sandia's Nuclear Weapons Components Production Program within the Manufacturing Systems, Science and Technology Division, one of two production programs that design and manufacture components for weapon systems to replace an aging stockpile. RAMP is in that division.

### More Sandia-MEP Centers Planned

The 9-month-old Sandia RAMP-MEP collaboration is too new to tout successes, but the ingredients are there. Their clients—small manufacturing companies and suppliers—have access to a growing list of Sandia resources, now 34 technologies and counting per the RAMP Initiative, as well as more than 2000 manufacturing and business specialists through the New Mexico MEP.

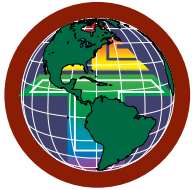
For more info: Cesar Lombana,  
[calomba@sandia.gov](mailto:calomba@sandia.gov) **NL**





## TECHNOLOGY WATCH

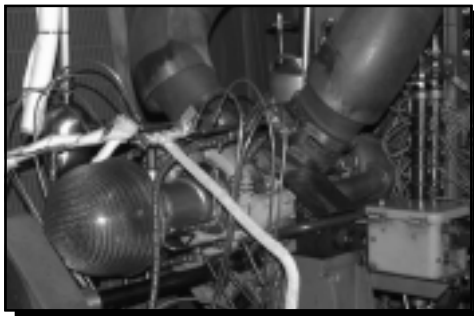
*Federal laboratory technologies available for technology transfer*



### ENVIRONMENT

#### **AFRL Looking to Develop Additives**

The Fuels Branch of the Air Force Research Laboratory (AFRL) Propulsion Directorate's Turbine Engine Division (AFRL/PRTG) is leading a national effort to develop fuel additives to reduce particulate emissions from turbine engines.



Experiments to assess the additives' performance in higher-pressure combustor rigs and actual turbine engines will follow.

Fuel additives offer a widespread and cost-effective means of reducing particle emissions from advanced and legacy gas turbine engines. Ongoing research shows a 20% to 35% reduction in particulate emissions from turbine engines using the "+100" fuel additive (developed for increased thermal stability). AFRL/PRTG recently assessed several fuel additives in an in-house atmospheric pressure combustor and found additives that reduced particulate emissions by up to 60%. Experiments to assess the additives' performance in higher-pressure combustor rigs and actual turbine engines will follow.

In addition, chemical modeling efforts and advanced laser-based diagnostics measurements will lead to increased understanding of soot formation and burnout in turbine engine combustors to aid in the development of effective additives.

**For more info:** Kristen Schario, 937-255-3428, kristen.schario@wpafb.af.mil



### SENSORS

#### **System Uses Magnetic Fields as Measuring Stick**

Superfluid helium-3 exists only at an equally unimaginable temperature—one-thousandth of a degree above absolute zero. Yet, because it flows without resistance, it flows endlessly. Now, physicists at the University of California-Berkeley, funded in part by the Office of Naval Research (ONR), have built a device using superfluid helium-3 that behaves just like a superconducting quantum interference device, or SQUID.

SQUIDS are the most sensitive detectors of magnetic fields known today. SQUIDS use the flow of supercurrents through loops as ultrasensitive sensors of the magnetic fields threading the loop. The new device uses the flow of the superfluid and can measure (again ultrasensitively) the rotation of the loop.

The potential is there for such a superfluid SQUID-like device to measure rotation thousands of times more sensitively than can be measured today with state-of-the-art ring-laser gyroscopes. "Inertial guidance systems, based on gyroscopes, are used in everything from spacecraft navigation to distant planets, to precise targeting of missiles, to the maneuvering of submarines, and this is exactly why the Navy is interested in them," said Dr. Peter Reynolds, ONR joint program manager. "What this tells us is that a gyroscope could eventually be built that would be orders of magnitudes better than anything we have today."

**For more info:** Gail Cleere, 703-696-4987, cleereg@onr.navy.mil.



### AGRICULTURE

#### **Compact Device Identifies Liquid Characteristics**

Runny ketchup isn't just bad on a burger, it's bad business for the food manufacturer that may have process control problems that adversely affect product quality and manufacturing



The compact real-time ultrasonic rheometer and fluid characterization device.

costs. To ensure that puddings, sauces and other fluid products have the viscosity, texture and other characteristics consumers expect, most manufacturers must conduct time-consuming manual batch sampling.

Problems may not be discovered until a defective product has already been processed. Researchers at Pacific Northwest National Laboratory have developed an ultrasonic tool that provides noninvasive, real-time and continuous monitoring of key physical properties of fluid products. The real-time ultrasonic rheometer and fluid characterization device is compact, easily mounted on process piping, and also could be used to monitor the performance properties of polymers, coatings, chemicals and pharmaceuticals.

**For more info:** [www.pnl.gov](http://www.pnl.gov)



**LAW ENFORCEMENT**  
**Potato Technology**  
**May Help Move**  
**Mail**

The same technology that helps deliver wholesome Idaho potatoes to family kitchens may be an effective tool against terrorism.

Researchers at the **Department of Energy's Idaho National Engineering and Environmental Laboratory (INEEL)** are teaming with a small business to experiment with destroying anthrax using ozone.

The **O3Co.**, located in Aberdeen, Idaho, has developed a patented process to deliver high concentrations of ozone to freshly harvested potatoes as they travel along conveyor belts. Ozone destroys harmful bacteria such as *Erwinia*, which are responsible for soft rot, silver scurf and pink rot, thus allowing farmers to safely store their potato crops for months. INEEL researchers believe this same process can be used to sterilize mail and are testing their theory with harmless surrogates for anthrax spores.

"We recognized the potential right after the first anthrax started showing up," says O3Co. president **Lynn Johnson**. "We were trying to contact INEEL at the same time they were calling us. We've had such success with agricultural pests that we felt it would work on this."

The INEEL research will reveal how great the concentrations of ozone must be and how long the ozone must be applied to destroy anthrax in mail.

**For more info:** Kathy Gatens, 208-526-1058, [kzc@inel.gov](mailto:kzc@inel.gov) or Deborah Hill, 208-526-4723, [dahill@inel.gov](mailto:dahill@inel.gov), [www.inel.gov](http://www.inel.gov)

**FLC Web Site**

We continually update our web site with new technologies categorized into 15 industry topic areas—Simply go to [www.federallabs.org](http://www.federallabs.org) and click on TECHNOLOGIES. New entries are added weekly!



**MANUFACTURING**  
**Aluminum Castings**  
**Cast Off in Favor**  
**of Steel**

Heavy truck manufacturers have relied on aluminum castings with thick cross-sections to meet load and durability requirements and to reduce the weight of vehicles. However, long-term endurance



Castings are developed by modifying the evaporative pattern casting (EPC) process for aluminum casting and applying it to steel.

of aluminum in truck life (over a million miles) is being challenged.

As an alternative, thin-wall steel castings have high strengths, high strength-to-weight ratios and excellent fatigue properties, and can be made at a weight that is equivalent to or even lighter than the weight of an aluminum counterpart. Thin-wall steel castings could also replace other steel castings that cannot be reduced in weight and bulk using conventional casting processes.

The **Albany Research Center** is successfully making complex thin-wall (0.125 inch/3 mm) castings by modifying the evaporative pattern casting (EPC) process for aluminum casting and applying it to steel.

The advantages of EPC include: dimensional tolerances and surface finishes similar to those using investment casting; eliminating cores; the option of gluing simple pattern parts together to make a more complex whole; eliminating sand binders and sand preparation equipment; reducing pattern and part draft; eliminating parting lines; reducing post-casting cleaning; and the freedom to orient patterns within molds in a variety of positions to increase options for casting feeding and directional solidification.

**For more info:** Paula Palmer, 541-967-5966



**MATERIALS**  
**Chromatography**  
**Column Design Using**  
**Lab Glassware**

A scientist at **Westinghouse Savannah River Company (WSRC)** has designed an innovative method for constructing a chromatography column using standard laboratory glassware. The invention includes a device inserted into a hollow glass tube to support a chromatography resin or other matrix. When used with a graduated volumetric glass cylinder, the supporting device may be aligned with the "0" volumetric indicator on the glass cylinder to give accurate adjustments in volumetric measurements.

Chromatography is a commonly employed technique used to separate a biological or chemical material based on the material's physical or chemical properties. Standard sizes of traditional chromatography columns and accessories are not compatible with other standard lab glassware. Existing resin supports can be used only with a traditional chromatography column. With conventional membrane or single-use resin supports, fine particles of the matrix gel often may filter down, reducing the flow rate and/or separation efficiency of the column. These supports may rupture or lose their desired integrity if subjected to back flushing or back pressure.

In the new column design, the resin-supporting device provides a fluid-tight (liquid and gas) seal around the periphery of a standard glass tube to create an effective and inexpensive chromatography column.

Back pressure may be applied to back flush a packed resin bed and re-establish the desired column flow rate. The column also is easily cleaned, which greatly shortens the time of preparing the column for an additional run.

The dimensions of the chromatography resin-support device can be modified as needed to fit a variety of standard glass cylinders.

**For more info:** Eric M. Frickey, 803-725-0406 or 800-228-3843, [eric.frickey@srs.gov](mailto:eric.frickey@srs.gov)



## SPOTLIGHT ON SUCCESS

*Success stories from the federal lab community*

# INEEL Technology Licensed to Aid Environmental Cleanup and Food Processing

**N**itroCision, LLC will begin manufacturing the Cryogenic Zero Added Waste, Cutting, Abrading and Drilling (ZAWCAD) technology developed by the Department of Energy's Idaho National Engineering and Environmental Laboratory (INEEL).

The ZAWCAD technology was previously licensed from INEEL by another company in 1998. It features a patented technology using liquid nitrogen. The technology will make many industrial processes safer and "greener" by performing hazardous and nonhazardous cleaning and cutting operations while minimizing waste.

Cryogenic ZAWCAD acts like a water jet, but uses cold liquified nitrogen as the cutting/abrading medium. The nitrogen reverts to a harmless atmospheric gas as it warms, leaving no liquid or blasting residue.

Applications range from removing paint from metal surfaces to production line cutting in food processing plants.

"This technology has the potential to reduce the environmental impact of wastestreams in several industrial areas," said **Lyman Frost**, INEEL technology transfer director. "NitroCision's commercialization of this technology should pay benefits to NitroCision, the local region and the nation as a whole. Advanced manufacturing techniques are one of the areas of concentration for the Eastern Idaho Technology Corridor, and this technology fits perfectly into that regional development strategy."

In addition to developing applications for the environmental market, NitroCision has collaborated with the **University of Nebraska** to strategically target food-processing applications that require alternative cutting and

cleaning techniques. The University of Nebraska has a working meat processing facility on its campus and will serve as a test bed for the technology. The university also will assist NitroCision with developing and marketing the technology in the food processing industry.

"We are very excited and optimistic about the potential impact that this technology will have on the environmental management and food processing industry," said **Ron Warnecke**, NitroCision president.

The cryogenic ZAWCAD system can also be very effective in removing paint and other coatings from various surfaces quickly and efficiently without adding a secondary waste such as water or grit.

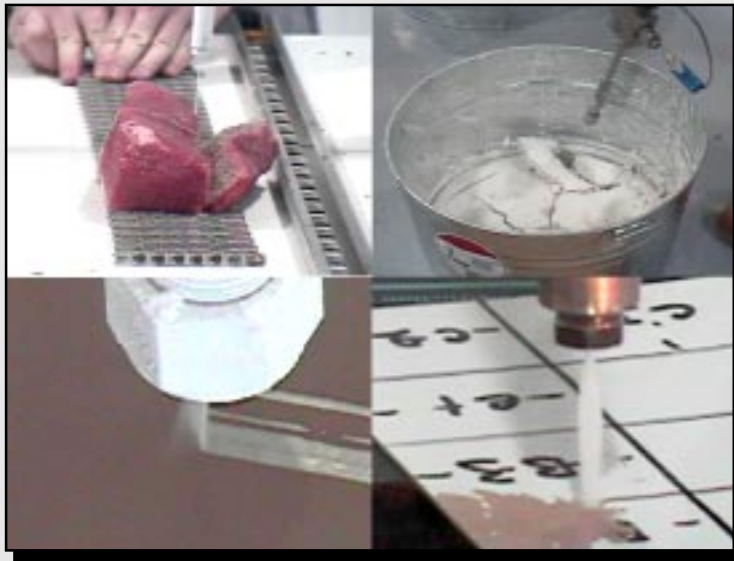
The ZAWCAD technology offers highly efficient environmental alternatives to industrial cutting and cleaning

techniques like water jet, blasting or chemical solvents. Designed for applications where a secondary wastestream poses environmental, logistical or economic problems, the advanced system reduces processing and waste handling costs while offering speed, safety and reliability.

"We have made considerable progress in optimizing the design of the system and have a number of potential customers waiting for the demonstration of the next generation of the technology," Warnecke said. "We also have identified some application-specific tooling that will make the technology deployable by hand for use in applications ranging from nuclear decontamination to removing meat from animal carcasses."

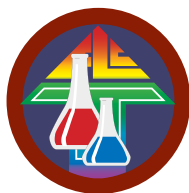
Funding for NitroCision has been obtained through a syndication of Idaho investors. NitroCision plans to complete its first prototype in 60 to 90 days.

**For more info:** Steve Zollinger, 208-526-9590, gaz@inel.gov **NL**



The many uses of ZAWCAD technology (clockwise from top left): cold cutting of beef roast, hot mode cutting of two inches of dried joint compound, cold mode removal of paint, and hot enamel paint removal.





**CHEMICAL TECHNOLOGY**  
**Nanofluids Take the Heat**

Heat transfer fluids used in today's conventional thermal systems have poor heat transfer properties. Adding millimeter- or micrometer-sized particles does not work with emerging "miniaturized" technologies because the particles can clog in the very small "microchannels" of heat exchangers.

Scientists at **Argonne National Laboratory** created "nanofluids" (tiny solid particles suspended in fluid) that can conduct heat ten times faster than scientists had predicted possible.

Nanoparticles stay suspended in liquid much longer than larger particles because of their small size (less than 40 nanometers, or one-thousandth the diameter of a human hair). The size of nanoparticles also means they can interact with liquid at the molecular level.

**For more info:** [www.techtransfer.anl.gov/techtour/nanofluids-summary.html](http://www.techtransfer.anl.gov/techtour/nanofluids-summary.html)

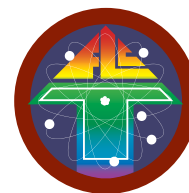


**BIOTECHNOLOGY**  
**Microarray Technology Applied to Living Cells**

**Berkeley National Laboratory** researchers have created a novel form of membrane microarray technology to be applied to the manipulation and sorting of living cells. These researchers solved technical problems relating to the production of sterile membrane microarrays suitable for cell culture, the actual culture of cells on the membrane, and the development of suitable membrane compositions. For the first time, natural lipid membrane surfaces that have been fabricated into chip-based microarrays can be used for massively parallel live cell screening and behavior modulation.

Membrane microarrays are likely to find broad use in applications such as front-end screening; drug discovery, diagnostic and therapeutic applications; and directed evolution of desirable cell recognition/adhesion characteristics.

**For more info:** Technology Transfer Department, 510-486-6467, [TTD@lbl.gov](mailto:TTD@lbl.gov)



**ENERGY**  
**Microwave System Cleans Gaseous Wastestreams**

Engineers at **Westinghouse Savannah River Company (WSRC)** have invented a unique system that uses microwave energy and high temperatures to treat off-gas emissions for safe discharge to the atmosphere.

The Microwave Off-Gas Treatment System is designed to remediate hazardous gaseous emissions from a wide variety of thermal processes.

The system can treat a wide range of contaminants, such as diverse mixtures of volatile organic compounds. Small, compact and portable, the system requires low maintenance. It can be connected easily to various furnaces, ovens, or other thermal equipment.

Using a standard, off-the-shelf microwave oven, the system is low cost and easy to assemble. It is scalable for large volume commercial units as well as smaller scale batch operations.

**For more info:** Dale K. Haas, 803-725-4185 or 800-228-3843 **NL**

## MEP *from p. 1*

to a sales training course. Explore purchasing contact management technology to get the most out of each sales call.

**4. Refresh your business perspective.** Obtain fresh ideas by getting an objective, outside view of your company. Strategic assessments are useful in identifying improvement opportunities, informing about business practices used by other companies, and sharpening your own game plan by providing practical ideas.

**5. Streamline your business strategies.** Lean business strategies help companies identify and eliminate waste in the business cycle and can help a small firm attain gains that would normally be associated with a much larger company. Using lean business strategies can lead to better space utilization, quality improvement, enhanced teamwork, and effective

communication, all of which affect productivity. And, more importantly, they provide efficiencies that translate into cost savings and increase bottom-line profits.

**6. Upgrade your network security.** Computer viruses are increasing in frequency and complexity. Take steps now to ensure the security of your business data and computer network.

**7. Review your disaster plans.** The September 11 attacks had an impact on a variety of business supply chains. Regardless of the cause—a natural disaster, customer loss or other issue—a disruption of any kind can be better managed using a well-articulated disaster plan.

**8. Invest in employee training.** Promote people from within by providing them with skills that prepare them for the next job. Research the skills or technologies your customers need

next. Ask your vendors what training opportunities they may have to teach you about their products and services. Whether it's a computer software course, management class or technology training, employee education pays off.

**9. Take stock of what you measure and why.** Are your measurements aligned with your business strategies? If you're looking for focused measures, consider inventory turns and on-time delivery performance. These two indicators often provide clues for future cost-savings and improvement opportunities.

**10. Engage your employees.** If you're not asking your employees about ways to improve the company—and listening to the answers—you're missing out. Engaging your employees at the grassroots level, whether through informal hallway discussions, employee surveys or monthly staff meetings, is one of the easiest ways to reap big rewards. **NL**



## COMING ATTRACTIONS

**February 20-23, 2002**

***Agricultural Equipment Technology Conference (AETC 2002)***  
**Kansas City, MO**

This year's conference will bring together engineers, managers, researchers, and other professionals in the agricultural equipment industry to exchange information, discuss opportunities, and address challenges for production agriculture.

[www.asae.org/new/meetings/aetc2002](http://www.asae.org/new/meetings/aetc2002)

**March 4-7, 2002** ★

***Society of Automotive Engineers Congress***  
**Detroit, MI**

The largest OE service, parts and components exhibition in the world offers an in-depth technical program containing more than 1,200 individual presentations within five specialty conferences: Safety; Emissions/Environmental Control; Electronics/Intelligent Vehicles; Materials; and Powertrain. Each specialty conference is the largest technical event of its kind in the world.

[www.sae.org/congress/](http://www.sae.org/congress/)

**March 18-21, 2002** ★

***National Design & Engineering Show***  
**Chicago, IL**

This show addresses the needs of the \$770 billion design engineering market. One thousand exhibitors feature all the latest tools, components and materials used in mechanical and electromechanical design and product development.

[www.manufacturingweek.com](http://www.manufacturingweek.com)

**April 3-4, 2002**  
***TechTrends 2002***  
**Baltimore, MD**

This conference offers an opportunity for technology, R&D and science organizations to gain insight into the newest funding initiatives offered by government agencies; to form strategic partnerships; and to learn about cutting-edge technologies through workshop presentations and keynote speakers.

<http://www.techtrends.org/>

**May 6-10, 2002** ★  
***FLC 2002 National Meeting***  
**Little Rock, AR**

With a theme of "Moving Forward with the FLC," this meeting should be the biggest and best yet! Basic and advanced training is offered, focusing on tech transfer processes and offering new ways of conducting tech transfer. Includes the 2002 FLC Awards for Excellence in Technology Transfer, a formal event.

**Sherry Nacci, 856-667-7727, [www.federallabs.org](http://www.federallabs.org);**  
**[snacci@utrsmail.com](mailto:snacci@utrsmail.com)**

**October 15-18, 2002**  
***Americas Nuclear Energy Symposium (ANES)***  
**Miami, FL**

ANES 2002 will provide a forum for a hemispheric discussion and exchange focused on issues relating to the future of nuclear energy in the Americas. The program will deliver interactive discussions, workshops, case studies, industry updates, and an exposition by leaders in the nuclear industry.

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