Dear Readers,

Whether at home or at work, most of us try to do our part in recycling. Even though our efforts are helpful to the environment, it’s the overall consumption of plastics that is staggering.

A Cornell University chemist has developed a solution to the recycling challenge by creating a biodegradable plastic that breaks down in 6 months as opposed to 700 years. It’s an affordable solution that could reduce the size of our landfills.

ifm has recently developed an affordable sensing solution for factory automation applications. The new efector® product line includes sensors and cordsets that are designed, tested and produced with a high level of automation to deliver performance and quality – at a great value.

Enjoy the issue!

Lizanne Dathe
Editor, i-Step Newsletter

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**TECHNOLOGY NEWS**

Biodegradable Plastic
A solution to the recycling challenge

Americans throw away 2.5 million water bottles per hour, and just 1 of every 5 is recycled. With the rest ending up in landfills, new technologies in biodegradable plastic are moving closer to market.

Americans spent nearly $11 billion last year on bottled water, making it the nation’s second-favorite beverage, after soft drinks. That’s a lot of water — and a lot of waste, environmental advocates say. It takes 1.5 million barrels of oil, enough to fuel 100,000 cars for a year, to make the plastic bottles that meet Americans’ demand for bottled water, according to the Earth Policy Institute. The kind of plastic most commonly used for water bottles — polyethylene terephthalate, or PET — is recyclable. But consumers recycle just one of every five bottles they drink, with the rest ending up in landfills, says Pat Franklin, executive director of the Container Recycling Institute.

A common myth is that plastics that go into a curbside recycling bin get recycled. The fact is that many plastics are nonrecyclable. The recyclable types must be separated out, and the rest go to waste. Many people assume that plastic collected at the curb is converted into new packaging, but plastic recycling only provides a temporary diversion from landfills. Most recovered plastic packaging is made into secondary products (textiles, parking lot bumpers, or plastic lumber) that are not recyclable.

The startup company, Novomer, Ithaca, NY, is moving ahead with an efficient method to make affordable, biodegradable plastics. The company’s technology involves making a super-repellent material that breaks down in the environment.

Researchers from MIT and the Air Force Research Laboratory in CA have made materials that repel oil and are able to clean themselves without the help of soap and water. Making super oil-repellent materials, also called superoleophobic materials, is one of the great challenges in materials science. Oil has a lower surface tension than water, so it has a greater tendency to spread over and cling to surfaces. The researchers developed something like a super Teflon. Fluorine chemical groups in Teflon help make it repellent. The researchers developed a molecule with a structure that incorporates much more fluorine. Adding this molecule to the material makes it more repellent to liquids. The researchers also changed the microscopic structure of the material in a way that traps air near the surface, so that oil on the material is suspended partly on air, which prevents the oil droplets from sticking to the surface. The resulting material was so extremely oil repellent that the oil, which normally clings to surfaces, actually bounced off instead. The new material could lead to a number of applications, including filtering water out of fuel and self-cleaning displays, something cell phone manufacturers have been working on for years.
A New Benchmark for Value

ifm introduces a new line of sensors and cordsets designed for factory automation applications

Introducing...

efector v
the value series

Inductive sensors
• Extended range technology
• Standard industrial housings: M8, M12, M18, M30 and rectangular
• Flush mount sensing ranges from 2mm to 20mm
• Nonflush mount sensing ranges from 4mm to 35mm
• 360° LED status
• Tested for high levels of shock and vibration

Photoelectric sensors
• Robust metal housings replace plastic sensors
• Sensing ranges: background suppression 200mm; retro-reflective up to 4 meters.
• Powerful visible red light source with large spot diameter for quick setup
• Background suppression models eliminate the need to adjust sensor as target colors change.

ecolink Cordsets
• Lock-in-place coupling nut secures cordset
• High-flex PUR-jacketed cable
• Special insert design prevents damage to Viton o-ring from over tightening
• Broad operating temperature of -25 to 90°C with cRUus approval for the North American market

Quality through automation
ifm has made significant investments in production and manufacturing technologies. The first result of these investments is our new efector v product line.

High performance
efector v inductive sensors incorporate extended sensing ranges that enable the sensor to be mounted farther away from a target preventing physical damage.

efector v optical sensors offer high precision background suppression technology that eliminates the need for adjustments as target colors change. Polarized retro-reflective models offer long sensing ranges up to 4 meters.

A new benchmark for value
Our goal is to help you compete in your business. efector v products incorporate performance features for today’s industrial automation requirements; uncompromising quality that increases production uptime; and a price point that sets a new benchmark for value.

For a brochure, call 800-441-8246, or visit www.ifmefector.com.
A Pill That Talks Back Using RFID

For the 70 million Americans who suffer from gastrointestinal diseases – and rack up $100 billion in medical costs each year – a better solution is at hand: the SmartPill.

This device doesn’t deliver drugs; rather, it provides information about acidity, pressure, temperature, and digestive activity from inside your intestines. The data is transmitted wirelessly via RFID to a 5” x 4” receiver worn around the patient’s neck or waist during the pill’s trip through the gastrointestinal tract. From there it can be downloaded to a doctor’s laptop.

The transmitter’s broadcast range is 5 feet, so a patient can remove the receiver to sleep or shower. Two tiny batteries power all of the pill’s components for at least five days which are etched onto a single, custom-made chip.

The swallowable, vitamin-size sensor is FDA-approved and uses patented microelectromechanical systems technology to provide a digital map of the patient’s entire GI tract. This information enables a gastroenterologist to precisely locate an area of abnormality and assist in the diagnosis of GI diseases and disorders. The patient benefits from an accurate diagnosis, better treatment at a lower cost, and a non-invasive approach to GI exploratory examinations.

That may sound like overkill, but compare it with other diagnostic systems for GI diseases, such as feeding patients radioactive meals and sticking tubes down their throats for measurements. "Many people just suffer in silence instead," says David Barthel, SmartPill’s president and CEO.

"These patients will often run through all these procedures and it could take anywhere from six months to two years to accurately diagnose a patient." The company’s bionic pill is designed to replace this hodgepodge of tests, helping doctors diagnose the condition within days.

The SmartPill is expanding into new markets too, including veterinary and pharmaceutical companies interested in using the product in drug trials.

IFM APPLICATION

Sensing the Future with Background Suppression Technology

There are multiple optical technologies available for sensing applications: thru-beam, retro-reflective, diffuse reflective and diffuse reflective with background suppression. More users are applying diffuse reflective sensors because they contain the emitter and receiver in one housing, eliminating the need for a separate receiver. They also do not require a reflector because the target itself reflects light back to the sensor’s receiving element. The challenge with diffuse reflective sensors is the quality of performance in less-than-perfect applications. Shiny objects can cause false triggers, dark colors absorb too much light for reflection, and changing colors can be extremely challenging for the sensor type.

A better solution is to use diffuse reflective with background suppression. ifm has made technical advances in background suppression technology by producing a smaller, more robust sensor with high precision optical performance. The OG-Cube photoelectric sensor differentiates between a target and the background regardless of background color. The sensor’s high accuracy technology eliminates the need for adjustments as target colors change. Integrated diode receivers provide more information about the target and the background, offering high precision feedback.

For more information, visit www.ifmefector.com/response.
High Def is in The Air

The recent Consumer Electronics Show (CES) in Las Vegas pointed to a home entertainment trend: flat-panel displays on walls are in; bulky cabinets that hold boxy TVs, stereos, and media players are out. But as good as those skinny displays look, they still pose the aesthetic and logistical challenge of what to do with the wires connected to them. Now, a few companies are racing to outfit TVs, media players, video cameras, and gaming systems with wireless chips that can cut some of those cords.

At CES, the company SiBeam demonstrated its wireless chipset, which could stream high-definition video and audio from a media player to a TV. With SiBeam’s technology, it would be possible to hang a television on a wall and place the media player in the same room, but far away and out of sight, without wiring the two together.

Wireless data-transfer technologies such as Wi-Fi and Bluetooth are already familiar to most people. But these weren’t designed to send and receive as much data as is needed to make a wireless entertainment center possible.

Unlike Wi-Fi, which operates in the 2.4-gigahertz range of the electromagnetic spectrum, SiBeam works in the 60-gigahertz range, a previously unused region that has a significant amount of bandwidth to spare. Objects, such as walls or people, readily absorb signals at this frequency. This means that if a signal were simply sent from a media player to a display, and someone walked in front of the player, the picture quality would degrade. SiBeam got around this problem by building a radio that uses beam steering. SiBeam’s chips create a beam of information and sends it directly between two devices – essentially creating a wireless wire.

But the chips’ antenna arrays can also route the signal along multiple paths. The company’s first commercial chips – available in Panasonic displays in early 2009 – will transmit data at four gigabits per second, fast enough to stream the highest-quality high-definition video, 1080p.

MIND-BENDER

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The first 100 people who answer the puzzle correctly will win a stainless steel travel mug.

To enter your answer, log on to www.ifmefector.com/response. Closing date is February 29, 2008. The answer will be revealed in the April 2008 issue of i-Step newsletter.

Update your contact information on-line.

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1. Go direct to www.ifmefector.com/response
2. Complete the form.
3. Enter your account number below.

4. For your time and effort, we’ll send you a complimentary ifm efector “gadget pad” – it’s a mouse pad with a 2008 / 2009 calendar, weight conversions and measurement scale.