



# Design News Magazine names Solid Edge with Insight as the best new computer productivity tool of the year!

By Michelle Lang, Associate Editor  
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Like Olympic swimmers racing to the pool wall, engineers today continually operate on high speed for the sake of productivity. This sink-or-swim environment does, however, bolster creativity in developing innovative products—a bonus for the 2002 Design News Best Products of the Year contest. Representing the best engineering of their class, this year's winners feature a common thread of efficiency. Whether it's cutting back on design time by combining a data management system with a CAD program, reducing vibration with a new fastener, or limiting pressure pulsations with a pump, these Best Product winners all aim to make your job easier, safer, and more productive.

Here's how the contest works: We asked vendors to submit their best products introduced from September 2001 to September 2002. Design News technical editors then narrowed down the entries in each of the categories and forwarded the finalists to an independent panel of judges. The judges selected the following best products

**Computer Productivity Tools.** Solid Edge Insight from EDS PLM Solutions (Huntsville, AL) wins this category with its built-in design management system.

## **Software combines CAD and PDM**

Solid Edge Insight features a built-in product data management (PDM) system embedded in its 3D mechanical software at no additional cost. Working transparently, most users will not even know they are using data management tools. "It removes the burden from the user to learn and implement what has historically been complex technology," says the Computer Productivity Tools judge. Extending to Microsoft SharePoint™ Portal Server, its web components allow users to access product information via Internet Explorer, track changes to CAE files, and automatically synchronize file servers. EDS PLM Solutions, [www.solidedge.com](http://www.solidedge.com).

## **The Rest of the Winners**

**Electrical/Electronics.** Fujitsu Microelectronics America Inc. (San Jose, CA) scores the highest for its MBF300 Fingerprint SweepSensor™.

**Test, Measurement, & Control.** United Electric Controls (Watertown, MA) has the best product in its field for the One Series 2-wire electronic pressure switch.

**Power Transmission & Motion Control.** The NanoMuscle Actuator from NanoMuscle Inc. (Antioch, CA) wins this category for its miniature motion control products.

**Fluid Power.** The HPR Open Loop, Load Sense, SPU Pump from Linde Hydraulics Corp. (Canfield, OH) rates the best in the fluid power category.

**Fastening, Joining, & Assembly.** Permanent Technologies Inc. (Valhalla, NY) tops this group with its PermanentechSM Self-Locking, Vibration-Proof Fastener System.

**Plastics, Metals, & Other Materials.** The Chomerics Division of Parker Hannifin Corp. (Woburn, MA) is singled out for its Ecoplate™ metallic conformal coating process.

### **Fingerprint sensor works in mobile devices**

The Fujitsu MBF 300 Fingerprint SweepSensor(tm) is introduced as the world's smallest capacitive-based, solid-state fingerprint acquisition device. Measuring 4.3 x 14 x 1.2 mm, the sensor may be used in such mobile applications as cellular phones, personal digital assistants (PDAs), and keyless access devices. According to the Electrical/Electronics judge, "The smaller size not only reduced operating demands (current went from 35 to 20 mA) but broke through a size barrier that discouraged new applications on mobile devices." The fingerprint image is recorded in a row-by-row sequence of metal electrodes, linked to a pair of sample-and-hold circuits. A finger-press on the sensor assigns values across the arrays, set by the contour of the fingerprint, to create an image of the fingerprint. Fujitsu Microelectronics America Inc., [www.fma.fujitsu.com](http://www.fma.fujitsu.com). Enter 633

### **Switch combines data on pair of wires**

The ONE Series 2-Wire electronic pressure switch operates as both a switch or gauge and a transmitter. Connecting to a discrete digital input channel of a PLC or a DCS, it features a process display, diagnostic information, and a switch output on a single twisted pair of wires. Requiring low power taken from residual PLC input current, the switch eliminates the need for re-wiring the infrastructure in order to upgrade. "The One Series 2-wire will replace mechanical switches and analog transmitters in a gauge pressure application," predicts the Test, Measurement, and Control judge. "It will be a direct drop-in replacement utilizing existing wiring and discrete input channels." Suitable uses for the switch include alarm and shutdown applications. United Electric Controls, [www.ueonline.com](http://www.ueonline.com). Enter 634

### **Actuator reduces noise, size, and cost**

The NanoMuscle Actuator is designed for affordable miniature motion in consumer electronics, medical devices, computer peripherals, and automobile and robot/toy manufacturing. Unlike standard electric motors that require electromagnetism for motion, this actuator relies on Shape Memory Alloys made into tiny wires. According to the Power Transmission and Motion Control judge, "This technology not only produces silent, smaller, and less expensive solutions, but eliminates the need for extra transmission components, while increasing energy efficiency up to five times." Throughout its one million cycle life, the actuator can generate 125g of force over a 4-mm range of motion, and measures 1/20th the size of cost-equivalent electromagnetic motors. NanoMuscle Inc., [www.NanoMuscle.com](http://www.NanoMuscle.com). Enter 635

### **Pumps limit noise, pressure fluctuations**

The HPR Open Loop, Load Sense, SPU pump is said to have decreased pressure pulsations by up to 70% over the full range of operation compared to conventional pumps, resulting in a significant noise reduction design. The noise reduction is generally application specific, but may apply to commercial applications with decreases of more than an order of magnitude in decibel levels. "The SPU noise reduction feature is a low-cost solution to meeting noise regulations, providing increased protection to applications where noise is an issue," says the Fluid Power judge. Designed with reportedly the highest power-to-weight ratio in the industry, the pump features a fluid capacitor that limits pressure changes between the cylinder and high-pressure line. Linde Hydraulics Corp., [www.lindeamerica.com](http://www.lindeamerica.com). Enter 636

### **Eco-friendly coating protects electronics**

The automated Ecoplate(tm) coating process applies a thin metallic conformal coating over plastic or metal electronic housings for the purpose of EMI shielding. The solvent- and corrosive-free process uses a tin/zinc alloy-Ecoplate 5030 material-which offers shielding over 75 dB from 100 MHz to 10 GHz. "With the proliferation of cell phones, portable computers, and other portable electronics, there is a need to protect the sensitive inner electronics from EMI and spurious RFI," says the Plastics, Metals, and Materials judge. "The Ecoplate is a simple, effective technique that solves the problem." The coating may be applied as thin as 0.0005 inch for use in thin-walled, plastic injection-molded parts. Parker Hannifin - Chomerics, [www.chomerics.com](http://www.chomerics.com). Enter 638

### **Fastener system eliminates vibration**

The PermanentechSM self-locking, vibration-proof fastener system is designed to make products safer, lower warranty costs, and extend product life by eliminating equipment vibration. The longitudinal bolt channel design features notches and a multi-tine nut which automatically locks into place when the nut is counter-rotated. According to the Fastening, Joining, and Assembly judge, "During a standard vibration resistance test, this design more than doubled the number of cycles withstood by other fastener systems before the test was halted, because no vibration was present." Made of metal or injection molded materials, the lightweight, non-corrosive, and tamper-resistant fasteners come in standard and custom sizes and reportedly will not loosen regardless of seat torque. Permanent Technologies, Inc., [www.permanentech.com](http://www.permanentech.com). Enter 639

### **Panel of Judges**

Larry G. Cartwright, Principal Lecturer, Civil & Environmental Engineering Dept., Carnegie Mellon University, Pittsburgh, PA.

Dick Miller, Technology Consultant, North Andover, MA.

Michael Ruane, Associate Professor of Electrical and Computer Engineering, Photonics Center, Boston University, Boston, MA.

Douglas Stamps, Ph.D., Associate Professor of Mechanical Engineering, University of Evansville, Evansville, IN.

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