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Science by the Seat of Their Pants

Museum goers, consumers, and industry take the pressure off with body mapping.

(Sensor Products: Madison, NJ) -- Interactive exhibits make learning science fun. One such exhibit, "Under Pressure," demonstrates how pressure between the body and a contacting object—such as a chair—can create pressure points and strain. Sensor Products Inc., an innovator in the field, donated their Tactilus Body Mapping Pressure System to The Leonardo Museum, which is showing the exhibit at schools and libraries until the museum opens next year. Joe Andrade, the exhibit developer and a professor of bioengineering at the University of Utah, integrated it into a portable kiosk that teaches children and adults about surface pressure body mapping.

"The kids and adults really love it," says Andrade. "They chuckle and can't wait to sit on the pressure pad to see their body maps. Meanwhile, they are learning about science and technology."

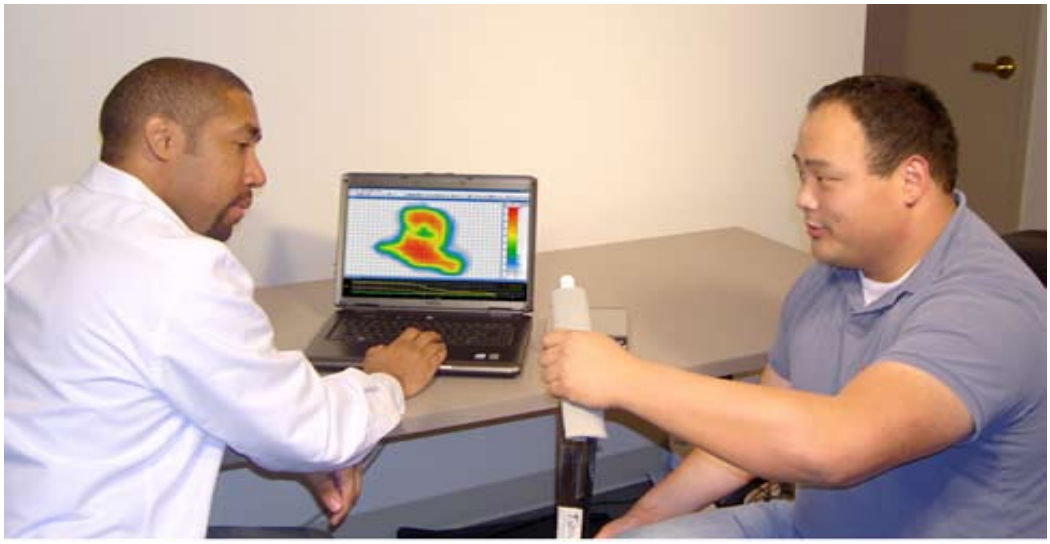
A child sits and watches his body map change on the Tactilus Sensor System display.

In pressure body mapping, sensors collect data from the force exerted by the human body as it touches another surface. This data is then converted into color-coded body maps that correspond to different degrees of pressure. Armed with this knowledge, designers and engineers modify their products to produce more even distributions of pressure on the human body. By taking the load off areas with red hot spots, the locations of greatest pressure, products become more comfortable, ergonomic, and efficient.

According to Sensor Products, their body mapping projects have been evolving—mattresses are being customized for different body types; plastic tubes and bottles are being modified to be easier to squeeze; and golfers are changing their swing, seeing how the force of their moving feet affects their shift and balance.

"We are delighted to share pressure body mapping with visitors to The Leonardo," says Jeffrey Stark, president of Sensor Products. "This technology is becoming more prevalent and is of increasing benefit."

Pressure body mapping is helping engineers develop products that are not only more ergonomic but also less expensive to produce. A major consumer toothpaste manufacturer enlisted Sensor Products Inc. to help develop tubes that dispense toothpaste within certain force parameters but were of less costly material construction.



Subject uses Tactilus Sensor System to demonstrate the pressure needed to squeeze a toothpaste tube.

The client assembled a focus group to test different types of prototype packaging with Tactilus and asked the test subjects to squeeze all the toothpaste out of the tube. The pressure to squeeze was measured along the tube, with the common practice of rolling the tube up to extract every ounce of toothpaste also profiled. The project established for the first time for the client quantitative as well as qualitative measurement of squeezing effort. This created a baseline which packaging engineers could use in the future to precisely measure and improve their product standards.

The Leonardo is a science, technology, and art center fostering creativity and innovation in young people and adults. Located in Salt Lake City, the museum will debut on da Vinci's birthday—April 15, 2011. Funding for "Under Pressure" is provided by the foundations of the Society of Plastics Engineers (SPE) and the Utah Science Center.