

Gear of the Year

10 Breakthrough Products That Will Change the World **P. 72**

Tested: Circular Saws

New Cordless Models Are Light and Powerful **P. 101**

Airport Security Scandal

Billions Spent and We're Still Not Safe **P. 82**

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Technology Adventure Home Automotive Science

8TH ANNUAL BREAKTHROUGH AWARDS

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BOLD

IDEAS

SALUTING THE GREATEST INNOVATIONS OF 2012



The SpaceX Dragon capsule returns from the ISS

AUTOMOTIVE

Self-Inflating Tires!



MEDICINE

Brain-Controlled Prosthetic Arm

MATERIALS SCIENCE

Metal Light as a Feather



ROBOTICS

This Machine Can Walk Faster Than You



DISASTER TECH

Oil Skimmer Cleans Up 4600 Gallons Per Minute



BREAKTHROUGH AWARD WINNER ELON MUSK

SPACE REBEL

VISIONARY BEHIND SPACEX AND TESLA MOTOR



MECHANICAL LIFETIME ACHIEVEMENT

Voyager 1: Traveling to the Edge of the Solar System



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Plugging Into the Brain



Brain-Computer Interface: Michael Boninger, Jennifer Collinger, Alan Degenhart, Andrew Schwartz, Elizabeth Tyler-Kabara, Wei Wang, University of Pittsburgh; Tim Hemmes

On the evening of July 11, 2004, Tim Hemmes, a 23-year-old auto-detail-shop owner, tucked his 18-month-old daughter, Jaylei, into bed and roared off for a ride on his new motorcycle. As he pulled away from a stop sign, a deer sprang out. Hemmes swerved, clipped a mailbox, and slammed headfirst into a guardrail. He awoke choking on a ventilator tube, terrified to find he could not lift his arms to scratch his itching nose.

Seven years later Hemmes was invited to participate in a University

