

# In Brief

■ Materials research is undergoing a revolution. Nanotechnology is opening the door to a host of innovative materials with completely new properties. (p. 47)

■ New materials make it possible to generate, transmit and use energy more efficiently. Special coatings protect the blades in gas and steam turbines against heat and corrosion. This enables higher operating temperatures and thus higher efficiencies. Fuel consumption and environmental impact are both cut as a result. The goal is to introduce combined cycle power plants in 2011 that will use more than 60 percent of the energy in gas. The world's most powerful gas turbine, which will start test operation in Irsching, Germany, this year, will produce enough electricity to power the households in a city the size of Hamburg. (pp. 50, 54)

■ In the lighting sector, the focus is also on further cutting power consumption, eliminating pollutants, and increasing lamps' service life. Mercury-free LEDs are particularly environmentally friendly, consume little electricity, and last up to 50 times longer than incandescent lamps. (p. 63)

■ Siemens is the world's leading supplier of offshore wind power systems. In 2008, the company will install the world's largest such wind farm off England's east coast. The facility will supply up to 180 megawatts of environmentally-friendly electricity from 54 turbines. Siemens' one-piece rotor blades are extremely robust and up to 90-percent recyclable. (p. 60)

■ Advanced technology can cut energy consumption by planes, ships, cars, and trains. Siemens continuously improves vehicles by using lightweight engineering, better drive systems, and, in many cases, new materials. Improved energy storage systems also make regenerative braking an increasingly attractive option. (pp. 70, 74)

■ Bioplastics from bacteria should also make electronic products more environmentally compatible in the future. (p. 58)

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## LINKS:

### The EU's Joint Research Center:

[www.jrc.ec.europa.eu](http://www.jrc.ec.europa.eu)

### U.S. National Academy of Engineering:

[www.nae.edu](http://www.nae.edu)