

PRODUCTS

UTC's products convert energy into useful work, so we are passionate about reducing our products' energy use and developing innovative, energy efficient technologies that help reduce our customers' environmental footprints.

**UTC businesses collaborate to Eliminate Materials of Concern***UTC Green Technologies Exchange highlights sustainability, green products*

Collaboration among UTC's business units is the key to reducing the impact of company products on the environment. That was the goal of the "UTC Green Technologies Exchange" on Monday and Tuesday, Sept. 29-30, 2008. The event, sponsored by Hamilton Sundstrand, took place at UTC Technical Education Center in East Hartford, Conn.

"This was a way to bring everyone together in one room to discuss strategies that pertain to sustainability and green practices," said Debby Orosz, Green Products Manager at Hamilton Sundstrand. "The goal is to measure the impacts our products have on the environment and reduce materials of concern."

UTC established a target of 100 percent Materials of Concern (MOC) elimination from new products. The MOC's include lead, mercury, hexavalent chromium, cadmium and chlorinated solvents. Significant progress has been made in a number of areas, including:

- Elimination of lead-based solders in electrical products sold in Europe by Carrier
- Use of a hexavalent chromium-free primer on military and commercial helicopters at Sikorsky
- Successes in eliminating mercury in new engines at Pratt & Whitney Canada as well as 90 percent of cadmium uses and 80 percent lead uses.

The Green Technologies Exchange focused on reducing the environmental impact of the company's products through sharing experiences, best practices and innovative approaches to material processing and design. Presenters from Pratt & Whitney and Sikorsky described their company programs and processes for developing solutions. Several sessions were directed at on-going efforts to test and qualify MOC substitutes.

Alternatives to lead solder in electronics that have been implemented in commercial applications such as Carrier air conditioners are not directly applicable to the aerospace environment where the formation of tin whiskers is pronounced and can seriously impact reliability. Engineers from Hamilton Sundstrand detailed their mitigation approaches to the problem, and noted that even when newly-developed solutions meet technical requirements, customers are sometimes reluctant to accept them.

Hexavalent chromium compounds have been used in a variety of coatings to prepare surfaces for adhesives or paints and as protection against corrosion. The broad range of applications and requirements indicates that a similarly wide range of possible alternatives must be investigated. During one of the sessions addressing chromate-free adhesive bond primers, Mark Jaworowski described UTRC's participation in consortia involving industry, academia and government to address the issue.

Not all of the barriers to eliminating MOCs are technical. While the use of cadmium coatings on fasteners has been eliminated in many new designs, direct substitution of cadmium-free solutions in existing applications is often not possible without redesigning other components as well, increasing complexity and cost.

“It’s a tough challenge to find safe alternatives for materials that, quite frankly, have worked extremely well,” said Mark Jaworowski, “but we’re well on our way to achieving our goals.” Collaborative efforts such as the Green Technologies Exchange will accelerate their attainment.