

LOOKING TO THE GECKO FOR ANSWERS; FORD TO SEEK SOLUTIONS BY MIMICKING NATURE

- Ford researchers will study the gecko's sticky toe pads for clues to improve adhesives and increase the recyclability of auto parts
- Biomimicry is an innovative approach that looks to nature for sustainable solutions to modern-day challenges; biomimetic innovations could transform the interior design of Ford vehicles
- Ford Motor Company recently hosted a biomimicry workshop at its Dearborn campus with participation from Procter & Gamble and The Biomimicry Institute

DEARBORN, Mich., - Ford Motor Company will chart new territory as it seeks to create adhesive innovations inspired by the gecko. Ford will also work with Procter & Gamble, sharing research findings as both companies look to biomimicry for a host of business solutions.

For years, Ford researchers have considered ways to make auto manufacturing more sustainable. A key challenge is glue used to adhere foams to plastics and metals can make disassembling parts for recycling nearly impossible.

Enter the gecko.

The lizard's toe pads allow it to stick to most surfaces without liquids or surface tension. The reptile can then easily release itself, leaving no residue. Consider, too, that a typical mature gecko weighing 2.5 ounces is capable of supporting 293 pounds.

The gecko could inspire a host of adhesive innovations for global applications at Ford, said Debbie Mielewski, Ford senior technical leader for plastics and sustainability research.

"Solving this problem could provide cost savings and certainly an environmental savings," said Mielewski. "It means we could increase the recycling of more foam and plastics, and further reduce our environmental footprint."

Buoyed by the biomimetic method, Ford recently hosted a forum at its Dearborn campus with participation from Procter & Gamble and The Biomimicry Institute, a nonprofit committed to promoting the innovative approach of looking to nature for sustainable solutions to modern-day challenges. Nearly 200 researchers and designers took part in the day-long session to learn about biomimicry and how to apply it to their work.

"We are excited for the opportunity to participate, together with Ford - with whom we have a history of collaboration - in The Biomimicry Institute workshop," said Lee Ellen Drechsler, director for corporate connect and

development, The Procter and Gamble Company. “We have an interest within Procter & Gamble for using biomimicry as a way to broaden our approach to solving tough research challenges.”

The biomimetic approach is not new. The Bullet Train in Shinkansen, Japan was inspired by the kingfisher. Velcro took its cues from a burr. And improved medical needles were developed based on the mosquito. Interest in the approach has increased in the last decade as awareness of climate change and environmental challenges is heightened, said Gretchen Hooker, project manager for design challenges at The Biomimicry Institute.

Founded in 2006, the group works to empower people to create sustainable products and services using biomimicry. In addition to mobilizing educators and regional practitioners through the Biomimicry Global Network, the organization provides a platform to learn and practice biomimicry through multiple design challenges. These include open innovation, academic-corporate partnerships and corporate-employee challenges where employees get hands-on training while developing new solutions to issues corporations face. AskNature.org, the organization’s online database of biological solutions, offers inspiration to those looking to find answers in biomimicry.

“Ford and P&G are the first companies to take part in these new corporate-employee challenges,” said Hooker.

Beyond recycling, the Ford design teams have worked for nearly a decade to find nature-inspired technologies, with recent successes in yarn production for seating materials and headliners.

Ford is the only automaker to use Unifi’s high-performance REPVE fiber, made from 100 percent recycled materials including plastic bottles, in its vehicles. Ford employs REPVE in five of its vehicles - the new F-150, Explorer, Edge, Focus Electric and Fusion - making it a globally used material. The use of REPVE represents Ford’s commitment to reduce, reuse and recycle, part of the automaker’s global sustainability strategy to lessen its environmental footprint.

Ford designers are now looking to expand upon that commitment, turning to nature to further improve the sustainable materials in vehicle fabrics. The gecko may also inspire fabric technologies that could transform the cabin of Ford vehicles, researchers said.

“As we look to further our commitment to reducing our environmental footprint, taking a holistic, biomimetic approach makes sense because nature has efficiencies in design and uses minimal resources,” said Carol Kordich, global sustainable fabric strategies and development, Ford. “Nature is the ultimate guide.”

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