

TACOM Engineers Test New Interior Designs To Protect Warfighters in Combat Vehicles

by Jim Stickford

The U. S. has just spent the last decade fighting two wars and, as these conflicts wind down, engineers and other experts at TACOM want to use what they've learned to build better troop transport vehicles.

The TACOM engineers work in the Technology Enabled Capability Demonstrations (TECD) section.

Ross Boelke, program manager of TECD's Occupant Centric Platform (OCP) program, said that TECD is using something called a "camel" to improve designs for future troop transport vehicles.

The camel is used for what he calls interior bucks, otherwise known as a mockup of the interior of a troop carrier.

This mockup is used to test just how well troops in full battle dress fit in the vehicle, and how quickly then can get in and out.

Believe it or not, Boelke said, in the past, the engineering requirements of building a troop transport platform were such that engineers often don't spend a lot of time thinking about how the occupant – in this case a soldier who is carrying 60 pounds or more of battle gear – sits in the vehicle.

The end result, Boelke said, is that when the vehicles were actually used in real-life battle conditions, it was difficult for soldiers

to get in and out of the vehicles in an efficient manner.

What the Army discovered – and passed along to the engineers – was that damage to troop carriers was coming from IEDs planted in the roads, Boelke said. Even when the vehicles weren't severely damaged, the explosive force coming from under the vehicle was transferring the energy through the floor to the seats, doing things like driving shock up into soldiers' spines and causing compressed spinal injuries.

To solve this problem, engineers are experimenting with "decoupled" floors, which can ease the jolt of an IED. A decoupled floor is not directly loaded onto the hull, which causes energy to be absorbed from the hull and not easily transferred to the floor.

So, by decoupling the floor, the energy is diverted and soldiers don't suffer as many injuries.

"What we are seeking to do is change the military vehicle design paradigm," Boelke said. "We're going to try to change the way military vehicles are designed."

Presently, vehicles are designed to requirement, Boelke said. For example, a troop transport might need to carry 11 soldiers in a squad along with 500 pounds of ammunition, water, medical equipment, be armored, and have guns that can fire back

at the enemy. When designing a vehicle like that, it can become relatively easy to not think about how the occupant will fit into the picture.

Boelke said that his brethren in the military aviation industry had the same problem a couple of decades ago. The Air Force found that they were losing a lot of planes and pilots, and they were looking for ways to reduce losses.

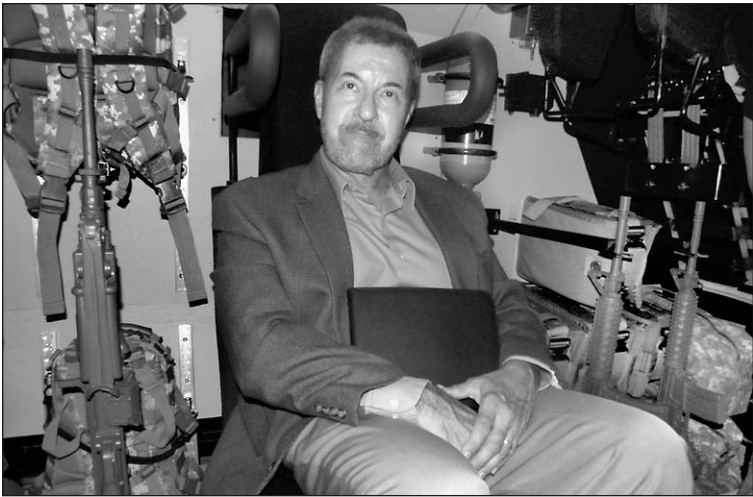
"So they brought designers and aviators together," Boelke said. "These are two groups of people who don't always get along."

"But, by working together, they were able to design planes that took the needs of pilots into consideration."

That reduced losses. By applying that same thinking to ground vehicles, the Army hopes that the next generation of troop transports will save lives by protecting soldiers and reducing injuries.

That's how the creation of the TECD's camel came about. Engineers are able to mix and match different components to "design a vehicle from the inside out," Boelke said.

They are able to put in different kinds of seats to see which ones are the most comfortable for soldiers in full battle dress. They've found that doing something as simple as changing the



Designer Ross Boelke in the newly designed seat that protects soldiers.

angle of the seat compared with the floor can relieve a great deal of stress on the soldier who is wearing a bulletproof vest.

The camel makes it possible to create different interior designs to see what works best for the troops that actually have to sit in the transports.

"If you've ever had to sit in one of these things while carrying 100 pounds of gear, having a seat that has an indentation to compensate for your flack vest makes a huge difference," Boelke said.

"We are able to look at different types of restraints, seats, trim and cargo capacity levels, (that's holding things like gear, water and ammunition) and floor materials to see which combinations produce the best results for the soldiers who need to be protected and be

able to get in and out of the transport quickly."

Boelke said they've been using this camel for more than a year. The analysis is going to go on for four years. Once the data is collected, it will be shared with contractors who will build the next troop transport vehicles.

Those engineers, Boelke said, can use this data to inform their designs.

"We want people to use this hard-learned knowledge and put it to use so that our troops have the best," he said. "We want the design standards that we are developing to be used so that the next troop carrier will be the optimal platform that protects soldiers."

The ultimate goal is to use the camel to help in the design of a vehicle that "creates something that's gone right," Boelke said.

Eliminating Landfill Waste is Job of GM's 'We Care'

CONTINUED FROM PAGE 1

good idea on how to reduce waste.

"We seek other people's opinions because we can't be everywhere, see everything or know everything," Ziebell said. "By seeking out others who have their own points of view and their own knowledge, we are better able to do our jobs."

Ziebell said that an example of an idea that never occurred to her or Zillio was getting a heated compactor. A contract worker, Clint LaFontaine, suggested at the last meeting that Ziebel look into getting a heated compactor.

"It's a good idea," Ziebell said. "A heated compactor allows waste to be compacted more densely because plastic and other substances that react to heat are more malleable as a result."

These substances can be, when heated, compacted into smaller blocks. More of these blocks can be placed on a truck and the truck has to take fewer trips to recycling centers or landfills. Fewer trips means less fuel is used, saving money, but it also means fewer carbon is emitted, helping GM keep down its carbon emissions.

"We are still in the process of

looking at the costs associated with a heated compactor, but after everything is said and done, that's a really good idea," Ziebell said.

She is also looking to purchase more mixed recycling containers that can be placed at different locations throughout the Tech Center.

By placing these bins in convenient locations, it becomes much easier for employees to help with recycling, Ziebell said.

Those looking to learn more about the next "We Care" meeting can contact Ziebel at 586-879-5836 or email her at ashley.ziebell@gm.com.

UP TO \$50.00 OFF
WINDSHIELD REPLACEMENT
(WITH INSURANCE DEDUCTIBLE)

Michigan's Glass Experts

Henderson

GLASS

RE-OPENS IN WARREN

14 Mile Rd

32680 Van Dyke
S. of 14 Mile Rd.

Van Dyke

COME SEE OUR NEW SHOWROOM

**CUSTOM SHOWER DOORS
& ENCLOSURES**

10% OFF*

*MATERIAL ONLY, LABOR EXCLUDED.
Not valid with other offers, some
restrictions apply.

FOGGY HOME WINDOWS?
BUY ONE DOUBLE PANE GLASS ... GET ONE -

50% OFF*

*MATERIAL ONLY, LABOR EXCLUDED.
Not valid with other offers, some
restrictions apply.

STONE CHIP REPAIR

\$29.95

RETAIL IN SHOP

Not valid with other offers, some
restrictions apply.

FREE MOBILE SERVICE AVAILABLE

800-ASK-GLASS
275-4527

22 Convenient Locations
www.HendersonGlass.com

t

f

MALANA

BARBERSHOP

Welcome's MICKY - who brings 29 years of experience

We are close by: 5831 13 Mile Rd
In The Village Plaza Just West Of Mound

586-979-4285

MEN'S
HAIRCUT:

\$10⁰⁰

SENIOR'S
HAIRCUT:

\$8⁰⁰

ASK YOUR SERVER ABOUT THE BEER OF THE MONTH!

Lime Light

SPORTS BAR & GRILLE

Karaoke & DJ

Good Food, Good People

DINING • COCKTAILS • 32 TVs

The Best Burger & the
Coldest Beer in Town!

HOMEMADE DAILY SPECIALS

Try Our Every Day Hot Lunch
Specials under \$4.95

We've got you covered on all Tiger Games

BUCKET OF BEERS & \$2⁵⁰ Boombas
6 FOR \$12⁰⁰ till 7pm

10% OFF

to All
GM
Employees

30200 Van Dyke • Warren

586-751-7883