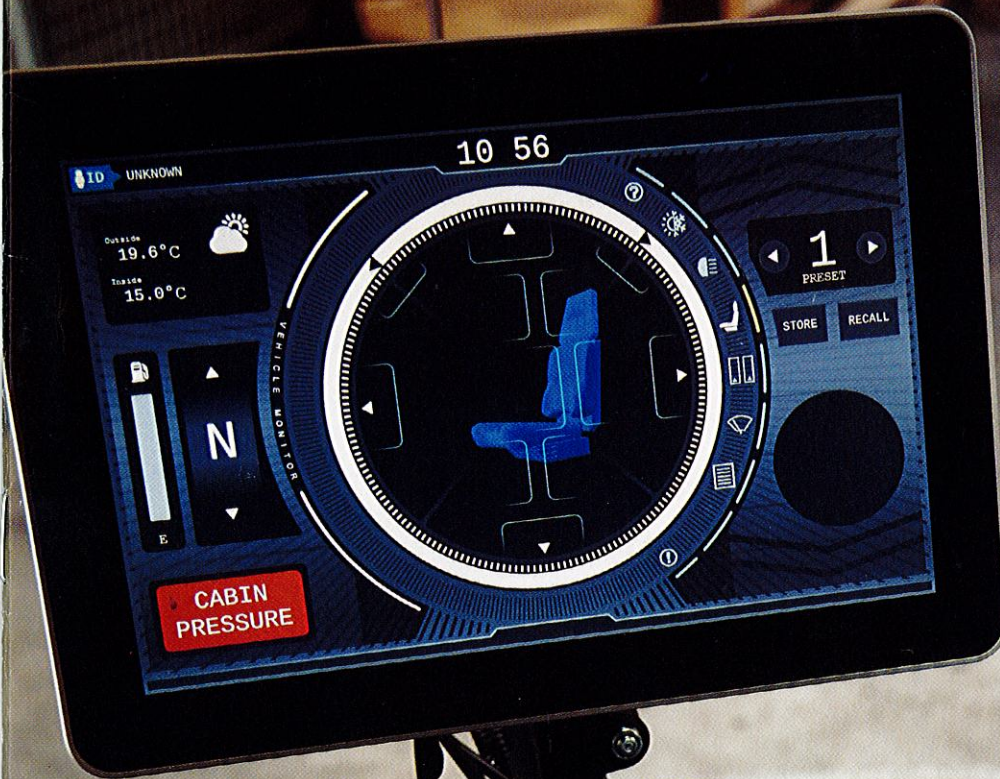


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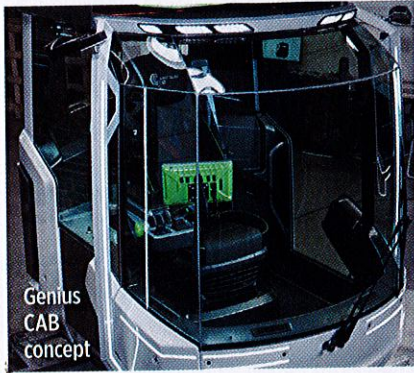
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EDITORIAL

Automotive influence on off-highway cabs

Describing new features and technologies for off-highway vehicles as “automotive-style” sometimes can be considered as marketing hype—words meant to tap into views that passenger vehicles are more progressive and closer to the cutting-edge. But often the link is more substantive—engineering know-how actually migrated from pavement-bound machines to those that call dirt home.



Genius CAB concept

The latter scenario holds true for a recent concept cab envisioned for construction, agricultural and industrial forklift application that consists of near-series (capable of employment within the next two to three years) components and systems. Many among the 13 partners that jointly developed the Genius CAB are firmly established in the automotive industry, and quite a few note the influence their automotive arms played in their contributions to the project.

Robert **Bosch** is one such company. The Tier 1 contributes the body computer, which enables centralized control of the sensors and actuators via CAN (SAE J1939), LIN or directly, as well as the ultrasound sensors integrated into the exterior of the Genius CAB to detect dangerous situations by displaying relative positions and nearby obstacles.

“We have a lot of experience [with systems integration] coming from the automotive industry, so using that on a construction machine really gives us a big advantage,” said Kai Bohne, Senior Manager of Sales and System Engineering, Commercial Vehicle and

Off-road Business. “Our main business in off-highway currently is hydraulics, fuel systems and aftertreatment systems; HMI [human-machine interface] and electronics is the next step on top of that.”

The sensors are “similar technology from pass car,” he said, which would be mounted in the bumper for advanced warning systems.

Hella, another major automotive supplier, notes that development of the cab’s LED worklights was based on its previously-deployed-in-automotive matrix beam technology. Subdivided into multiple units that can be dimmed up or down according to the situation, matrix beam LEDs avoid “dazzling” operators. For example, while the bucket of a wheel loader is raised, it is not illuminated and the light is routed past it.

During the 18-month development process for the Genius CAB, systems integration was a key focus for the partners. One example is the aluminum front beam structure, manufactured by **Fritzmeier Systems**, doubling as a heat sink for the integrated matrix beam worklights.

The inspiration behind the HMI setup developed by **Grammer** (shown on this issue’s Cover) was the car interior—having multifunctional controls at the fingertips, according to Marko Boving, Product Manager, Grammer Eia Electronics. “Why can’t you do that in an excavator? This is what we focused on,” he said.

As with drivers on the road, operator distraction is a concern in HMI design. “Although we can show a lot of information, you can disengage [certain functionalities] or not show them. It’s just software, so the modification factor is high.”

Boving used a term common in automotive, of course, to describe the discipline: cognitive systems engineering. “We engineer what you can perceive, and that’s what we did here.”

If the Genius CAB concept is an accurate indicator, it’s easy to perceive automotive technologies and sensibilities having an even greater influence on off-highway cabs in the near future.

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