Interior Concept Challenges Convention

Faurecia's 'Light Attitude' jarring but fascinating look at the future.

BY DREW WINTER

NORMALLY WHEN YOU THINK ABOUT shaving pounds from a vehicle, you think of downsizing or substituting lighter alternatives to steel.

Supplier Faurecia SA is proposing a weight reduction strategy that quite literally is a bare bones approach, sometimes stripping off the skin and "celebrating the substrate."

Dubbed "Light Attitude," Faurecia is showing a grouping of interior and chassis design concepts that it says taken together can chop 66 lbs. (30 kg) from a vehicle's weight.

The Light Attitude is the third in a series of ambitious concepts from the supplier the past two years exploring new approaches to interior flexibility and defining a luxury interior.

This latest undertaking uses Faurecia's expertise in seats, interiors, acoustic packages and front-end modules to challenge conventional ideas about how a vehicle should be constructed, yet still provide the same levels of comfort, safety and quiet consumers have come to expect.

With Light Attitude, Faurecia designers take a jarring but fascinating look at what cabins could be like if hard surfaces and structures were as soft as a gym bag, or normal skins and covers were stripped away entirely to leave just the interior's skeletal structure.

Or, to use Faurecia's less macabre imagery, the interior "wears a T-shirt rather than an overcoat."

Faurecia says the design study demonstrates a way to achieve weight savings by removing traditional layering to reveal the natural fiber of the underlying carrier, or structural base, and exposing visible, ecologically sound materials.

For instance, the upper portion of the Light Attitude instrument panel is covered with fabric over a natural fiber. The lower portion of the IP leaves the natural carrier exposed as an aesthetic element.

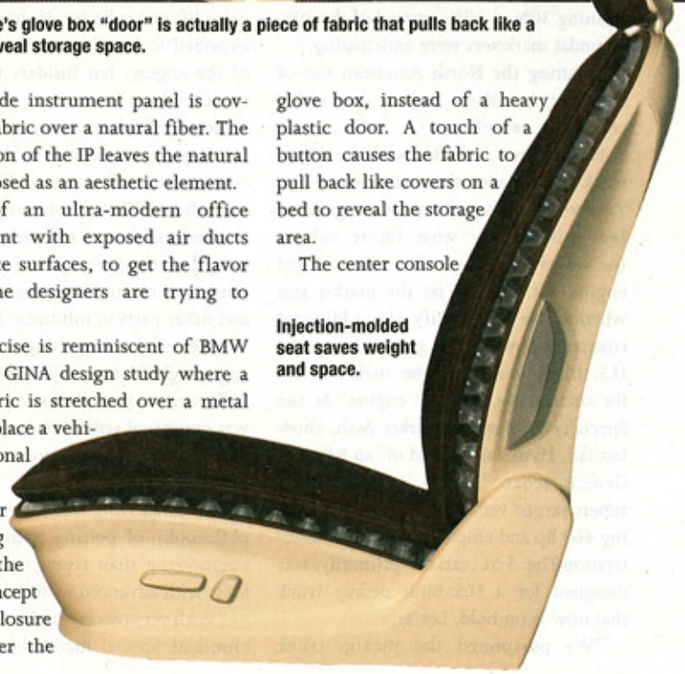
Light Attitude's glove box "door" is actually a piece of fabric that pulls back like a blanket to reveal storage space.

Think of an ultra-modern office or apartment with exposed air ducts and concrete surfaces, to get the flavor of what the designers are trying to achieve.

The exercise is reminiscent of BMW AG's recent GINA design study where a flexible fabric is stretched over a metal frame to replace a vehicle's traditional sheet metal.

Another interesting feature of the interior concept is a fabric "closure system" over the glove box, instead of a heavy plastic door. A touch of a button causes the fabric to pull back like covers on a bed to reveal the storage area.

The center console is another surprise. About 70% is made of soft materials like those used for gym bags and backpacks to save weight. The armrest tower is made of structural materials, and the remainder of the console is fabric, pulled and held in shape by hidden structures.



Injection-molded seat saves weight and space.

The material along the passenger side of the console is fashioned to form a map pocket, with a fold-out wing to provide space for a purse.

Pocket-like cupholders in the console also are made of fabric and held secure by lightweight control elements. The concept's console can save as much as 3.3 lbs. (1.5 kg), compared with its conventional hard-plastic counterpart, Faurecia says.

Light Attitude applies interesting ideas to door construction as well, incorporating what the supplier calls "synergistic light weighting."

The door panel is designed as a system to bring about weight savings. An exposed natural-fiber substrate is used on a portion of the door, which allows the vehicle to "celebrate the substrate," rather than hiding it under a covering of fabric or vinyl. With this design, the substrate is showcased as a decorative element.

The door also uses the door module itself as an acoustic chamber for the audio speakers.

Making the door an actual part of the audio system allows smaller speakers to be installed that can produce better sound than larger, conventional units. These innovations could save up to 13.2 lbs. (6 kg) per vehicle, Faurecia says.

Seats are perhaps the most important part of any vehicle interior, and Faurecia claims Light Attitude'sultra-thin seats can reduce weight 15%, compared with a typical D-segment sedan.

Instead of using conventional metal seat frames for structure, this design uses an injection-molded nylon part with continuous glass-fiber inserts supported by ribs for structural integrity.

The 1-piece molded backrest can withstand crash loads equal to those of conventional metal seats, and it can be attached to traditional metal base frames and tracks. Just 6.9 ins. (17.5 cm) thick, the composite backrest is 1.2 ins. (3 cm) thinner than conventional seatbacks, allowing vehicle designers to provide more room to second-row passengers.

Passenger side of console is fashioned to form a map pocket, with a fold-out wing to provide space for purse.

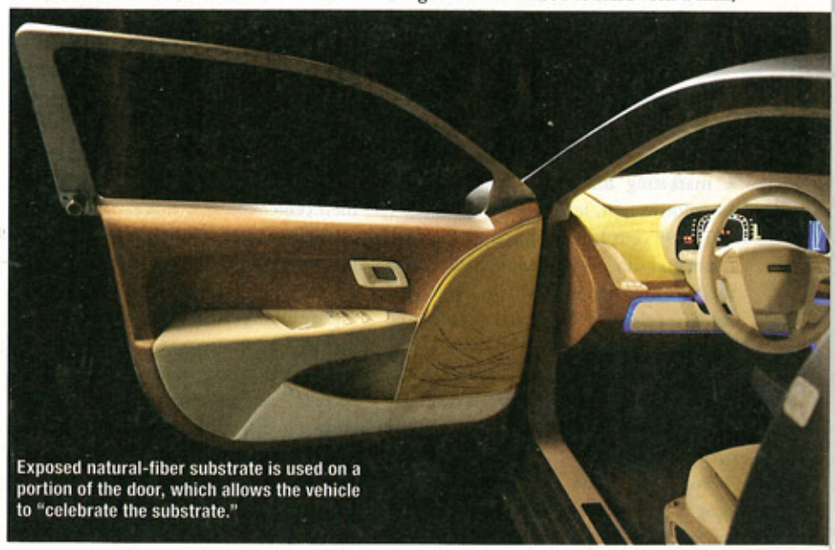
A curtain airbag, installed down the edge of the seat, is integrated into the backrest and capable of deploying more quickly, with less inflator energy than a conventional side curtain airbag.

Faurecia says the potential for parts integration offered by plastic injection molding, as demonstrated in the backrest, will ultimately result in lower investment and shorter time to market than conventional seat architectures.

The chassis-oriented elements of the mockup that do not come into direct contact with the driver or passengers are less radical but nevertheless play an important role in weight reduction.

For instance, a lighter-weight approach to the conventional dash insulator, a mundane slab of plastic and foam that fits between the engine and passenger compartments to reduce noise, can reduce vehicle weight by 7.7 lbs. (3.5 kg) Faurecia says.

Engineers cut the weight by using a new 3-layer design. Two layers of lightweight foam are used to sandwich a thin,



Exposed natural-fiber substrate is used on a portion of the door, which allows the vehicle to "celebrate the substrate."

airtight center layer.

This replaces the common 2-layer insulator that includes a thick heavy layer of material composed of chalk and plastics. The alternative design maintains the same sealing performance as heavier insulators and the same overall thickness, while being 25% to 30% lighter.

Last but not least, the supplier shows a front-end module 20% to 30% lighter than conventional modules, shaving 5.5 lbs. (2.5 kg).

Most front-end modules consist of one large molded component.

The Faurecia design uses a building-block concept featuring a series of smaller segments that snap, bolt or glue together.

The strategy includes aluminum honeycomb crush boxes as well as plastic or foam energy absorbers that replace steel components, which reduces weight compared with traditional metal-based solutions.

The idea already has caught the eye of auto makers and is expected to be incorporated in several '12 models. WAW

WARDSAUTO.COM

Designers Say Smart Features Key to Retaining Luxury's 'Premium-ness'
wardsautoworld.com/ar/auto_smart_features_key/

Faurecia Peddles Happy Attitude
subscribers.WardsAuto.com/ar/faurecia_peddles_attitude/

JCI's re3 Plug-in Concept Seats 5

FITTING FIVE PASSENGERS INTO A COMP-pact plug-in hybrid-electric vehicle, such as the upcoming Chevrolet Volt and Fisker Karma, has been problematic.

The necessary Lithium-ion batteries occupy the tunnel that runs along the floor of the vehicle, from the footwell to the back seat, barring a center-seating placement in the second row.

Johnson Controls Inc. displayed a solution at the recent North American International Auto Show in Detroit.

The interior and battery specialist unveiled its "re3" concept, a name that represents JCI's efforts to rethink small-car packaging, renew interior capability and respond to consumer demands.

The re3 series-hybrid concept cleverly packages the 96 Li-ion cells in the space of the center console, from the footwell to the back of the front seats, freeing up the second-row floor space and allowing for a lower, more comfortable seating position in back.

"We knew that you can't come out with a vehicle with only 4-passenger seating and hit very high volume," Michael Warsaw, vice president, design & marketing for JCI's North American automotive unit, tells *Ward's*.

The 96 cells have a capacity of 22 amp hours and can provide enough energy so that most commutes can be completed solely on electricity, without running the gasoline engine.

Nickel-metal-hydride batteries in most HEVs currently in production are placed in the floor of the trunk or rear cargo space.

But Warsaw says a key goal of the re3 program was to keep the Li-ion batteries out of the rear of the vehicle, away from "impact" zones.

"Seat-wing" control module positioned atop center console for driver's easy access. Battery cells appear below center console.

"We want to keep them low in the vehicle for a good center of gravity," he says. "When you take those considerations into place, plus 5-passenger capability, (the center console) is where we think it should be."

Consumers accustomed to stashing MP3 players, CDs, coins and notepads in their center consoles would have to find a new storage spot for their belongings, and JCI has a solution for that issue, as well.

With advanced electronics and repositioning of audio and climate controls, JCI has managed to dramatically shrink the space necessary for display screens and instrumentation on the dashboard, freeing up about two-thirds of the dashboard for massive storage bins.

A conventionally sized woman's purse fits handily into one of the bins, covered by a door like a standard glovebox.

Another innovation in the re3 concept is "conversation seating," which enables the front passenger seat to slide rearward almost 2 ft. (61 cm), allowing a parent easier access for feeding an infant in a car-seat positioned in the second row, behind the driver.

"There's no (traditional) first-row, second-row barrier," Warsaw says. "Everyone can see each other, can interact; and you can tend to the baby in a safe and convenient way.

"There are more times when you have three people in the car than four or five," he adds. "We wanted to make sure in most of those instances, when there are three people, that it feels like a bigger vehicle."

Jeff Williams, JCI automotive group vice president and general manager, tells *Ward's* the unique seating configuration should be ready to launch in '12 model