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26 Synergies strengthen safety systems
Complementary technologies and data sharing are enabling enhanced collision avoidance. For example, radar and camera sharing the same processor provides a higher level of safety than two separate systems. ELECTRONICS | SAFETY

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20 Directing Tesla's unique trajectory
   JB Straubel wears far more hats than most automotive CTOs. He talks about vehicle development, his engineering team, and what they've got in the works.

24 Engineering Ford's global product assault
   Hau Thai-Tang details how his global product development teams are changing to keep pace with faster product cycles, greater product diversity, and an avalanche of new technologies. (Hint: They're benchmarking the CIA.)

28 Closing the hybrid control gap
   Virtual sensing, architectural tweaks, and faster processors help engineers narrow the cost gap between hybrid and conventional powertrains. ELECTRONICS | POWERTRAIN

32 Radar love
   An emerging crop of autonomous vehicles uses ever-vigilant sensors to find their way and avoid collisions. The technology will be trickling into production, but practical, fully autonomous cars might not make it into the market until 2025. ELECTRONICS | SAFETY
AEI SAE 2013 Tech Awards

The editors of Automotive Engineering International annually select from among SAE World Congress exhibitors the technologies they judge worthy of an AEI SAE 2013 Tech Award. Judging is based on level of design and engineering innovation, uniqueness, potential for "real world" production application, and potential benefit for industry customers and end user.
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Chairman Prof. Dr. Martin Winterkorn announces high-output, high-pressure diesel; a 10-speed DSG automated manual; and more plug-in hybrid models.

18  Connecting the dots for lower CO₂
BMW's Head of Efficient Dynamics, Dr. Marcus Bollig, discusses connectivity, drivetrain technology, and his company's new strategic partnership with Toyota to mutually develop solutions for future-generation cars.

19  An emotional approach to smarter R&D
Ian Hoban, Vehicle Line Director of all Jaguar products, discusses "emotion" and its relationship to the company's development programs in creating cars of character like the new F-Type.

22  PSA & GM: working together for efficiency
The two companies expect synergies of 2 billion U.S. dollars (1.6 bn euros) within five years through projects like C-segment multipurpose and crossover utility vehicles and B-segment multipurpose vehicles, according to PSA R&D boss Jean-Marc Finot.

23  Continental moves tire development forward
One significant example, according to David O'Donnell, Senior Vice President, R&D, Passenger and Light Truck Division, is the company's world-first Automated Indoor Braking Analyzer, which increases its testing output, but more significantly, studies braking phenomena in great detail under all weather conditions.

26  LEDS light the way for SuperTruck
A research team developed a group of low-energy, high-output LED lamps for forward lighting that could be retrofitted into the truck's current incandescent headlamp housing and lens.

30  Plastic proliferation under the hood
Plastic components continue to displace metal engine parts because of cost and weight advantages.
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Pumping more air into the cylinder is key to solving the CAFE puzzle, and engineers are hard at work figuring out the best ways to do it with turbocharger and supercharger innovation. POWERTRAIN
22  Building a pathway for autonomous driving
Existing safety systems will be augmented by onboard and external inputs; the biggest challenges will be designing the software that makes proper decisions without error and liability concerns. ELECTRONICS | SAFETY
30  Steel in control
Hyundai Steel develops a new 780-MPa grade of hot-rolled high-strength steel for application in a one-piece front lower control arm, displaying the potential for an 8% mass reduction. MATERIALS | CHASSIS
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Honda R&D's top engineer outlines his company's Earth Dreams
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30 Setting Hyundai's fuel cell strategy
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developing FCEV technology, rather than collaborating with competitors.
The company's head of fuel cell R&D explains the path toward 2015 series
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The truck maker is working with Oberon Fuels and others to bring dimethyl
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alternative fuels—to North America in 2015. POWERTRAIN | ENERGY
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Automakers and suppliers are turning to new sensors to help make cabins
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The three-year, $30 million Multi-fuel Multiair R&D program with the U.S. DOE is nearing completion. Here's what Chrysler Powertrain engineers have learned as they try to achieve a 25% fuel-efficiency gain.

20 Counteracting cyber-attacks
As vehicle systems become more complex and interact with more internal and external elements, the potential for outside intrusion and tampering increases for both vehicles and the transportation infrastructure.

HIGHLIGHTS New Vehicle Technology
24 Kia moves upscale with 2014 Cadenza
The all-new premium sedan is the Korean automaker's 'most technologically advanced' vehicle ever on U.S. roadways.

26 2014 Corvette: 460 hp, 30 mpg, 1 g, $52,000
No other sports car can match the C7's combination of performance, value, and overall efficiency. Chief Engineer Tadge Juechter provides insight on executing a masterpiece.

31 Mercedes anticipates the future with new S-Class
Mercedes-Benz, using networked electronic systems (sensor fusion), is introducing on its new S-Class a step-change suspension system that can "see" (via a stereo camera) the road surface ahead and make ultra-high-speed decisions on how to deal with it.

36 Toyota engineers a shine into the 2014 Corolla
In an effort to stay competitive with a car that has been on the market for 47 years, Toyota will offer an all-new Corolla for 2014 with a CVT with intelligent shifting and standard LED headlamps.

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