

42-VOLT UPDATE

Visteon's Integrated Starter Alternator

Designed for use as part of a 42-Volt power architecture, the Visteon Integrated Starter Alternator combines starter and alternator functions into one powerful system. The system enables start-stop strategies, brake regeneration, and power assist/boost. Features of the Integrated Starter Alternator include:

- Capable of generating up to 20 kW (at 42-Volt) of power while performing the functions of both the starter and alternator
- Flexible system design for soft hybrid vehicle platform
- Ultracapacitors provide rapid charge/discharge
- Allows for lower emissions through smart control strategies
- Enables electro-mechanical valves
- Enables belt-less engine design

Quieter vehicle start, reduced start time to 300ms or less and improved fuel economy through start-stop and torque boost are among the benefits that can be realized with the Integrated Starter Alternator.

www.visteon.com

Valeo Establishes Alliance With International Rectifier

Valeo and International Rectifier have announced that they have entered into a long-term strategic alliance to develop advanced power electronics systems for leading-edge automotive applications. With this alliance they will jointly develop and produce proprietary system solutions that combine Valeo's strength in electrical systems and IR's power switching expertise, will target high-growth applications in automotive electronics.

The power modules, which incorporate dedicated silicon devices, will be embedded into high power electronic control units, and are first planned to be integrated into Valeo's reversible starter alternator and related energy management systems, such as its DC/DC converter. Valeo's future intelligent engine cooling and 42 Volt systems, including the integrated starter alternator and heating ventilation and air conditioning system (HVAC), could also benefit from power module integration. Valeo will produce the

full power electronics systems and deliver directly to its worldwide customers. U.S.-based International Rectifier plans to produce the power modules developed under the alliance in its state-of-the-art manufacturing facility in Wales, UK, with Valeo providing additional manufacturing capacity as needed.

www.valeo.com; www.irf.com

GM's AUTOmomy Concept Vehicle Reinvents Automobile

According to Rick Wagoner, President and CEO of General Motors Corp., "AUTOmomy is more than just a new concept car; it's potentially the start of a revolution in how automobiles are designed, built and used."

AUTOmomy is the first vehicle designed from the ground up around a fuel cell propulsion system and the first to combine fuel cells with x-by-wire technology, which allows steering, braking and other vehicle systems to be controlled electronically rather than mechanically.

Larry Burns, GM Vice President of Research and Development and Planning, presents the result as an entirely new vehicle architecture that is far greater than the sum of its innovative parts. With AUTOmomy, an almost endless variety of affordable, all-wheel-drive vehicles could be built from a limited number of common chassis — possibly as few as two or three — emitting only water from the tailpipe and using renewable energy.

Burns states, "If our vision of the future is correct — and we think it is — AUTOmomy could reinvent the automobile and our entire industry. AUTOmomy is not simply a new chapter in automotive history. It is volume two, with the first hundred years of the automobile being volume one. The 20th century was the century of the internal combustion engine. The 21st century will be the century of the fuel cell."

The AUTOmomy concept provides a vision of the potential of the coming hydrogen economy. "Achieving energy and environmental improvements are extremely important objectives in and of themselves, but the AUTOmomy concept promises much more," Burns added. "By synergistically combining fuel cell and x-by-wire technologies, we can provide a totally different value proposition for our customers."

Because of its x-by-wire controls, the driver has no pedals to operate, merely a steering guide – called X-Drive — that is easily set to a left, right or even center driving position. This frees up the seating to be more flexible and comfortable. The interior floor is completely flat, creating more interior space, flexibility and accessibility.

With its robust 42-volt electrical system, the car is configured to run any number of devices in the passenger compartment, from homes to entire farms.

“By combining fuel cells and x-by-wire, we can explore the design, use and marketing of transportation devices that truly give our customers what they want —regardless of where or how they live now or in the future,” Burns said. “This is the first concept vehicle that captures the vision and potential of where fuel cell technology will lead the industry in every region of the world, well within the lifetimes of most of the people who will be visiting this show. This is a global vision because GM and its alliance partners have an unparalleled ability to design and build vehicles all over the world. “Some people think the auto industry is mature, with evolutionary innovation and slow growth,” said Burns. “But the AUTOnomy concept reinforces the incredible growth potential of the automobile industry worldwide. What if the entire world could affordably enjoy as much mobility freedom as the developed world does today? Add to that the ability to power up your home or your farm from your vehicle. With these capabilities, AUTOnomy may prove to be as important as the original invention of the automobile.

“More than 100 years after the automobile’s invention, only 12 percent of the world’s population currently enjoy its benefits. The AUTOnomy concept, we believe, could be the foundation for extending the benefits of personal transportation to the remaining 88 percent of the world’s population.”

www.gm.com

New Siemens VDO Automotive 42-Volt Powered Mechatronic Pretensioning Motor

Siemens VDO Automotive has developed a mechatronic, multi-function coiling motor to enhance the safety, effectiveness and comfort of seat belt pre-tensioning systems. Through the incorporation of Siemens VDO Automotive ad-

vanced electronics, complex, conventional mechanical and pyrotechnic coiling belt tensioning seat safety systems can be replaced with an intelligent electric motor.

The Siemens VDO Automotive mechatronic pre-tensioning motor solution replaces traditional multiple mechanical components with an intelligent control system integrated with existing safety systems, such as the electronic stability program (ESP), anti-lock braking system (ABS) and the airbag electronic control unit (ECU). Information from these onboard systems is processed by the mechatronic pre-tensioning motor to define and react to an emergency situation by tightening the seatbelt within a fraction of a second.

Powered by 42-volt architecture, the Siemens VDO Automotive motor pulls the occupant into a desirable, upright position before collision impact and airbag deployment. During the first fractions of a second following a collision, the pre-tensioning motor selectively varies belt tension depending on occupant size and the amount of restraint required to hold the occupant in the optimal seat position. This better ensures occupants of varying weight and stature are correctly seated during airbag deployment. If an imminent collision can be avoided, the mechatronic system immediately disengages seatbelt pre-tensioning coils returning the belt to a normal fit. Unlike conventional systems, the Siemens VDO Automotive solution is completely reversible and allows for the pretension-triggering threshold to be set at varying levels. Siemens VDO Automotive expects rapid market penetration of this advanced seatbelt safety technology and its mechatronic pre-tensioning motor will reach production on a European vehicle application before year-end. Industry experts predict 10 to 30 percent of all new vehicles will be equipped with an intelligent seatbelt pre-tensioning system of this type by 2005.

<http://www.usa.siemens.com>

Upcoming SAE 42-Volt Programs

42 Volt Challenges TOPTEC®: Technical Potholes on the Highway to Success; April 29-30, 2002; Management Education Center, Michigan State University; Troy, Mich. *Electrical Arcs: A Technical Challenge for 42 Volt Systems*; May 8, 2002 - Troy, Mich.; Sep 18, 2002 - Troy, Mich. For more information go to www.sae.org .