Achieving a Smart Society

Renesas Electronics Group’s Semiconductor Technologies

Our societies are facing a variety of problems, such as climate change, the decline of fossil fuel reserves, and power shortages. A “smart society” seeks to solve these problems, aiming towards the realization of a sustainable society that balances consideration for the environment with comfortable lifestyles, by making effective use of energy and managing, controlling, and connecting energy sources, including released heat and previously unharvested energies throughout society as a whole.

A Smart Society and Semiconductor Technologies

Offering a variety of benefits, including the reduction of power consumption, semiconductors contribute to the reduction of waste and the realization of efficiency all around us — from ordinary houses to offices, and from cars to industrial devices and equipment. A diverse range of semiconductor technologies and applications will be essential to the realization of our projected smart society. Among the roles that semiconductors will play, we can point to their use in electronic devices to reduce power consumption and offer more advanced functions, and in addition to contribute to the creation of networks. The technological evolution of semiconductor products will accelerate the appearance of a smart society.

Smart Home Solutions

A smart society will be underpinned by a smart grid, which will eliminate waste through the control and effective use of energy. The overall optimum balance will be achieved by means of the management and control of the power produced by power stations and the power consumed by homes. And the control of energy in each individual home will produce a smart home.

Understanding Power Consumption in the Home

The creation of smart homes requires us to understand the amount of power being consumed in each home, as well as the amount of power being generated. In order to do so, power monitors and micro power meters will be essential. Systems using the functions offered by semiconductors will make it possible to manage and control power throughout the house.

Curbing Energy Loss through Home Electrical Appliances

Many of the electrical appliances used in the home operate using motors. However, in some cases, these motors do not operate efficiently, resulting in energy loss. The effective control of high-performance motors in home appliances using semiconductors makes it possible to save energy in these appliances. Renesas Electronics is reducing energy loss to the absolute minimum by means of semiconductor possessing advanced functions that have been leading a technological revolution in combination with Japanese home appliance technologies.

Renesas semiconductor technologies making a contribution in a smart society

The Vehicles demanded by a Smart Society

Cars will also be required to increase fuel efficiency and reduce dependence on oil. While the use of electric vehicles and plug-in hybrid vehicles has spread widely, development efforts are now proceeding for “smart cars” — next-generation vehicles that will be even smarter.

We can also expect the realization of an energy-conserving, safe and comfortable automotive society in which cars and advanced traffic systems are mutually linked, controlling traffic congestion and providing assistance for safe driving.

Connecting Homes and Power Companies

Smart meters are indispensable in connecting homes and power companies. Smart meters must be electronic, and must consume low levels of power to enable long-term operation. Because they also possess communications functions, they require advanced security functions, making encryption technologies another important factor. There are numerous patterns of specifications and performance parameters for the application of semiconductors to smart meters. Renesas Electronics is contributing by offering a wide-ranging product lineup offering low power consumption, and technological expertise for the realization of safe and reliable security.

Contributing to the Future Automotive Society

The importance of electronic technologies in the rapidly expanding field of eco-friendly cars is increasing, and the achievement of further size and weight reductions and greater efficiency in parts is a necessity. Semiconductor technologies will be essential in areas including the construction of effective infrastructure for electric vehicles and the realization of advanced traffic systems and safe driving support systems. Renesas Electronics is contributing to the early realization and diffusion of smart cars by supplying high-performance microcontrollers with low power consumption. (Please see the following page for details).
Special Feature | Achieving a Smart Society
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TOPICS

Smart Cars and Renesas Microcontrollers

The Potential of the Automotive Society and Renesas Semiconductors

The recent diffusion of electric and hybrid vehicles and the acceleration of new technological development have seen the rapid evolution of automobiles with new initiatives in the direction of reduced carbon emissions and energy conservation. Among other developments, we can also look forward to the creation of systems to support safe driving and control traffic congestion and systems for the charging of electric vehicles, which will help to usher in a safe and comfortable automotive society.

With each vehicle employing between 50 and 100 microcontrollers, Renesas Electronics is supporting automotive comfort, safety, and energy conservation, and contributing to the development of the automobile. Boasting a 42% share of the global market in automotive microcontrollers*, in the automotive field we offer safety, security, and comfort with customer satisfaction as our top priority.

Smart Cars and Renesas Microcontrollers

We are contributing to the creation of an environmentally friendly, safe, secure and comfortable future automotive society.

Contributing to an Evolving Automotive Society

Connectivity is an increasing contemporary requirement. Microcontrollers will be indispensable in the realization of vehicle operation support functions involving communication with surrounding vehicles and the road, including sharing information with smartphones, linking vehicle operations, and the real-time acquisition of road traffic data.

Contributing to Comfortable Cabin Spaces

Soft interior illumination comes on when the door is opened. The vehicle recognizes the driver and offers voice guidance. These and other functions offering increased user comfort will be flexibly realized by microcontrollers.

Contributing to the Reduction of Traffic Accidents

The majority of traffic accidents originate in misjudgments or operating errors by drivers. Microcontrollers with high processing capacity are contributing to the realization of safe driving assistance functions that will reduce the incidence of human errors.

Contributing to the Prevention of Global Warming

Vehicles that produce minimal exhaust and good fuel efficiency are needed as we work to reduce greenhouse gas emissions. Microcontrollers with lower power consumption are contributing to the realization of environmentally friendly automobiles.

*Source: HIS (Supplied Competitive Landscape Tools (CLT))

Naka Factory Restoration and Earthquake Lessons

Damage to Our Production Centers in the Great East Japan Earthquake and its Effect

Eight Renesas Electronics Group manufacturing sites were damaged in the Great East Japan Earthquake, forcing a suspension of production activities. Of these eight, our Naka Factory was particularly severely damaged, resulting in considerable inconvenience for our customers, shareholders, and business associates. In working towards recovery, we received tremendous support from the parties concerned, and we were able to recommence production three months ahead of our originally projected schedule. We would like to take this opportunity to once again thank all of the stakeholders who offered us their generous support.

Putting the Lessons learned from the Earthquake into Practice

Having reaffirmed our awareness that our mission as a company is to provide our customers with a stable supply of products, in fiscal 2012 we focused our efforts on disaster responses based on lessons learned from the Great East Japan Earthquake.

Details of measures related to production equipment

• Measures to prevent damage to PVC ducts
• Measures to prevent jigs and tools from falling
• Measures to prevent collapse of office ceilings
• Measures to prevent submersion of underground water disposal tank pit
• Measures to prevent toppling of electrical equipment

Details of measures related to buildings

• Measures to prevent toppling of buildings
• Measures to prevent damage to buildings
• Measures to prevent collapse of office buildings
• Measures to prevent collapse of office ceilings

Details of other measures

• Measures to prevent damage to buildings
• Measures to prevent collapse of office buildings
• Measures to prevent collapse of office ceilings

措施 to prevent damage to PVC ducts

• Measures to prevent jigs and tools from falling
• Measures to prevent collapse of office buildings
• Measures to prevent collapse of office ceilings
• Measures to prevent damage to buildings

Creation of a robust factory, difficult to damage and easy to repair

Extension of measures to other Renesas front-end Fab and assembly/test lines, with Naka Factory as a model.