Research and Development

The Shell Group is a pioneer in environmentally friendly countermeasures and new energy development. Our Central Research Laboratory—our primary research organization—works closely with the Shell Group's worldwide R&D bases, undertaking research on themes ranging from oil refining to eco-friendly energies. The results of our research efforts are evident in a variety of businesses, such as the high-octane gasoline *Shell Pura* and our development of asphalt that offers drainability and noise-reduction features.

Solar Energy Business

Since 1978, Showa Shell has been making aggressive efforts to popularize solar batteries, and the Company is undertaking a variety of projects in this area. Among these is a project commissioned by The New Energy and Industrial Technology Development Organization (NEDO), an independent administrative organization, the development of CIS (copper, indium, and diselenide) thin-film photovoltaic modules that have achieved the worlds most efficient energy conversion rate. A manufacturing plant is currently under construction, with commercial production slated to begin in 2007. We will continue to pursue further technological developments in the field of clean energies to enable the realization of a sustainable society.

Hydrogen Fuel

Hydrogen fuel promises to be an extremely clean source of energy. The Shell Group has developed proprietary technology—modified CPO (Catalytic Partial Oxidation) technology—for incorporation in a highly efficient hydrogen production system, which features high startability and an ability to reduce the environmental load (the degree of operational freedom). As part of a project commissioned by the Petroleum Energy Centre (PEC), the Central Research Laboratory of the Company is working to develop a system that uses a hydrogen station, leveraging the modified CPO technology.

Dispersed Power Source Business

We began cogeneration utilising the TES (Total Energy System) in 1974. Since then, we have realized significant achievements in the dispersed power source business. We have been able to more efficiently supply electricity than the existing electric power companies, thereby contributing to the reduction of carbon dioxide. In addition to large-scale facilities, we will also begin offering efficient and reliable cogeneration power systems for home-use and use by small businesses.

GTL (Gas to Liquids)

GTL refers to a process that combines the carbon and hydrogen elements in natural gas molecules to make synthetic liquid petroleum products. GTL fuel is clean, and environmentally friendly, as it contains almost no sulfur and has virtually no odor. The Shell Group operates the world's first commercial GTL plant in Bintulu, Sarawak, in Malaysia, providing products to over 20 countries. Moreover, the Shell Group has announced plans to build a large-scale GTL plant in Qatar, slated for completion in 2009, which will further cement its lead in both GTL technology and GTL fuel supply.

Natural Gas Development Business

From the viewpoint of environmental protection, it is necessary to further improve energy-use efficiency while giving adequate consideration to atmospheric preservation and energy conservation. These requirements have prompted us to develop new applications for natural gas, which is a clean form of energy. Showa Shell is working together with Tokyo Gas on a power project through joint establishment of K.K. Ogishima Power in order ensure the efficient and economical supply of electricity from sites located in close proximity to customers. Leveraging the strengths of each company, the project is making steady progress, with full-scale operation slated to begin in 2009.

Soil Remediation Business

The Company employs the NERA (Network Environment Risk Assessment) system, developed by the Shell Group, to assess environmental risks and manage soil contamination risks at service stations. Our subsidiary Shoseki Engineering & Construction Co., Ltd. is registered as a specified assessment organization with regard to soil reclamation countermeasures. Another subsidiary, K.K. SVC Tokyo, which is authorized to undertake verification of environmental measurements, is working to develop a business as a highly reliable environmental risk assessment company.