

Foreword

About This Special Edition of Global Warming Countermeasures

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Global warming is the most important issue of the 21st century and could well undermine the foundations of our society in that economic growth has been based on fossil energy.

The demand for energy is increasing around the world, especially in the rapidly developing countries of Brazil, Russia, India and China (BRICs), whose remarkable economic growth presages a continued increase in the amount of emitted greenhouse gases.

If economic growth continues to be our major priority, climate change and environmental destruction will be unavoidable, greatly affecting human life and severely impairing economic growth itself because of the enormous costs involved.

To combat this situation and its long-term implications, the international community is searching for an effective framework for reducing greenhouse gas emissions while maintaining economic growth.

The increase in energy demand and concomitant rise in oil prices have demonstrated to the international community the importance of stable energy supplies. We must reduce our degree of dependence on the reserves of expensive oil and turn to the clean use of coal, which is abundant and inexpensive, as well as increase our use of safe nuclear power and renewable energy sources.

The economy, energy resources and the environment are interconnected in global warming; this constitutes a problem that cannot be solved simply by reducing greenhouse gas emissions. Instead, we must construct a social system based on “The 3Es” of achieving sustainable economic growth, energy security and environmental protection, simultaneously. Innovation in environmental energy technology is also required to implement “The 3Es” system.

Mitsubishi Heavy Industries, Ltd., (MHI) has contributed to Japan’s position as the world’s most advanced energy-saving society through its achievement of a stable energy supply by providing environmental- and energy-related

products, such as power generation plants.

This special edition introduces ideas from MHI on how to construct a “3Es” society, using proven technology that offers effective global warming countermeasures.

First, we provide an overview of recent trends in environmental energy issues, propose a framework for “3Es” development cooperation between Japan and Asia, and suggest an idea for a linked group of low-carbon liquid fuel producers.

Next, we introduce the improvements MHI has achieved in the efficiency of thermal power generation systems through the effective use of fossil energy, which is the nucleus of the power generation sector. We also introduce the GTCC (gas turbine combined cycle), which emits lower amounts of CO₂, the IGCC (integrated coal gasification combined cycle), which burns coal cleanly, improved engine efficiency, fuel-cell development advances, and CO₂ recovery technology.

We then introduce MHI’s initiatives in expanding the use of nuclear energy through the development of a nuclear fuel cycle and a fast-breeder reactor. Nuclear energy is key to reducing greenhouse gases and achieving a stable energy source.

Next, we describe the renewable energy technology and products that MHI has developed and put to practical use, including wind, solar and geothermal power devices, a biomass gasification system and a biomass carbonization system.

Finally we describe the centrifugal chiller that MHI developed to improve efficiency in the end-user sector, a modal shift in a new transportation system, and the use of ITS to control traffic jams and thus reduce CO₂.

MHI is determined to fight global warming and achieve a “3Es” society by supplying new energy and systems solutions through continued technological innovation.

We thank you for your continued interest in, and support for, MHI.