Opening Message

“Beaming Future by Environmental Technologies”

Akihiro Yamanaka
Vice President

In recent years, frequent and devastating disasters have occurred around the world due to global climate change. One potential cause of this phenomenon is global warming, which is believed to be caused by greenhouse gases, such as CO_2 and methane. These environmental issues have long been recognized, and various efforts have been made to address them.

In the United States, the social issue of air pollution in urban areas led to the enactment of the Clean Air Act in 1963 and its subsequent amendment in 1970, more commonly referred to as the Muskie Act. The amended act was very strict and greatly impacted the development of environmental technologies for cars. Following the first oil crisis triggered by the Yom Kippur War in 1973, which caused oil prices to skyrocket, countries began implementing regulations to improve the fuel efficiency in cars, which promoted energy conservation. Consequently, while CO_2 emissions per car were mitigated, the aggregate amount of CO_2 emissions continued to rise in tandem with global economic expansion.

The 1992 United Nations Conference on Environment and Development (Earth Summit), held in Rio de Janeiro, Brazil, is widely regarded as a significant turning point in thinking about global environmental issues. At this conference, initiatives to achieve “sustainable development” that balances the environment and development were discussed, and the United Nations Framework Convention on Climate Change was adopted.

Then, in 1997, the Kyoto Protocol was adopted at the Third Conference of the Parties (COP3) to the United Nations Framework Convention on Climate Change held in Kyoto.

This protocol set reduction targets for greenhouse gas emissions in developed countries. In response to this change, Japan began mass-producing hybrid cars, which were twice as fuel efficient as conventional cars. This sparked a global increase in the development of various electrified vehicles.

Furthermore, the Paris Agreement was adopted at the 2015 United Nations Climate Change Conference (COP21). Its goal is to "keep the global average temperature rise well below 2°C above pre-industrial levels and pursue efforts to limit the temperature increase to 1.5°C." The agreement stipulates that the world aims to achieve "decarbonization." This means that global greenhouse gas emissions will be reduced to net zero in the second half of this century. This goal is based on scientific evidence presented by the Intergovernmental Panel on Climate Change (IPCC).

In Japan, "carbon neutrality," the feature theme of this technical journal, was declared by the prime minister in 2020. The goal is to reduce greenhouse gas emissions to zero overall by the year 2050.

As mentioned earlier, strict regulations about car emissions and fuel efficiency have been gradually introduced in various countries to improve the environment. Technologies to meet these regulations have also evolved. Moreover, the new "zero CO_2" goal has been added and has led to quick changes. In recent years, many cars with internal combustion engines have been replaced by electric vehicles.

However, electric vehicles are expensive, and the current methods of generating the electricity needed to charge them rely on fossil fuels, making them far from clean. Also, it's hard to solve problems like not having enough charging stations, charging taking a long time, and the cars not being able to drive very far on one charge. This is causing the extreme shift toward electric vehicles to slow down somewhat.

Of course, the goal of achieving zero CO_2 emissions hasn't changed. However, instead of solely seeking solutions through switching to electric vehicles, we believe it is important to combine various types of vehicles with different advantages and respond through multiple pathways. These pathways range from energy conservation and CO_2 reduction to zero CO_2emissions.

Let's take a look at cars with internal combustion engines. We can achieve zero CO_2 emissions by using carbon-neutral fuels such as biofuels, e-fuels, and hydrogen. In addition, if we eliminate other emissions, such as hydrocarbons (HC) and nitrogen oxides (NOx), these cars can be considered equivalent to electric vehicles that are charged by clean energy. Furthermore, cars with internal combustion engines can also achieve negative emissions by taking in polluted air and purifying it, thereby cleaning the atmosphere.

Aisan has long been involved in developing functional products for internal combustion engines such as air intake systems, fuel supply systems, and exhaust gas control systems. We've also worked on environmental technologies related to fuel efficiency and exhaust gas control and suitability for cars. We are experts especially in fuel supply systems. We can handle many different fuels, including gasoline, LPG, CNG, and alcohol fuels.

We aim to achieve zero CO_2 emissions and zero other emissions from cars with internal combustion engines using these technologies. We also hope to contribute to the protection and preservation of the global environment by expanding these technologies to countries in the Global South and other regions.

Aisan will also use these environmental technologies to develop and produce new technologies related to electrification, clean energy (fuel cells, hydrogen, ammonia, etc.), and new mobility. We will also work to develop software and systems that can work with AI and software-defined vehicles (SDVs) in a way that follows current trends. We aim to help achieve carbon neutrality and solve societal challenges by innovating Aisan strengths in MONOZUKURI and production technologies, as well as providing solutions that create new values.

Lastly, we will continue developing new environmental technologies to help the automotive industry grow and provide high-quality products and services. In doing so, we will contribute to society and help create a beaming future.