

Theme 1 Effective Utilization of Recyclable Resources

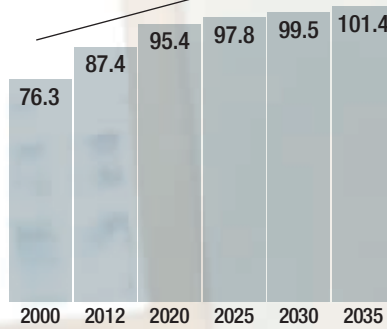
Initiatives of the Business Technologies Business



Limited Natural Resources and Utilization of Recycled PET

Forecast of global oil demand (million barrels/day)

33% increase in 35 years →



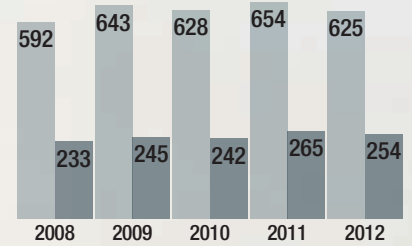
Source: World Energy Outlook 2013, IEA.

Recovery of used PET bottles and volume recycled in Japan (thousands of tons)

Recovered Recycled in Japan

Volume recycled in Japan:

less than **50%** of volume recovered



Source: Annual Report on PET Bottle Recycling, Council for PET Bottle Recycling.

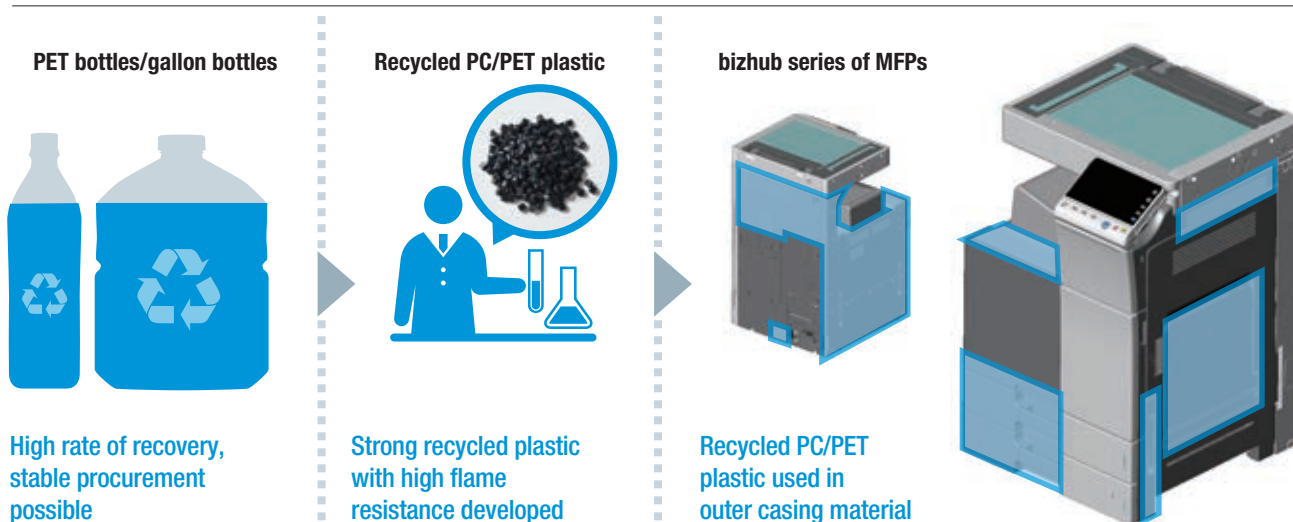
With demand for oil expected to keep increasing despite the threats of resource depletion and climate change, virtually every industrial sector is attempting to use less and recycle more plastic and other petroleum-based resources. One item with a high profile is PET bottles. PET is available in a relatively stable supply and has well-established recycling infrastructure. At present, however, the volume recycled in Japan is growing more slowly than the volume collected; more than half of collected PET is shipped outside the country at low prices. In order to become a recycling-oriented society in the truest sense of the term, Japan needs to find more added-value applications for using PET bottles as a recyclable resource.





Using Recycled PET Bottles in the Outer Casing Material of MFPs

For some years now, Konica Minolta has been conducting R&D on ways to use recycled plastic, looking to help build a recycling-oriented society. The company created new technology for recycling PET plastic and succeeded in using it in the outer casing of its MFPs, which had previously been difficult to achieve, thus increasing the value of the recycled material.



Each MFP uses recycled PC/PET plastic equivalent to about sixteen 500 ml PET bottles and two 5 gallon PC bottles.*

* bizhub C554e series of color MFPs

The biggest challenge when recycling recovered PET bottles as recycled PET (polyethylene terephthalate) plastic is the deterioration in performance compared to virgin material. That is why applications for recycled PET plastic were limited until now to products with low performance requirements, such as sheets and textiles.

Konica Minolta's research into using recycled PET plastic in the outer casing material of MFPs faced hurdles at first in terms of performance. The challenges included making it processable enough for injection molding, as well as meeting strength and flame-resistance requirements. The company applied polymer alloy technology to obtain better performance by blending different resins. By mixing it with polycarbonate (PC), the researchers were able to improve the strength, flame resistance, and processability of the recycled PET plastic.

PC is used to make gallon bottles for water coolers. Like PET bottles, it is a plastic with a high rate of recycling. By combining recycled PC and PET into a composite material, Konica Minolta developed recycled PC/PET plastic, a material good enough to use for the outer casing of its bizhub series of color MFPs. The usage rate of recycled PC/PET and other recycled materials continues to increase with every new model. Recycled materials make up more than 40% of the total plastic surface area in the bodies of bizhub C554e series machines, the main new models launched in 2013.

This adoption of recycled plastic in the outer casing of an MFP was an industry first, worldwide. Building on this achievement, Konica Minolta will strive to improve the quality and expand the applications of recycled plastic material in the future.

Theme 2 Contributing to the Advance of Medical Diagnostics

Initiatives in the Healthcare Business



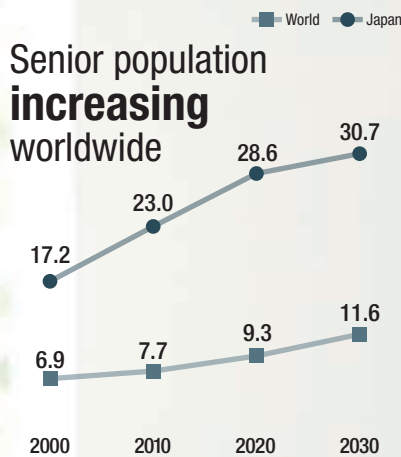
Social Issue

Aging Societies with Rising Home Care Needs

Societies around the world are experiencing faster and faster demographic aging, while the total global population is also growing dramatically. In Japan today, people 65 years and older account for 25% of the entire population, making Japan one of the quickest-aging countries in the world. The health care situation facing seniors has created various challenges. Too many patients have difficulty making it to see the doctor, there are too few doctors, and medical and nursing costs are increasing for society as a whole.

Given this context, there is a great need to supplement the traditional outpatient and inpatient care systems with a third form, home health care. With home care expected to become more common in the future, observers expect an expansion in the number and type of medical services that can be performed in the home.

Percentage of seniors (65 and older) in the population (%)

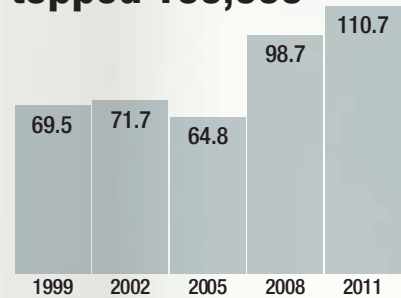


Senior population increasing worldwide

Source: World Population Prospects: The 2012 Revision, United Nations.

Patients who have received home care in Japan (thousands)

The number of home care patients in Japan has topped 100,000



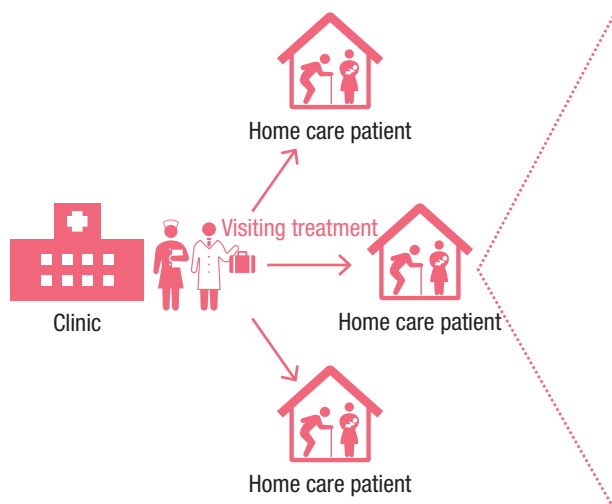
Source: Patient survey conducted by the Ministry of Health, Labour and Welfare.





Making High-precision Diagnostic Imaging Devices Usable in the Home Care Setting

Diagnostic imaging devices that use X-rays and ultrasound enable healthcare providers to see inside the body, shedding more light on conditions that cannot be assessed just from outward appearance. Until recently, patients who needed imaging services were required to visit a medical facility, since the imaging devices were not mobile. Konica Minolta has now developed portable devices that make diagnostic imaging in the home possible.



AeroDR, a cassette-type digital radiography system



SONIMAGE P3, a portable ultrasound diagnostic imaging system

Making X-ray and ultrasound diagnostics available to home care patients

As a pioneer of X-ray film in Japan, Konica Minolta has developed diverse medical diagnostic imaging devices by leveraging its core imaging technologies. In recent years, it has driven the digitalization and networking of diagnostic imaging and contributed to the expansion of its scope of use by making devices more and more user friendly.

The digital radiography system AeroDR, for example, features improved operability during image capture, which had been a challenge until now, taking advantage of painstaking weight reduction efforts and wireless technology. The AeroDR makes it possible to take images not only in the X-ray room but also at the hospital bedside, in the emergency room, or other locations. The diagnostic ultrasound system SONIMAGE P3 is proving useful not only in hospitals but also in home care and disaster settings, since its ultra-lightweight, compact design make

it easy for doctors to bring with them wherever they go.

Seeking to take advantage of the AeroDR's excellent portability to make it usable at home care and disaster sites, in 2013 Konica Minolta developed a mobile package that includes a tablet PC for image diagnostics and a wireless communications unit. This package was used for demonstration testing of a health promotion car, conducted by Aomori Prefecture in three municipalities as a health care measure in thinly populated areas. This initiative, which conducts treatment visits, house calls, and health checkups using portable medical devices packed into a compact car, confirmed AeroDR's usefulness in home care.

Going forward, Konica Minolta will continue to make these advanced diagnostic imaging devices even more user-friendly to contribute to the advance of home care.

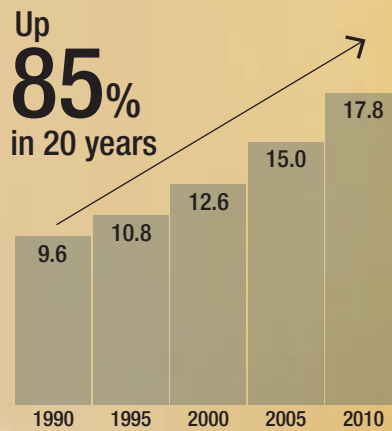
Theme 3 Contributing to Energy Savings Throughout Society

Initiatives in the Industrial Business



Continually Rising Electricity Consumption and the Demand for Low-power Lighting

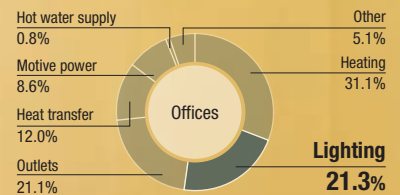
World Electricity Consumption (trillions kWh)



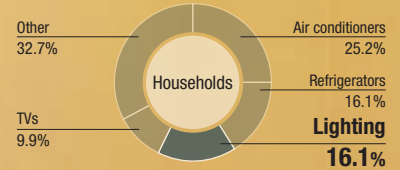
Source: Energy Balances of OECD Countries, Energy Statistics and Balances of non-OECD Countries, IEA.

Breakdown of Energy Consumption in Offices and Households

Lighting accounts for a high percentage



Source: Energy Conservation in Office Buildings, Energy Conservation Center, Japan (ECCJ).



Source: Dictionary of Energy Conservation for Households, ECCJ.

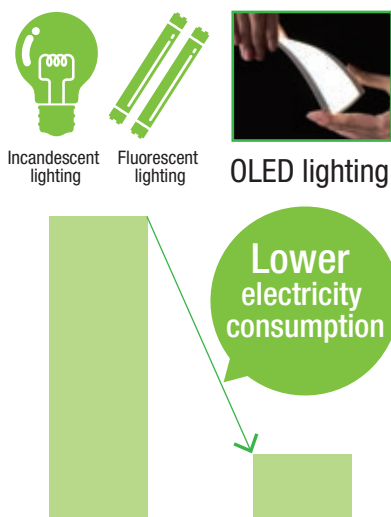
The need for greater energy savings is in the news worldwide amid growing concerns over climate change and resource depletion, yet electricity consumption keeps going up. Lighting equipment accounts for the second highest percentage of electricity use, following heating and cooling, including air conditioning. Saving more energy on lighting, which is an indispensable part of modern life, would help conserve energy throughout society, including at residences and offices. This potential is driving demand for the development and popularization of next-generation lighting equipment that has better energy efficiency than conventional fluorescent and incandescent lights.



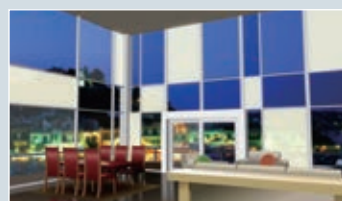
Finding Diverse Applications for Cutting-edge Organic Light Emitting Diode (OLED) Lighting

Konica Minolta is working hard to meet the rising demand for next-generation lighting with lower electricity consumption than fluorescent and incandescent lighting. The company is applying its proprietary film-making and optics technology to R&D into organic light emitting diode (OLED) lighting, aiming to create new products which help save energy throughout society. Seeking to identify many promising applications, Konica Minolta is working to improve functionality and luminous efficiency and is already building an efficient mass production system.

Conventional lighting Next-generation lighting



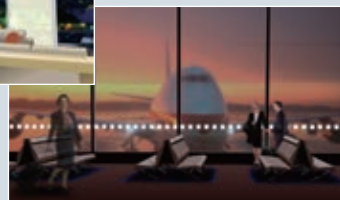
OLED lighting is thin, lightweight, and flexible, and has many potential applications.



Building materials



In-car lighting



Interior décor

OLEDs use an organic material that emits light when stimulated by an electric current. They do not use mercury like fluorescent lights and are highly energy efficient, giving them great promise as a next-generation lighting source with low environmental impact. OLED lighting also boasts unique features unavailable in conventional lighting: they are thin, lightweight, and flexible, and they provide a light source surface that evenly lights a wide area. These characteristics create the potential for novel ways to use lighting. It is anticipated that they will be used in diverse situations, ranging from homes to offices and car interiors to outdoor settings.

From early on, Konica Minolta has leveraged its proprietary technical capabilities, including optics technology and design and synthesis techniques for organic materials, to conduct R&D into putting OLEDs into practical use. Since 2010, the company has also been involved in a project called Fundamental Technology Development of

Next-generation High-efficiency and High-quality Lighting implemented by Japan's New Energy and Industrial Technology Development Organization (NEDO).

In March 2014, it succeeded in increasing the luminous efficiency, which had been a challenge for achieving broader application of the technology, to 131 lm/W, which is better than general LED lighting and is the world's highest luminous efficiency for an OLED.^{*1}

The company has already started building a mass production plant at its Kofu site in Yamanashi prefecture in preparation for full-scale commercialization in the future. It has adopted roll-to-roll processing,^{*2} which provides excellent productivity, and plans to start production in the fall of 2014.

^{*1} As of March 1, 2014. Among white OLED lighting panels with a luminance area of 15 cm² or greater. Based on a Konica Minolta investigation.

^{*2} **Roll-to-roll processing:** a method of processing electronic devices on a roll as it is being rolled up. Compared to the processing of devices cut out individually, there is no need for time and effort spent on installation and conveyance.