



KONICA MINOLTA

News Release

Konica Minolta Concludes a Comprehensive Collaboration Agreement with Tamura TECO, a Leading Maker of Ozone-related Products

Aiming to Quickly Offer and Expand Products for Preventing Infections with the Power of Manufacturing

Tokyo (January 18 2021) – Konica Minolta, Inc. (Konica Minolta) today announced that the company has concluded a comprehensive collaboration agreement with Tamura TECO Co., Ltd. (Tamura TECO), an Osaka-based leading maker of ozone-related products that are effective for removing viruses, to help prevent the spread of Covid-19 and create a clean and safe living environment. The scope of collaboration includes contract manufacturing of ozone gas products, whose production system needs to be expanded rapidly to meet the growing demand from medical institutions and fire departments across Japan due to the Covid-19 pandemic, and procurement of parts to increase the manufacturing capacity. Konica Minolta has been selling some of Tamura TECO's existing products through the Group's sales channels.

Key points:

- Procurement of parts and OEM manufacturing by taking full advantage of Konica Minolta's manufacturing skills and capability
- Commencement of sales of some of Tamura TECO's products through the Konica Minolta Group's sales channels
- Joint development of new products for medical use and product control systems
- Utilization of an integrated platform with peripheral devices

Previously, a high-concentration ozone gas was shown to effectively inactivate E. coli, influenza viruses, norovirus, pollen, and Covid-19. In August 2020, it was verified that low-concentration ozone gas is effective for decontaminating Covid-19 based on experiments conducted by Fujita Health University.* The results showed that ozone generators (capable of generating ozone at a low concentration and maintaining an appropriate concentration) can be used constantly at a concentration permissible for the human body at places where people gather, such as medical facilities, public transport systems, and offices, to prevent the spread of Covid-19.

Tamura TECO uses the expertise acquired through these demonstration experiments to develop products. The company optimally controls the CT value (ozone concentration multiplied by exposure time), which is an important index for ensuring the effectiveness and safety of ozone gas, to commercialize products. As Covid-19 has spread, Tamura TECO has received a huge increase in orders from medical institutions and fire departments across Japan, and so needs to quickly expand its production system. Against this backdrop, Konica Minolta will help expand Tamura TECO's production system by using its production and procurement capability.

The collaboration will study the possibility of jointly developing, manufacturing, and selling new products for medical use and using Konica Minolta's integrated platform in the future.

* <https://www.fujita-hu.ac.jp/news/j93sdv0000007394.html> (Japanese)

Value Creation through Collaboration

1. Procurement of parts and contract manufacturing by taking full advantage of Konica Minolta's manufacturing capability

With the demand for ozone disinfection systems growing rapidly due to the spread of Covid-19, Tamura TECO is facing difficulties in supplying products, including procurement of parts and production. Tamura TECO and Konica Minolta already work as partners in procuring necessary parts to increase the manufacturing capacity of ozone-related products. Specifically, based on information from Tamura TECO about parts for ozone-related products and their suppliers, Konica Minolta supports Tamura TECO in procuring key parts and identifying new parts suppliers from the viewpoint of production technology. Konica Minolta is also considering the possibility of contract manufacturing at the new Mikawa site, which will start operation in May 2021.

2. Commencement of sales of some of Tamura TECO's existing products through Konica Minolta's sales channels

Konica Minolta has started to sell Tamura TECO's existing ozone gas products, which are suitable for offices and nursing care facilities, through the sales channels of its group companies.

3. Joint development of new products for medical use and product control systems

Konica Minolta and Tamura TECO will work on a joint development project to remodel BACTECTOR, an existing ozone gas product manufactured by Tamura TECO, into a product for medical use. BACTECTOR is already used in various facilities, including schools, hospitals, long-term care and healthcare facilities for senior citizens, and station terminals. It has also been used in ambulances across Japan and delivered to public institutions. Konica Minolta's design expertise and production technology refined through the development of devices will be used to further increase reliability and reduce costs. Konica Minolta's IoT technology will also be utilized to enhance the functionality and accuracy of the product. The new ozone gas product for medical use to be jointly developed will be manufactured by Konica Minolta's group company. The two companies are also considering selling the product and providing services through Konica Minolta's global sales channels in the future.

4. Utilization of an integrated platform with peripheral devices

Konica Minolta offers communication systems for medical use, such as the world's first sub-GHz wireless communication for medical vital sign monitoring, and integrated platforms such as the FORXAI image IoT platform. These solutions will be incorporated into Tamura TECO's products to offer new value, such as centralized management of equipment, higher efficiency by remote management, and optimized operation by using data.

Konica Minolta is committed to improving its corporate value by addressing social challenges toward 2030 and beyond, such as improving fulfillment in work and corporate dynamism, supporting healthy, high-quality living, ensuring the security and safety of society, effectively utilizing limited resources, and addressing climate change, by increasing intangible assets and business competitiveness through digital transformation (DX) and by constantly offering value to customers and society. In its unique value creation process, Konica Minolta aims to attain "people-centric pursuit of motivation and satisfaction in life" and "realization of a sustainable society" at the highest level.

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Supplemental Information

Disinfection Using Ozone Gas

1. Characteristics of ozone gas used for disinfection

Viruses and bacteria are thought to spread through droplet infection, airborne infection, and contact infection. By using ozone gas, it is possible to disinfect an entire space inexpensively and easily.

1. Strong disinfection ability: The disinfection ability of ozone gas is about six times higher than that of chlorine. Ozone gas is not persistent and is reduced to oxygen after reaction.
2. Spread of gas to the corners: The entire space and areas that are difficult to reach can be disinfected.
3. Ozone derived from air: It is unnecessary to replenish chemicals because ozone is derived from air, whereas hydrogen peroxide requires air and water.
4. Small and compact: The ozone generator is relatively small and does not require high energy.

High-concentration ozone harmful to the human body: At high concentrations, ozone is

Item	Hydrogen peroxide	Ozone	Ethylene oxide	Formaldehyde	Chlorine dioxide
Decontamination performance (against spore-forming bacteria)	○	○	○	○	○
Decontamination performance (against chemicals)	○	○	△	○	○
Influence on equipment	○	○	○	○	X
Influence on the human body	△	△	△	X (Carcinogenicity)	△
Treatment to ensure safety (processing time)	○	○	X (Processing time: long)	X (Processing time: long)	○
Overall evaluation	○	○	X	X	X

○: Good, △: Depending on the conditions, X: Not good

harmful to the human body and animals. For quick disinfection, it is necessary to use high-concentration ozone with no people present. Low-concentration ozone disinfection, in which the unpleasant smell of ozone is not perceived, is already used in hospitals, offices, and schools. Thus, there are the following two types of application.

- (1) Generating high-concentration zone, which is harmful to the human body, in an unmanned environment for sterilization
 - (2) Constantly generating low-concentration ozone, which is not harmful to the human body, in a manned environment to minimize the infection risk
- Many local governments in Japan subsidize the purchase of ozone generators.

2. Covid-19 disinfection effect by high-concentration ozone gas

In May 2020, the Nara Medical University issued a press release stating that Covid-19 was inactivated by ozone gas. It was previously known that ozone generators capable of killing airborne viruses at the cellular level are effective against influenza viruses, norovirus, and E. coli. It was verified that ozone gas is also effective for Covid-19.

(<http://www.naramed-u.ac.jp/university/kenkyu-sangakukan/oshirase/r2nendo/ozon.html> Japanese)

3. Covid-19 disinfection effect by low-concentration ozone gas

In August 2020, experiments conducted by Fujita Health University found that Covid-19 is decontaminated by low-concentration ozone (0.05 ppm/0.1 ppm). The results show that the risk of Covid-19 infection can be reduced by constantly dispersing ozone gas indoors where people are present at a permissible concentration of 0.1 ppm (0.05 ppm set by the FDA in the U.S.), which is advocated by the Japan Society for Occupational Health. (<https://www.fujita-hu.ac.jp/news/j93sdv0000007394.html> Japanese)