

The Next Generation Toilet And Its Maintenance

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Overview

It was in the 19th Century that a movement to improve the sanitary environment of the city of Paris resulted in the construction of a new sewer system there. In the 20th Century, flush toilets were in use all over the world in the pursuit of improving sanitary living conditions. Now in the 21st Century, new toilets which are environmentally friendly are and will be in great demand, and it is time to focus and conduct research and development of the next generation toilets in a horizontal manner with the close cooperation of manufacturers, environmental researchers and specialists of toilet maintenance.

Key Words

Maintenance, The Next Generation Toilet and its overall picture, Social Comfort

1 The sewage disposal system in Paris is a treasure house of innovations concerning tools and technology

It is widely known that a lot of citizens died of infectious diseases attributed to contamination from human excreta in France in 1832 and 1849. Among the casualties there were the French Prime Minister and the head of the Waterworks Bureau. Their deaths and many others triggered the development of a large-scale underground sewage disposal system in Paris.

Thus, the history of the French toilet was born of, especially, the concern for hygiene. Since that time, the science and technology of toilets has rapidly developed, resulting in the development of various innovative tools and technologies.

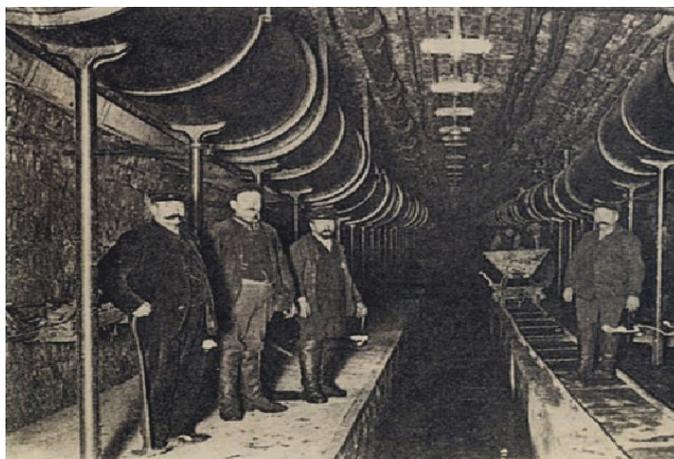


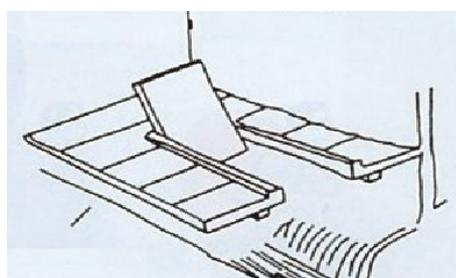
Figure 1 – Public sewerage in Paris

(“The History of Sewerage in Paris” written by Bernard Védry)



Figure 2 Toilet seats manufactured in Europe at the end of 19th Century

(Photo : Saiko Sakamoto)



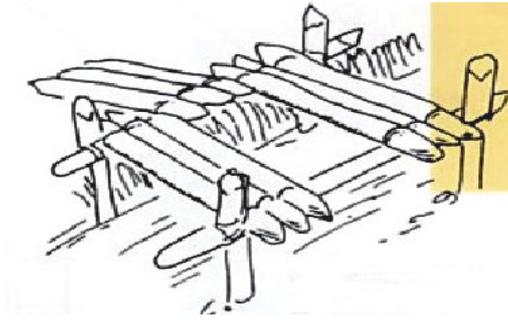


Figure 3 Ancient Japanese Flush toilet
(“Toilet Renaissance” OHM co.)

With the technologies developed by ancestors passing to the following generations, various kinds of flush toilets have been developed in Japan as well. As WC systems connected to public sewers has been built in urban areas, the development of the environmentally friendly toilets has also been under way in recent years.

2 The future of the urban type of toilets – learning lessons from the Great Hanshin-Awaji Earthquake

Prompted by the Great Hanshin-Awaji Earthquake occurred in 1995, the WC system in urban areas has been questioned afresh. In tandem with the movements to review the emergency toilets, dissemination of “mountain type toilets” and “river type toilets” has been spurred, and now the self-complete type of toilets is attracting people’s attention.

Although the development of the self-complete type toilet has remarkably advanced in recent years, a comfortable toilet system which is easy to use and maintain should be created taking into consideration the various situation of the sewage disposal systems. The toilet industry is prone to attach an importance to technology for the disposal system, but the industry needs to be more concerned about the design, building and other materials, and maintenance of the toilet as well as how easy to use their toilet system as a whole.



Figure 4,5 – Toilets used aftermath of The Great Hanshin-Awaji Earthquake
(Photo : Saiko Sakamoto)

3 The Next Generation Toilets (Its overall picture and classification)

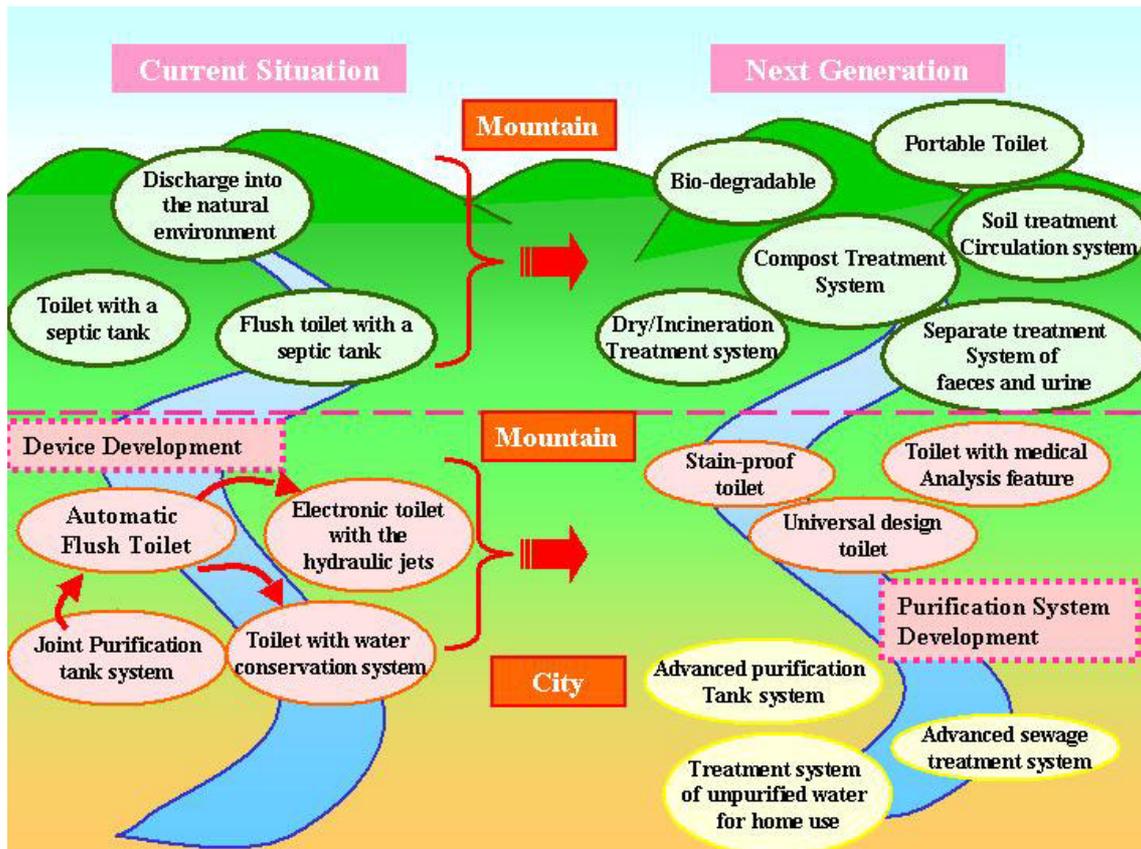


Figure 6 — Overall picture and classification of Toilets in the next generation
(Saiko Sakamoto Comfort Styling Institute)

4. How to approach urban areas moving from mountain areas

The self-complete toilet has been developed and deployed in response to the serious problem arising from toilets in the areas without sewers. For example; with the number of mountaineers rapidly increasing, there is seldom-sufficient number of toilets in mountain areas, and as a result, human waste and used toilet papers are becoming an every more increasing blot on the landscape. As well, the increased use of the Mountain “Out-house” is harming the ecological systems of the mountains. In order to improve such situations, the self-complete type toilet, which treats human excreta on its own without affecting the surrounding environments, began to attract people’s attention and such toilets are now being deployed in many mountain areas.

Such toilets have been deployed as part of a movement to improve the environment in mountain areas, however in order to apply it to the urban environment, numerous important issues need to be tackled. Creating “Universal design” of such toilets is one issue. The other issue is to develop the space and facilities for such toilets, which must meet the needs of women in particular, who attach greater importance to cleanliness and sanitation by nature.



Figure 7・8 – Mountaineers carrying a portable toilet with them
(Photo : SOGO SERVICE, Inc.)



Figure 9 · 10 – Maintenance of re-circulating toilets at a ski area
(Photo : ALL Round, Inc.)



Figure11 · 12 – Portable toilet placed at the site of an event
(Photo : IHI Ishikawajima-Harima Heavy Industries, Co., Ltd.)

5. How to solve the problem of being unable to use detergents

The self-complete toilet uses bacteria to purify human excreta. In order not to prevent its reproduction, detergents and chemicals can not be used to clean the toilet. However some stubborn dirt remains after wiping with a little water and a special cloth called “WES”. Therefore it is necessary to urgently develop the method, which could fulfill such contradictory conditions. To achieve this goal, having occasions where toilet manufactures, environmental researchers and maintenance specialists could exchange ideas is needed.



Figure 13 • 14 – Maintenance of toilets at school and various detergents

Table 1 – 5 principles of maintaining the next generation toilet

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| 1. | Review the wisdom of our predecessors : About water and our planet |
| 2. | Superintendents should deepen their understandings and knowledge about maintenance and cleaning of toilets |
| 3. | Improve the working environments for maintenance workers |
| 4. | Plan the annual proper works and prepare enough budgets for them |
| 5. | Promote research and development for devices, detergents and systems across the industries |

6. The toilet system, which takes environmental situation into consideration

The toilet in the next generation should be the one which not only has advanced treatment technologies, but also takes into consideration the local environmental conditions. In some cases, the solar system is being used. In the future much more importance will be attached to environmental issues, and the use of reusable and harmless materials for building, parts, pots and accessories of toilets will be desirable.

Recently the method to use microorganisms for the maintenance was introduced. In order to respond to the environmental issues, development of environmentally-sound cleaning methods, along with the issue of improving the environment for maintenance workers are key issues when thinking about the next generation toilet.

We expect that the development of the next generation toilets, which should be easy to use and maintain in accordance with various situations such as natural environment, urban cities, temporary event sites and disaster areas, will take place in near future.

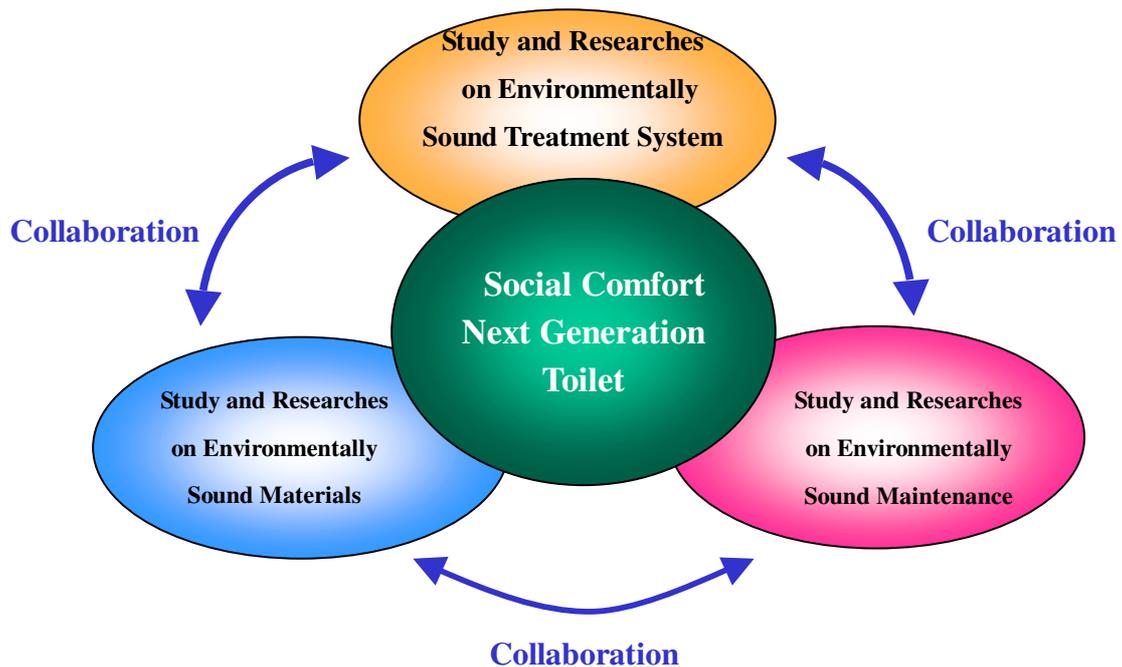


Figure 15 – Research system for the development of the next generation toilet
(Saiko Sakamoto Comfort Styling Institute)

Biography

Saiko Sakamoto

President of Saiko Sakamoto Comfort Styling Institute
 President of Japan Toilet Association Maintenance Study Institute
 Director of Natural Parks Foundation



Conducted approximately 1300 researches and studies both at home and abroad on toilets and other facilities in public spaces, making proposals of new toilet systems to various enterprises and public organizations.

Activities (extracts):

Research and Study:

2001: “White Paper on improvement of the living environment for human excretion to support sustainable independence of the elderly” - A contract research from The Society of Long-lived People Development Center

Lectures and exhibitions:

- 2003: “Creating better environment for wet areas to promote health and medicine” (coordinator)
“The next generation Toilet and its maintenance” The 3rd World Water Forum in Kyoto, International Symposium on Toilet and Water Circulation (lecturer)
1999: Gave a lecture at the meeting to celebrate the establishment of Taiwan Toilet Association
2000: Provided guidance on toilet maintenance in Taichung city

Publications:

- “The Designing and Maintenance of Toilet” (OHM, co)- in Japanese and Chinese
“WORLD TOILET COMFOROAD ~ Comfortable trip to the world toilets” (TOTO)- in Japanese and Korean
“TOILET MAINTENANCE MANUAL” (Japan Toilet Association Maintenance Study Institute)
“THE TOILET STYLING” (INAX)

Proposals and Planning:

- 2002: Planning of the toilet settings and systems for FIFA World Cup at Yokohama Soccer Stadium
1992: Proposal for toilet space at the Shuli Castle in Okinawa and its concrete works

Atsuhiko Katsumata

President of All Round, Inc.

Core Business : Environmental Sanitation and Toilet Maintenance at home and abroad.

Making proposals of manufacturing products which take into consideration comforts of public toilet spaces (such as the Japan Highway Public Corporation, parks, public buildings) as well as its maintenance, while attending symposiums held in Japan, Taiwan and other countries as a lecturer or a panelist.



1995: Conducted surveys and researches on the toilet environment in the disaster-stricken area of the Great Hanshin-Awaji Earthquake and dispatched volunteer workers to clean the area and conducted the operations.

1999: Engaged in NGO activities in conflict-stricken areas in Kosovo, donating emergency toilets. Engaged in volunteer activities in the disaster-stricken area of the Great Taiwan Earthquake and

made donations.

2001: Attended “WORLD TOILET SUMMIT 2001 IN SINGAPORE”, making a presentation on toilet maintenance.