COVID-19 and Rethinking Waste Handling: the role that Pneumatic (Urban) Waste Collection 2.0 can play

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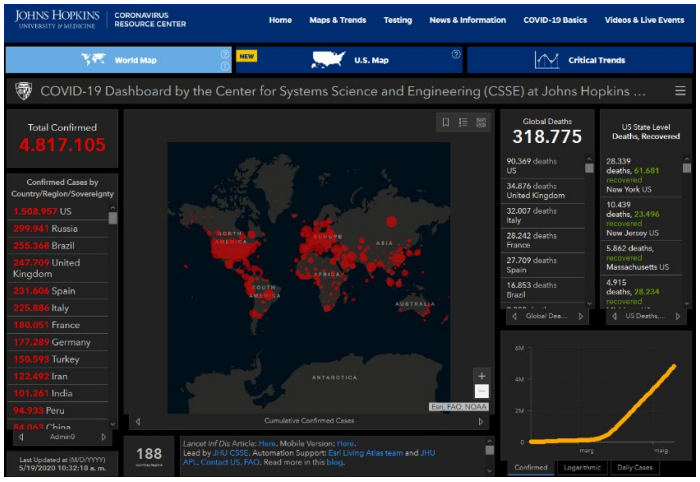
For the last two months, every day at 8 pm I have gone out to the balcony and, together with my neighbors, clapped for all of those, the nurses, doctors, nursing home staff, and others, who are in the trenches fighting against the covid-19 virus.. This is the least that we, as a society, can do right now.

Unfortunately, this ongoing display of gratitude will someday come to an end, and history tells us that when a problem of this sort is over, we soon forget it. Now we have an opportunity to challenge this history: society—politicians, corporations, all of us--must change many things in an enduring way. We must do this, both for ourselves and for our descendants.



According to the **Johns Hopkins University of Medicine,**(1) , as of today more than 5 M people have been infected by COVID-19 more than 325,000 have died and the toll continues to rise..

Urgent global action is required today, not tomorrow.

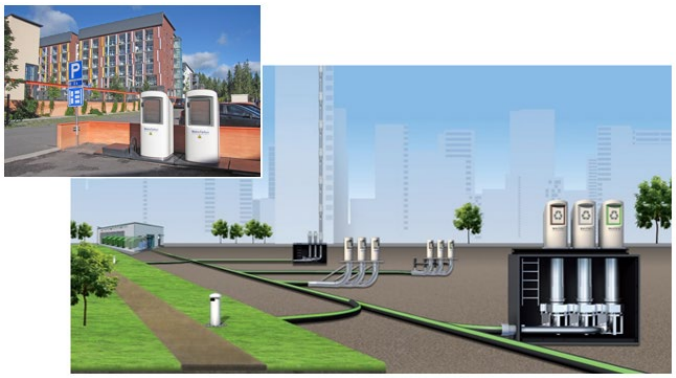
According to the Organization for Economic Co-operation and Development (**OECD**), *"The COVID-19 crisis may provide an* ***opportunity for city dwellers and planners to*** *rethink drastically, from the ground up, their consumption, production and travelling paradigm... a new approach to urban spaces."*(2)

More than half of the global population live in cities, and this share is expected to rise to 70% by 2050. Cities are densely populated places where close proximity imposes the inherent risk of disease transmission along with the challenge of mitigating this risk through the implementation of social distancing and **touchless urban services.**

The **UN** Environment Program urged "*governments* ***to treat waste management****, including of medical, household and other hazardous waste,* ***as an urgent and essential public service*** *in order to minimize possible secondary impacts upon health and the environment.*" (3) (4)

A pneumatic waste collection system (PWC, or automatic waste collection system, AWCS) is a sustainable waste management system alternative to conventional waste collection systems which **eliminates manual handling and contact with waste**, along with providing many other benefits for the city, its citizens, and the environment.

The fundamental components of any AWCS involve the depositing of waste bags into a bin or inlet (usually called a waste loading station)from which they are transported by a vacuum airflow through a pipe network to a waste transfer station and injected into vacuum-sealed containers. The AWCS is driven by a control system and it is available 24/7/365.



The new innovations in the field of "Pneumatic Waste Collection" (aka "PWC 2.0") results in a set of features that comport with the new recommendations from some the most respected voices in the world: United Nations, World Health Organization , UN, OECD, World Bank group.

The UN released a couple of weeks ago the "Water, sanitation, hygiene, and waste management for the COVID-19 virus". According the document, "*the main routes of transmission are respiratory droplets and* ***direct contact****. Droplets may land on surfaces where the virus could remain viable; thus, the immediate environment of an infected individual can serve as a source of transmission. Recent evidence indicates that COVID-19 virus (SARS-CoV-2) survival on surfaces is ranging from 2 hours to 9 days".*

MariMatic Oy [(5)], A Finnish company, the forerunner and most innovative company in the field of PWC, has developed the so-called PWC 2.0, which is equipped with automatic opening/closing waste-inlet doors that are totally **TOUCHLESS**. **No human contact is required with the waste disposal points.**

The automatic opening/closing is also of crucial importance for use by the handicapped or elderly, as well for children. Doors are also incorporating a volume control device for safety reasons (something very important when dropping big commercial bags) while avoiding at the same time improper behavior of the user.

According to the Association of Cities and Regions for Sustainable Resource Management **(ACR+)** the current COVID-19 pandemic raises questions and brings challenges regarding municipal waste management practices and procedures (safety and health measures for employees, waste treatment requirements, general procedures due to coronavirus) both for the waste sector and for citizens.[(6)]

Similarly, the International Solid Waste Association **(ISWA)** released a list of recommendations, "Waste management during COVID-19" [(7)], which are grouped into three priorities.

Priority 1: Ensure the continuity of the services

*"**Waste Management is one of the most important sanitary barriers to prevent dissemination of illnesses and diseases**. It is important to recall that the continuity of the waste services is not only for **municipal waste** but also for **healthcare waste.** Countries and Cities should ensure that waste management **will not be disrupted and no extra risks for public health will be created by improper waste management**"*

IPWCA is a member of the **Global Resilient Cities Network** [8] launched by **The Rockefeller Foundation** and the **World Bank group**. The Global Resilient Cities Network has identified **PWC as one of the most resilient waste-handling technologies in times of crisis, ensuring the continuity of municipal and medical waste collection services and reducing public risks created by improper waste management.**

*"Waste management workers, especially those in waste collection, should take additional precautions and ensure health & safety procedures to be protected by any potential infection by the waste streams and/or the equipment. Accordingly, there is **a need to ensure the health and safety precautions of waste workers as they are one of the most important sanitary barriers to keep cities and people safe from several diseases, including COVID-19.**"*

With PWC 2.0 there is no human contact after a waste bag is deposited into a disposal inlet until it reaches its final recycling or disposal destination. **Waste workers are completely safe.**

Priority 2: Adjusting recycling services to avoid cross-contamination and infections.

*"The main sources of infection in relation to waste and recycling will usually come at the **interface** between the generator and the handler. To be more specific, the moment that a professional has to come in physical contact with waste or recyclables from other persons who might be infected."*

The primary actors at risk of potential cross-contamination are cleaning staff in medical facilities & other buildings, waste collection crews and waste processing or disposal workers. According to ISWA, national and/or regional governments should ask their local authorities and municipal waste service providers to Identify the interfaces between generators and handlers and to develop appropriate contamination-mitigation measures focused on these interfaces.

With PWC 2.0, the "Interface" is simply non-existent, because of **the touchless automatic-closing door** of the inlet on one side, and the **completely sealed** valves and container inside the waste transfer station on the other.

PWC provides separate deposit inlets for different waste fractions (refuse, recycling, organic waste, paper …). The inlets' buffer is digitally monitored to allow automated emptying when they are full, guarantying 24/365 system availability, eliminating waiting periods. Residents and businesses experience no interruption in services. This is crucial for managing unexpected surgesin material volumes.

Priority 3: Ensure safe collection, disposal, and treatment of healthcare waste, making sure that they pose no risk for further infections and pollution.

Hospitals, health-care centers, nursing and elder-care facilities are most severely impacted by the COVID-19.

"All countries, states/provinces and local authorities should ensure that all the healthcare waste is ***safely collected.****. To ensure that healthcare* ***waste won't be exposed nor mixed to non infectious waste****; waste workers will not be at risk during disposal activities and once healthcare waste is dumped,* ***no human or animal will be able to be in contact with it****. Then it is recommended* ***to unload the waste as close as possible to the selected area*** *and* ***dump the waste immediately after unloading****, taking care not to leave healthcare waste piles waiting to be dumped."*

PWC 2.0 allows these facilities to:

- **Avoid the possibility that either humans or animals can come into contact with waste and virus, since the inlets are totally sealed.**
- Avoid unnecessary manual waste transport within a facility by allowing inlets to be installed in the numbers and locations that would minimize distances between points of generation.
- Avoid the possibility for cross-contamination of waste types, since the material is deposited into separate closed inlets.

Unfortunately, PWC 2.0 cannot eliminate the COVID-19, but it can definitely help the fight that all of us need to start today, not tomorrow.

In the meantime, I will keep clapping every day for our heroes at the trenches.

(1) https://coronavirus.jhu.edu/map.html
(2) http://www.oecd.org/coronavirus/policy-responses/cities-policy-responses-fd1053ff/
(3) https://www.unenvironment.org/
(4) https://www.who.int/publications-detail/water-sanitation-hygiene-and-waste-management-for-the-covid-19-virus-interim-guidance
(5) https://www.marimatic.com/
(6) https://www.acrplus.org/en/municipal-waste-management-covid-19
(7) https://www.iswa.org/iswa/covid-19/
(8) https://www.resilientcitiesnetwork.org