



**Department of Mechanical Engineering**  
**Faculty of Engineering and Technology**  
**Jamia Millia Islamia, New Delhi, India - 110025**



**Response action during COVID-19 period**

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**Response action during COVID-19 period**

Since the outbreak of the COVID-19 pandemic, the Department of Mechanical Engineering, Jamia Millia Islamia, started all activities in online mode following the SoPs of Government of India and all activities were partially eased as per advisories issued from time to time. In order to continuously run teaching, learning and research activities along with other administrative activities the following actions were initiated.

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1	All the faculty members were provided training to conduct online classes. The training programme was organized by the university.
2	The teachers shifted from offline mode to online mode and started engaging theory, lab classes, sessional test and other academic related activities in online mode.
3	The COE of university started conducting end semester examination in online mode. The faculty members also evaluated the answer scripts and uploaded the mark/grade on the portal in online mode.
4	All the meetings (BOS, DRC, Departmental meetings. Farewell etc.) were conducted via google meet in the online mode.
5	The office and lab functioned with skeletal staff present offline whereas rest were available online in work from home mode. This was done as per the advisories issued by competent authority. The HOD office staff and emergency lab staff (Such as staff who look after CNC machines) were deployed in offline mode.
6	The counseling of the needy students was done by the faculty members in online mode.
7	All the research and academic activities were pursued in accordance to academic calendar in online mode without hindrance.
8	Online expert lectures symposia from the experts were also conducted.
9	The research publication and patents related to COVID-19 continued in research domains during pandemic.
10	Sanitizers, hand wash, masks and other desired essential elements were placed at appropriate places.
11	The staff, scholars were instructed to observe COVID-19 SoP strictly.

**Research and Development of Innovative Disinfection Tunnel for the prevention of COVID-19 developed by the faculty of the Department of Mechanical Engineering received Patent Published by Government of India**

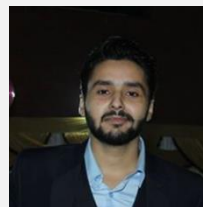
The Patent Office of the Government of India has published the patent to an invention titled “Solar Powered Self Generating Disinfection System for Preventing Coronavirus in Remote Places” by **Prof. Mohammad Emran Khan** and **Dr. Osama Khan**, Assistant Professor (Contractual), Department of Mechanical Engineering, Jamia Millia Islamia. The main objective of the invention is to provide a self-generating disinfection system powered by solar energy in order to prevent COVID -19 or similar diseases in large gathering, public and remote places.

The invention is based on overcoming the obstacles, procured while employing the disinfection models in remote places where electricity outages are quite common. The proposed system is basically intended for remote or public locations with comprehensive solar potential and comprises of huge population. The invention comprises of solar equipment’s (PV modules, charge regulator, inverter and battery system) and electrolytic disinfectant generator integrated with one another. A fine disinfectant mist is generated inside the chamber which eventually removes any harmful infection or bacteria on the incoming person.

The invention is highly suitable for all outdoor applications involving mass gathering, requires only a small area at entrance for the whole setup, simple in construction (no complicated wiring system), eco-friendly in nature, works on renewable energy, non-toxic in nature, has high efficiency in eliminating and suppression of bacteria’s and viruses, limited quantity of water required for whole operation and reduced overall and working costs in comparison to other disinfectant systems. Hence, the proposed system can be helpful in curbing the current situation of Covid-19 by employment of this system in various public and remote places where accessibility of electricity and chemicals for disinfection is burdensome. The disinfection system is mainly intended for remote or public places such as, banks, malls, hospitals, marriage halls, party halls, airports, universities, schools, temples, colleges and etc, where the transportation of chemicals and electricity availability for disinfection is scarce, thereby self-generating the mixture with available tap water using the solar energy.



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## **Media Mentions**

<https://www.ndtv.com/education/jmi-researchers-develop-solar-powered-covid-19-disinfection-tunnel>

<https://www.indiatoday.in/education-today/news/story/jamia-millia-islamia-researchers-invent-solar-powered-disinfection-tunnel-to-prevent-covid-19-1746775-2020-12-04>

<https://indiatomorrow.net/2020/12/05/jamia-researchers-invent-solar-powered-disinfection-tunnel-to-prevent-covid-19-at-public-places/>

**Publications Related to COVID-19 from the Department of Mechanical Engineering,  
Jamia Millia Islamia Published in Reputed Peer-Reviewed Journals**

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2. Equbal, A., Masood, S., Equbal, I., Ahmad, S., Khan, N. Z., & Khan, Z. A. (2021). Artificial intelligence against COVID-19 Pandemic: A Comprehensive Insight. *Current Medical Imaging*. DOI: [10.2174/1573405617666211004115208](https://doi.org/10.2174/1573405617666211004115208)
3. Mishra, D., Haleem, A., & Javaid, M. (2020). Analysing the behaviour of doubling rates in 8 major countries affected by COVID-19 virus. *Journal of Oral Biology and Craniofacial Research*, 10(4), 478-483.
4. Khan, O., Khan, M. Z., Khan, M. E., Goyal, A., Bhatt, B. K., Khan, A., & Parvez, M. (2021). Experimental analysis of solar powered disinfection tunnel mist spray system for coronavirus prevention in public and remote places. *Materials Today: Proceedings*, 46, 6852-6858.
5. Kumar, S., Suhaib, M., Asjad, M., & Salah, B. (2022). Industry 4.0 and its suitability in Post COVID-19. *Journal of Industrial Integration and Management*. <https://doi.org/10.1142/S2424862222500129>
6. Dixit, C., Haleem, A., & Javaid, M. (2022). Differentiating the SARS-CoV-2 Omicron (B. 1.1. 529) variant from other COVID-19 variants of concerns and the common cold. *Apollo Medicine*, 19(1), 70-70.
7. Vaishya, R., Javaid, M., Khan, I. H., & Haleem, A. (2020). Artificial Intelligence (AI) applications for COVID-19 pandemic. *Diabetes & Metabolic Syndrome: Clinical Research & Reviews*, 14(4), 337-339.
8. Haleem, A., Javaid, M., & Vaishya, R. (2020). Effects of COVID-19 pandemic in daily life. *Current medicine research and practice*, 10(2), 78.
9. Haleem, A., Javaid, M., Vaishya, R., & Deshmukh, S. G. (2020). Areas of academic research with the impact of COVID-19. *The American journal of emergency medicine*, 38(7), 1524-1526.
10. Khan, S., Haleem, A., Deshmukh, S. G., & Javaid, M. (2021). Exploring the impact of COVID-19 pandemic on medical supply chain disruption. *Journal of Industrial Integration and Management*, 6(02), 235-255.
11. Arshad, M. O., Khan, S., Haleem, A., Mansoor, H., Arshad, M. O., & Arshad, M. E. (2021). Understanding the impact of Covid-19 on Indian tourism sector through time series modelling. *Journal of Tourism Futures*.
12. Rab, S., Javaid, M., Haleem, A., & Vaishya, R. (2020). Face masks are new normal after COVID-19 pandemic. *Diabetes & Metabolic Syndrome: Clinical Research & Reviews*, 14(6), 1617-1619.
13. Imtyaz, A., Haleem, A., & Javaid, M. (2020). Analysing governmental response to the COVID-19 pandemic. *Journal of Oral Biology and Craniofacial Research*, 10(4), 504-513.
14. Shams, S. A., Haleem, A., & Javaid, M. (2020). Analyzing COVID-19 pandemic for unequal distribution of tests, identified cases, deaths, and fatality rates in the top 18

- countries. *Diabetes & Metabolic Syndrome: Clinical Research & Reviews*, 14(5), 953-961.
15. Irfan UIHaq, M., Khuroo, S., Raina, A., Khajuria, S., Javaid, M., Farhan UIHaq, M., & Haleem, A. (2020). 3D printing for development of medical equipment amidst coronavirus (COVID-19) pandemic—review and advancements. *Research on Biomedical Engineering*, 1-11.
  16. Khan, I., Haleem, A., & Javaid, M. (2020). Analysing COVID-19 pandemic through cases, deaths, and recoveries. *Journal of Oral Biology and Craniofacial Research*, 10(4), 450-469.
  17. Javaid, M., Haleem, A., Vaishya, R., Bahl, S., Suman, R., & Vaish, A. (2020). Industry 4.0 technologies and their applications in fighting COVID-19 pandemic. *Diabetes & Metabolic Syndrome: Clinical Research & Reviews*, 14(4), 419-422.
  18. Rab, S., Afjal, M. J., Haleem, A., & Vaishya, R. (2020). An update on the global vaccine development for coronavirus. *Diabetes & metabolic syndrome*, 14(6), 2053.
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