

Self-propelled vehicle can replace manual railway track scavenging

New Delhi, April 5th (India Science Wire): A self-propelled railway track scavenging vehicle may soon replace manual scavenging and cleaning that is still practiced to remove human waste lying on railway tracks. Despite the ban on manual scavenging since 1993 in the country, men and women are seen removing excreta on the tracks with brooms and metal plates. Once the garbage is picked up from the tracks, night soil, excessive dirt, oil, and other foreign materials are ineffectively cleaned with high-pressure water jets.

Dr Sharad K. Pradhan, Associate Professor, Department of Mechanical Engineering, National Institute of Technical Teachers' Training and Research (NITTTR), Bhopal, has developed a Multifunctional Railway Track Scavenging Vehicle with support from the Advanced Manufacturing Technologies programme of the Department of Science & Technology (DST), Government of India aligned with the 'Make in India' initiative. A national patent has been published for this technology.

This self-propelled Road cum Rail vehicle equipped with dry and wet suction systems, air and water spraying nozzles, control system, and road cum rail attachment is multifunctional and easy to operate. A display unit is provided for real-time control of the cleaning in a drastically changing environment. It requires only one person along with the driver to carry out the automatic cleaning of the railway track.

Once the dry and wet suction is over, the water nozzles start spraying water jets to clear off any human waste or semi-solid garbage present on the track floor. Another set of nozzles spray disinfectants on the track to get rid of flies, rats, and other insects. Water jets completely remove the human waste and other wet garbage from the inter rail space zone.

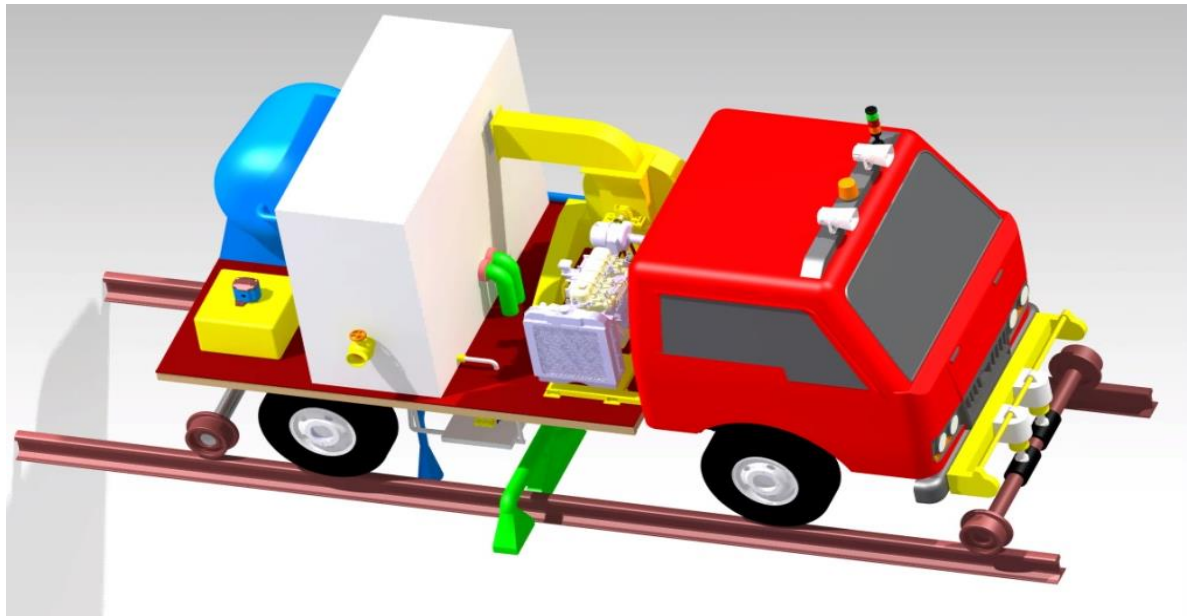
Both dry and wet garbage is collected in different tanks, and once filled, it can be decanted at the appropriate local municipal garbage collection point. A joystick-controlled telescoping suction pipe is fitted to clear the slurry from the trench parallel to the track. The telescoping suction pipe can easily be placed at an appropriate position in the side trench to suck the sewage slurry.

As this is a rail cum road vehicle, it can be used as a material/ garbage transport vehicle from track to the road by Indian railways. It can also be used as a maintenance/inspection vehicle and disinfectant spraying vehicle by Indian railways. In non-scavenging mode, it can also be used as a transportation and inspection vehicle by Indian Railways.

After successful development and testing, the developed vehicle can be adopted by Indian railways as a scavenging vehicle for all of its stations. The developed vehicle having low maintenance cost, compact size, reverse and forward movement, and continuous and intermittent action, make it better and effective as compared to existing research endeavours. (India Science Wire)

Keywords: self-propelled, railway track, scavenging vehicle, manual scavenging, human waste, railway tracks, Department of Mechanical Engineering, National Institute of Technical Teachers' Training and Research, NITTTR, DST

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Solid Model of the developed Vehicle



Actual Photograph of the developed Vehicle