



City rail station gets battery-operated carts

**BENGALURU:** Battery-operated carts have been introduced at the Krantivira Sangolli Rayana (Bengaluru City) railway station to replace old buggies launched three years ago.

A total of seven battery-operated carts will be available round the clock to ferry senior citizens and physically challenged people. But these vehicles cannot carry luggage. Each vehicle can carry four people, including the driver, and the fare will be Rs 20 per person. People can book the ride in advance by logging on to the IRCTC website.

The carts have been provided by Maini Material Movements Private Limited. Sandeep Kumar Maini, Chairman, Maini Group, said on Wednesday similar vehicles were available at Rashtrapati Bhavan, airports and historical monuments across India.

The South Western Railway, in association with the Maini Group, is now working on the modalities of introducing similar carts at the Yeshwantpur railway station. **DH News Service**

In brief

Power supply disruption

There will be intermittent power supply from 12 pm on Friday to 12 pm on Saturday in the following areas owing to maintenance works being undertaken by Bescom: K Channasandra, Hoysala Nagar, Horamavu, Hennur village, Gedala Hill, Vadara Palya, Kammanahalli Main Road, Banaswadi Main Road, Chikkabanaswadi, KG Halli, Nagawara Main Road.

Flat metro fare on NY night

Metro tickets will be sold at a flat rate of Rs 50 for travel in any direction at Cubbon Park, Trinity and MG Road stations after 11 pm on December 31.

Etched aluminium surfaces can cut hospital-acquired infections

Protrusions on surfaces rupture membrane of bacteria, kill them

Meghana Choukkar

**BENGALURU:** When someone is admitted to hospital, doctors not only have to worry about tackling the illness, but they also have to ensure the person is not infected by fellow patients.

According to the World Health Organisation, out of every 100 hospitalised patients in developing countries, 10 will be affected by at least one hospital-acquired infection (HAI).

Researchers at the Biomaterials and Tissue Engineering Lab of the Indian Institute of Science have developed a method to combat HAIs by giving aluminium surfaces the ability to keep bacteria away and even kill them.

Aluminium foils or sheets are dipped in a solution of sodium hydroxide or potassium



Dead and dying bacteria on an etched aluminium surface. These surfaces can be used in common areas of hospitals to prevent infections.

hydroxide, creating micro- and nano-scale roughness on the surface. While the micro-scale features prevent the bacteria from attaching themselves to the surface, the nano-scale features act like a bed of pins. When the bacteria try to 'sit' on the sheet, the sharp protrusions rupture their membrane, killing them.

Jafar Hasan, the postdoctoral fellow who led the research, found inspiration for the surface from the wings of insects like cicada and dragonfly, which have similar nanofeatures to kill bacteria.

"We wanted to create a surface which can be used in hospital settings, especially in the intensive care unit. Using these aluminium surfaces in common areas such as on doorknobs, tables and taps would reduce the risk of patients acquiring infections," Hasan said.

E coli, K pneumoniae and P aeruginosa are the common bacteria responsible for infections in hospital environments. They cause diseases like pneumonia, urinary tract infections and diarrhoea.

The material was put to test at the Mazumdar Shaw Centre for Translational Research of Narayana Hrudayalaya Health City. It was found that the etched aluminium surface killed 97% of E. coli and 28% of the Staphylococcus aureus cells in comparison to 7% and 3%, respectively, on smooth surfaces.

With more strains of bacteria becoming resistant to multiple drugs and even to disinfectants, this method could prove especially useful. "Since this method does not rely on chemicals to kill or repel bacteria, it does not matter if it is resistant to antibiotics," said Kaushik Chatterjee, associate professor and head of the lab.

The method is affordable, easily scalable and does not require much expertise. The team is in talks with clinicians and surgeons in some hospitals in the city.

"We are trying to understand where the surface would be most useful. Is it on doorknobs, headboards of beds or side tables? Once we understand their requirement, we will help them test it out," Chatterjee said. **DH News Service**

Only 34,000 homes have PNG supply

**BENGALURU:** Gail Gas Ltd has linked 34,000 households as part of the Bengaluru City Gas Distribution (CGD) project since June, well short of the 60,000 houses it aims to target by March 2018.

Implemented at a cost of Rs 6,283 crore in Bengaluru Urban and Rural districts, the project aims to provide uninterrupted natural gas to 1.32 lakh households for the next five years.

"We're working hard to meet the target," the senior GAIL official said. "Since PNG is cheaper and cleaner than other fuels, people are coming forward to getting the connection."

GAIL has so far networked the Bharat Electronics Limited complex canteens that cater to 11,000 people a day. It has also extended the pipeline to 4,000 households on the Rail Wheel Factory campus, the South Western Railway quarters, the Indian Air Force Training Command headquarters near Ballari

Road and the Air Force Chief Quality Assurance Establishment campus in Yeshwantpur.

The company has obtained a No Objection Certificate to lay pipelines at the KSRP quarters, the Karnataka Slum Development Board projects and 28 projects of the Bangalore Development Authority.

**GAIL fails to restore roads** Meanwhile, GAIL faces complaints of shoddy road overlay in several areas.

Residents of Hebbal, Yelahanka, BEL Road, Jalahalli, Bhuvanewari Nagar and Hebbal Dasarahalli are unhappy with the company for not laying over the roads after installing the underground gas pipes.

"We are working to fix the shabby roadwork," a senior GAIL official said, pointing out that such teething problems are part of large projects. "We've directed our authorised contractors to restore the roads after laying the pipes." **DH News Service**

BBMP to build 444 public loos, aims to rid city of open toilets by 2018

**BENGALURU:** Bengaluru could be free from open defecation by next year with the BBMP taking a step forward in building hundreds of public toilets.

Ahead of the Swachh Survekshan-2018, BBMP Commissioner N Manjunath Prasad has made an appeal to the director of Swachh Bharath Mission (SBM) to sanction partial funds for the construction of 444 public toilets and 79 community toilets across the city.

The letter was written on December 19, a copy of which is with *DH*.

"We want to make the city open defecation-free by next year," said Sarfaraz Khan, joint commissioner, health and solid waste management, BBMP.

The letter mentions that although the BBMP had called four tenders to build 250 pub-

lic toilets under a public-private-partnership (PPP) model, there were no applicants. Thus, the BBMP appealed to the SBM so that the Karnataka Rural Infrastructure Development Limited (KRIDL) can take up the work.

The estimated cost of constructing community toilets is Rs 4.92 crore, while the 444 public toilets will cost Rs 26.61 crore.

The cost will be shared by the SBM and the state government. "Once we get the approval, we aim to set the toilets up in a month," said a BBMP official.

The BBMP proposes to build the community toilets primarily in the slums that lack in private or public toilets. The additional public toilets will be built to cater to all sections of society.

*DH* had reported on Decem-

ber 2, 2017, that in a recent survey conducted by 'I Change My City', there are about 473 public toilet complexes in the BBMP limits or one in every 24 kilometres. However, according to the guidelines set by the SBM, for a city with a population of more than one crore, there has to be one toilet complex every seven kilometres.

This means the city falls short of about 1,100 toilets.

"Open defecation is prevalent mostly among slum dwellers and around construction sites in growing hubs such as Mahadevapura and Rajarajeshwari Nagar where there is no proper access to toilets. I have instructed the town planning committee to see to it that there are toilets particularly in these areas," Khan said. **DH News Service**

Two waste-processing plants shut as residents protest against stench

**BENGALURU, DHNS:** Waste-processing plants at Kannahalli and Seegehalli have remained shut for the past 20 days following protests from people living in adjacent localities.

A senior BBMP official said the plants were shut on December 8 after residents complained about stench emanating from the mounds of unprocessed garbage and feared being infected with contaminated diseases.

The Kannahalli plant can process 500 tonnes of waste and the Seegehalli unit 200 tonnes. With both the plants shut, the BBMP is sending about 220 tonnes of waste to the Bellahalli, Mittaganahalli and Bagalur quarries.

The plant at Lingadheeranahalli was established to process the waste generated lo-

Waste-processing plants in city

Unit	Capacity (in tonnes)	Wet Waste (in tonnes)
KCDC, Kudlu	500	170
Kannalli	500	150
Seegehalli	200	70
Lingadheeranalli	200	80
Doddabidarakallu	200	60
Chiknagamangala	500	-
Subrayapanpalya	200	-



cally. But it is facing residents' protests. The protesters even went to the National Green Tribunal (NGT).

Sarfaraz Khan, Joint Commissioner, Solid Waste Management, BBMP, said: "We will convince the villagers

and restart the plants at the earliest."

He said land sharks were instigating the protesters. "Private residential layouts are being formed in Kannahalli and Seegehalli. The Bangalore Development Authority (BDA)

is forming Kempegowda Layout. If there are waste-processing plants around these layouts, there will be fewer buyers. Real estate agents may be behind the protests since the prices of the land are low here."

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