

Toilet Demand Inspection System (TDIS) – Sensor System for Proactive Toilet Cleaning

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INTRODUCTION:

Toilet Demand Inspection System (TDIS) is an application that helps the Housekeepers to

RESULT:

In the conventional method of touch-up cleaning, a housekeeper needs to make 14 trips to check the toilet condition from 7am to 9pm. With TDIS, the average number of touch-up cleaning trips were reduced to 9 cleaning trips per day. This would save 5 touch-up cleaning trips or 25 minutes per toilet saved per day. Time saved from toilet touch-up cleaning will be spent in cleaning the clinics.

proactively respond to clean up toilet after a predetermined number of users



OBJECTIVES:

To reduce the number of touch-up cleaning trips to

Jan to May 2017 - Data Analyzed – CT L2 Male Toilet

Jan to May 2017 - Data Analyzed – WT L2 Female Toilet

Hourly No. of Users – CT L2 Male Toilet







Jan to May 2017 - Data Analyzed

the toilet with the use of TDIS, increasing work productivity

METHODOLOGY:

Before the implementation, housekeeper will check each toilet's condition every hour, from 7am to 9pm. This is to ensure that the toilets are kept clean. Depending on the condition of the toilets, the housekeeper will do the touch-up cleaning accordingly and move to the next toilet location. This practice will take some of the housekeeper's time and will interrupt her cleaning works in other areas.

With the implementation of TDIS, the number of touch-up cleaning trips made by housekeeper were reduced as the system will only prompt them to perform touch-up cleaning when the predetermined number of users is reached.

Location	Operational Hours	Current Touch-Up Frequency (Hourly – 7am to 9pm)	Average Number of Users per Hour	Recommended Number of Users to Trigger Housekeeping Service	Reduced Frequency
CT L2 Male Toilet	7am to 9pm	14 times	7	15 (every 2 hours)	7 times
CT L2 Female Toilet			16	24 (every 1.5 hours)	10 times
WT L2 Male Toilet			15	23 (every 1.5 hours)	10 times
WT L2 Female Toilet			18	27 (every 1.5 hours)	10 times
WT L1 MSW Toilet			9	18 (every 2 hours)	7 times



Time Savings Computation

Location	Current Touch-Up Frequency (Hourly)	No. of Touch- Up Trips Required with TDIS (7am – 9pm)	No. of Touch-Up Trips Saved with TDIS	Time Saved per Touch- Up Trip	Time Savings				
СТ									
CT L2 Male Toilet	14 times	14 <u>hrs</u> / 2 = 7	7	5 mins	35 mins				
CT L2 Female Toilet	14 times	14 <u>hrs</u> / 1.5 = 10	4	10 mins	40 mins				
			Total Time Savings for CT: 75 mins						
wт									
WT L2 Male Toilet	14 times	14 <u>hrs</u> / 1.5 = 10	4	5 mins	20 mins				
WT L2 Female Toilet	14 times	14 <u>hrs</u> / 1.5 = 10	4	10 mins	40 mins				
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TDIS was regulated based on the number of people using the toilet. When the system hits the limit of predetermined number of people using the toilets it will send an alert message to the housekeeper's handphone. The housekeeper will make a trip to the toilet for inspection and perform touch-up cleaning.

CONCLUSION:

TDIS improved the cleanliness of the toilets and enhance users' experience. The housekeeper became more proactive to attend toilet issues and more pleased with the reduction of unnecessary cleaning trips. Overall, it improves cleaning productivity in the toilets and clinics.