

## Privy Pristine and Salvage

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### Abstract

The main objective of our project is following the three R rules, that is to reduce, recycle and reuse. we can observe today lot of water are wasted in our domestic needs, especially in our rest-room.so by implementing the engineering idea we have designed an automatic flushing system to flush the urinal basin in an effective and efficient manner, where as in our project are conserve water five times than normal urinal basin.

Keywords: automatic, flushing, recycle, reuse, reduce

### I. INTRODUCTION

Earth is being the most essential and conservational planet of the solar system due to the presence of water, gas and gravity due to the natural disaster caused by the human activities.

The most essential planet of solar system is now under endanger situation. The gravity is due to the core of the earth and the tectonics plates now a days they are weak due to the bore and other underground process Air is being polluted due to insufficient tree which are responsible for observing co2 and to produce o2 from which we can understand water is mandatory for the earth to be stable So our project idea is the conserve the water in means of reduce , recycle and reuse . In present world most of the water is wasted in restroom. Our project idea is to conserve water in the flushes of toilet using the technical ideas of engineering in the stream of instrumentation and control engineering using PLC platform. Involves three steps first one is to limit the usage than to recycle the water which is being used and again to reuse for the process. Secondly, we are going to recycle the water which contains a tank of urine we have various methods of recycling a water in which we use a process which is very efficient. Now the third process is to reuse the water this is done by a pump which pumps the water which is being recycled to the tank at the roof top after which the process repeats in a cyclic manner again and again. To build a cost effective and efficient automatic flushing system, programmed to provide a platform for conservation. to provide a clean and hygienic

environment near the urinals at the public restrooms by making it to get flushed automatically. to use less amount of water for flushing purpose. To prevent the unnecessary wastage of water and save the water for the future generation. To provide a cheapest urinal flushing and recycle system. Prevailing of bad odour and unhygienic environment in public rest rooms impart intelligent control techniques for the robotic platform, so that it's dynamic performance, in varied applications of path and dimensions tracking, can be further developed. To monitor the movement of the robot through wireless mode of communication.to establish complete transparency of data over the internet.

### II.PROCESS OF REDUCE RECYCLE AND REUSE

The first person is that when proximity sensor detect the person it gives a output of 24 volt DC to the programmable logic circuit where it actuate the relay to give 230 volt to activate the solenoid valve while the direction control valve will be at its position 1,which will be direct the urine to the urine tank, when the person leaves now the output of the proximity sensor will be zero, whereas now the programmable logic circuit will active the direction control valve to position 2 so that now the flushed water will be directed to the recycling tank for the purpose of recycling. When the level of the tank is high now the recycled water is now pumped to the main tank for cyclic purpose. In this work, Programmable Logic Controller is used for

automatically control the process. The sensors which is used to sense the presence or not. The valves are used to bypass the urine and flushed water automatically.

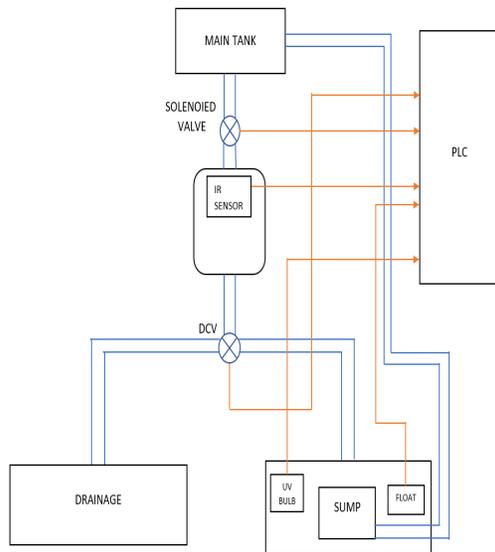
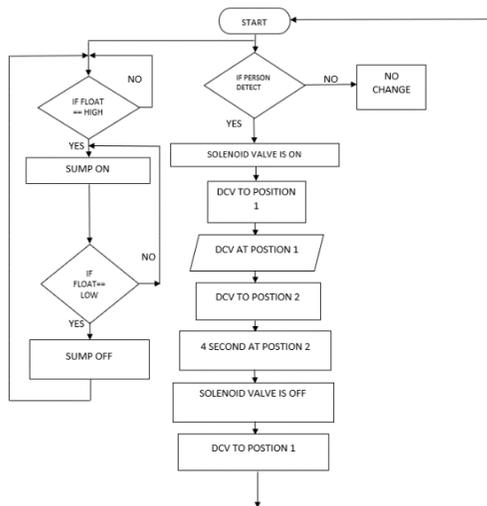


Fig1: block diagram

### III. DESIGN AND SIMULATION



The infra red sensor is used to detect the presence of a person in front of a urinator it gives 24 volts as output when detected and zero while absence. The output will actuate the solenoid valve as per output of the proximity sensor.

Float is used to for the level measurement of a the recycle tank, when the level is high plc output

activate the sump for draining and when the level reaches low then plc output deactivates the sump.

The sump is used to drain the recycled water, when the float level reaches high, this is done with hep of the plc output.

The direction control valve is at position 1, this is while output proximity sensor in 24volt so that the urine is send to the urine tank when the absence of the person it goes to the position 2, the output of the proximity sensor is zero. Now the flushed water which contains the trace of urine is send to the recycle tank.

The solenoid valve used here is 230v AC, it is actuated by the plc output when the output from the proximity sensor is zero since output of the plc is 24volt DC, using the relay are able supply 230v for the solenoid valve.

Ultra Violet light is used to kill the germs and other harmful substances in the water since the water contain trace of urine. It is placed at recycle tank, it is always at the ON position.

### IV. SOFTWARES

#### PROGRAMMABLE LOGIC CONTROLLER

The whole process is automated by the programable logic controller. A **programmable logic controller (PLC)** is used to control all the components in a logical manner whenever necessary to be ON and OFF. The plc logic is implemented in the components using the interface cables with personal computer. The software we used here is delta.

In programmable logic controller we had include six rungs to perform the logical operation for our project.

The first rung consist of open switch X0 where it is responsible to the proximity sensor close where the man present and open when he leaves it also consist of memory coil (M0) and where it is latched below for continuous energization of memory coil (M0) and we have timer (T0) which is a closed switch when timer (T0) energize the closed switch T0 will open at the first rung this is done to start the process from the first for each and every person

The second rung consist of open switch X0 where the output load ultra violet bulb turns ON. The latch of the output load will turn ON the bulb always.

The third rung consist of closed switch X0 where it is the proximity sensor since it is a closed switch the switch opens when the person detects and close when the person leaves secondly we have the memory coil (M0) which is an open switch and closes when the M0 coil in the first rung energize when both the two switch are closed the solenoid valve (Y0) switch energize and the valve open.

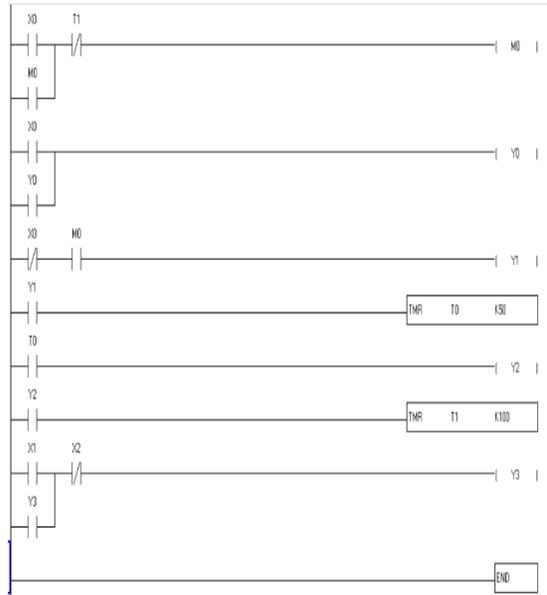


Fig2: ladder logic diagram

The fourth rung consist of the timer T0. The solenoid valve output is given as the input to the timer T0. The preset time is set as 5seconds. The output of the timer T0 is given to the directional control valve. When the enable time reaches the preset time, the directional control valve gets energized and change the flow direction from drainage tank to the recycle tank.

The fifth rung consist of the timer T1. The directional control valve output is given as the input to the timer T1. The preset time is set as 10seconds. When the enable time reaches the preset time the closed switch T1 at the first rung open due to which the memory coil (M0) deenergizes and entire switches are reset to the previous positions (or) actions.

The sixth rung is for draining the recycle tank and pump back to the main tank after the process of recycling, the recycling process is done by the ultra violet bulb, the switch high level sensor will closes, when the level of the water in the recycle tank reaches high, it pump back the water to the main tank using the sump . when the low level sensor get energized the pumping of the water to the main tank is stopped.



Fig3: front view of the prototype

## V.CONCLUSION

From the project we can clearly understand that a water is being saved five times by reduce, recycle and reuse methods by implementation the engineering knowledge in the stream of instrumentation and control engineering using PLC platform.

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