



AUTOMATED MATERIAL TRANSFERRING ROBOT

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INTRODUCTION :-

Automated Material Transferring Robot is an **Automated Guided Cart (AGC)** which is a driverless, cost effective, programmable controlled vehicle.

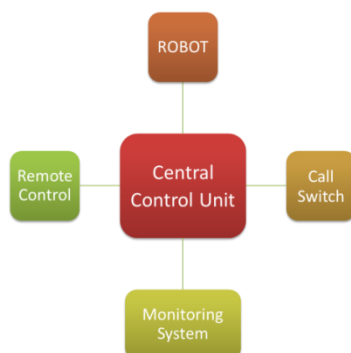
It can be used as an **assembly system** or to **transport materials** from designated pickup and drop off locations, within the facility, using **programmable delivery routines**.

AMTR system can help **automatic material handling** even if throughput does not warrant fixed path conveyors.

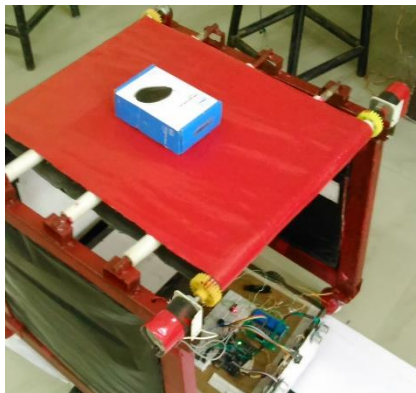
OBJECTIVE :-

1. To design a robot which can transfer materials from one place to another automatically according to their needs.
2. To design an ultrasonic collision avoiding system.
3. To install and automate a **Conveyor Belt** in AMTR.

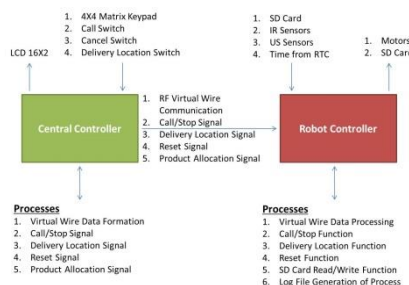
METHODOLOGY :-



SNAPSHOT :-



PROCESS FLOW DIAGRAM :-



SPECIFICATIONS :-

Conveyor Belt:

1. Width = 34 cm
2. Length = 45 cm
3. Speed = 2.09 cm/s

Conveyor Belt Motors:

1. 10RPM 12V DC
2. 5 Kg-cm torque(Max)
3. Load current = 300 mA(Max).

Wheels' Motors:

1. 100RPM 12V DC
2. 10Kg-cm torque(Max)
3. Load current = upto 9.5 A(Max)

INNOVATION :-

1. Increased the functionality by providing three modes of operations i.e. Manual, Semi-Autonomous, Autonomous.
2. Vehicle does not move until path is not clear.
3. Does not lose its memory after reset or power loss.
4. Can be easily synchronised with PLC & SCADA system using 3.4 GHz radio signal.

CONCLUSION :-

1. AMTR is more economical than man power and fork lifts.
2. AMTR is flexible, efficient and reliable.

FUTURE SCOPE :-

1. More than one AMTR can be used in synchronisation by establishing a wireless communication network between them.
2. Mechanical structure can be redesigned to be used in hospitals and offices.

REFERENCES :-

1. "Materials handling in flexible manufacturing systems", Dr. Tauseef Aized.
2. "Sonar sensor and mounting", University of Birmingham.