IOT CONTROLLED SMART INDUSTRIAL TROLLEY

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Abstract: The objective of this project is to control the trolley for industrial applications using remote through IOT section. So we can control the robot for a certain distance. It is operated by motor and keypad. In industries time saving is the major need. To fulfill this need in industries here is a solution with the help of trolley. It is used to carry the material from one place to another place.

Keywords: IOT, smart industrial trolley.

I.   INTRODUCTION

A Trolley is generally an unpowered vehicle pulled by a powered vehicle. Commonly, the term Trolley refers to such vehicles used for transport of goods and materials.

Sometimes recreational vehicles, travel Trolleys, or mobile homes with limited living facilities where people can camp or stay have been referred to as Trolleys. In earlier days, many such vehicles were towable Trolleys.

1.1 TYPES OF TROLLEYS
Some Trolleys are made for personal (or small business) use with practically any powered vehicle having an appropriate hitch, but some Trolleys are part of large trucks called semi-Trolley trucks for transportation of cargo.

Enclosed toy Trolleys and motorcycle Trolleys can be towed by commonly accessible pickup truck or van, which generally require no special permit beyond a regular driver's license. Specialized Trolleys like open-air motorcycle Trolleys, bicycle Trolleys are much smaller, accessible to small automobiles, as are some simple Trolleys, pulled by a drawbar and riding on a single set of axles. Other Trolleys, such as utility Trolleys and travel Trolleys or campers come in single and multiple axle varieties, to allow for varying sizes of tow vehicles.

There also exist highly specialized Trolleys, such as genset Trolleys and their ilk that are also used to power the towing vehicle. Others are custom-built to hold entire kitchens and other specialized equipment used by carnival vendors. There are also Trolleys for hauling boats.

II.   LITERATURE SURVEY

Material handling in construction and civil works is one of the basic necessities. The material supply to civil and construction is provided through trucks, dumper etc. The material should be properly loaded, managed, stacked, transported and unloaded. The dumper carries the material which is loaded from the site, where the material is initially stored. It is then loaded to the dumper and transported to the required site and then unloaded. The major issues raises over here, the incompatibility of the site with the fully loaded dumper causes a lot of settling time for the trolley to get the material properly arranged and transportation time to reach its location. The dumper unloads the material in only one direction. But this incapability can be full new method mechanism as the Three Axis Modern Pneumatic Trolley. Gothic mechanism is an Application roach to reduce the idle time to settle the dumper. A Trolley or dumper is a vehicle designed for carrying bulk material, often on building sites. Dumpers are distinguished from dump trucks by configuration. It is usually an open 4- wheeled vehicle with the load skip in front of the driver, while a dump truck has its cab in front of the load. The skip can tip to dump the load, Modern Trolleys have payloads of up to 10 tones and usually steer by articulating at the middle of the chassis (pivot steering).

They have multi-cylinder diesel engines, some turbocharged, electric start and hydraulics for tipping and steering and are more expensive to make and operate. An A-frame known as a ROPS (Roll Over Protection) frame may be fitted over the seat to protect the driver if the dumper rolls over. Some dumpers have FOPS (Falling Object Protection) as well. Lifting skips are available for discharging above ground level. Dumpers are the most common cause of accidents involving construction plant. A Trolley is an integral part of any construction work and hence its role is important for completion of any constructional site works. One of the problems cited with dumper is the problem during unloading in narrow roads and mines where it is impossible to unload the materials to the sides. Hence the need of the seminar work raised which is about 3 way dropping Trolley which can dump the material in any direction except the frontal one without moving the truck in any direction. The material is unloaded in any direction and hence can be boldly stated as three axis modern pneumatic Trolley. The major outcomes of three axis modern pneumatic Trolley. Has overcome space requirement which often result in road blocking. Hence, we have inversion in the existing mechanism providing the unloading in 180 rotations. This mechanism prevents blocking of road, saves time and enhances productivity at lowest cost. The automotive sector is fast booming section in India. There are variable in automotive industry light and heavy motor vehicle.

III. OBJECTIVE

- ✓ To achieve high safety.
- ✓ To reduce man power.
- ✓ To increase the efficiency of the vehicle.
- ✓ To reduce the work load.
- ✓ To reduce the fatigue of workers.
- ✓ To high responsibility.
- ✓ Less maintenance cost.

IV. SCOPE

World progressing at faster rate which demands efficient working equipment's such as user friendly machinery and hence the three way dumper may be used more than the two way or one way. The work can be modified further more on following basis:-Electronic sensors can be used to make the operations easy. Oil pump can be used instead of Pneumatic cylinder. Capacity can be increased. Four wheel steering can be adopted for more movement ability.

V. MACHINE COMPONENTS

- ✓ Dc Motor
- ✓ Relay Unit
- ✓ Motor
- ✓ Spur Gear
- ✓ Ball Bearing
- ✓ Control Unit
- ✓ Wifi Device

VI. WORKING PRINCIPLE

This project is designed with control unit, IOT transmitter & receiver, encoder, decoder, keypad, driver circuit along with motor and trolley model. The keypad is the set of keys each key represents one operation such that forward, reverse, left, Right and so on. The Transmitter section consists of keypad, Encoder and IOT transmitter. When any key is pressed in the keypad the corresponding signals is encoded in the encoder.

The pulse from keypad is encoded and then given to IOT section in which the signals are modulated with wifi carrier signal and transmitted through IOT transmitter. The receiver section consists of IOT receiver decoder, control unit and driver circuits. The IOT receiver receives that signal and removes the carrier frequency and gives the encoded signal to decoder in which the incoming signals is decoded into original signal and given to control unit. So when you press the key, for example forward key the corresponding signal is transmitted and received by IOT section and given to micro controller. So it activates the related driver circuit. Driver circuit consists of transistor just act as switch to control the motor. Now driver circuit operates the motor so the trolley moves in the forward direction. A motor is coupled with help of hinge joint to the trolley.

VII. MERITS

- Repairing is easy.
- It requires simple maintenance cares.
- Replacement of parts is easy.
- Increased moving ability: Thus, it does not become
- Can be used in very compact places: Where the
- Reversing & turning of vehicle is difficult.
- Manual power not required
- Can accommodate into pass on dam site working:
- Saves time & energy.
- Handling is easy.
- Checking and cleaning are easy, because of the main
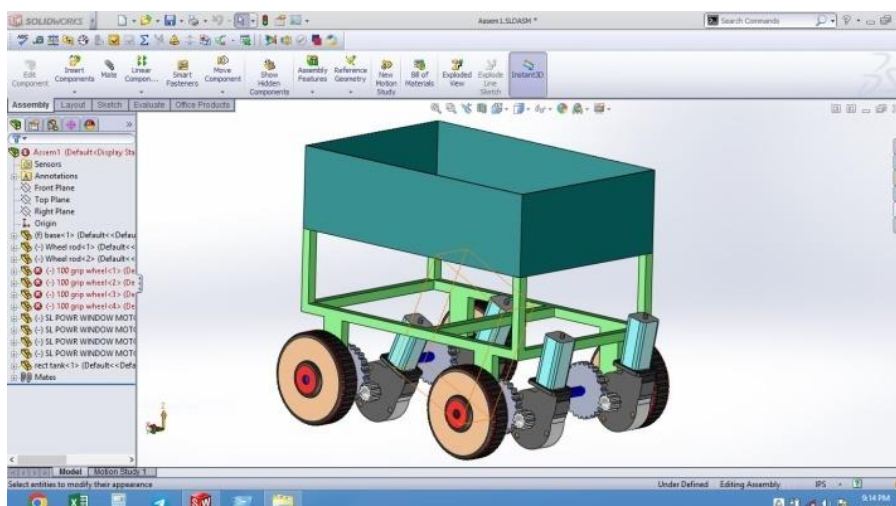- Parts are screwed.

VIII. BLOCK DRAWING

TRANSFER UNIT:

RECIVER UNIT :
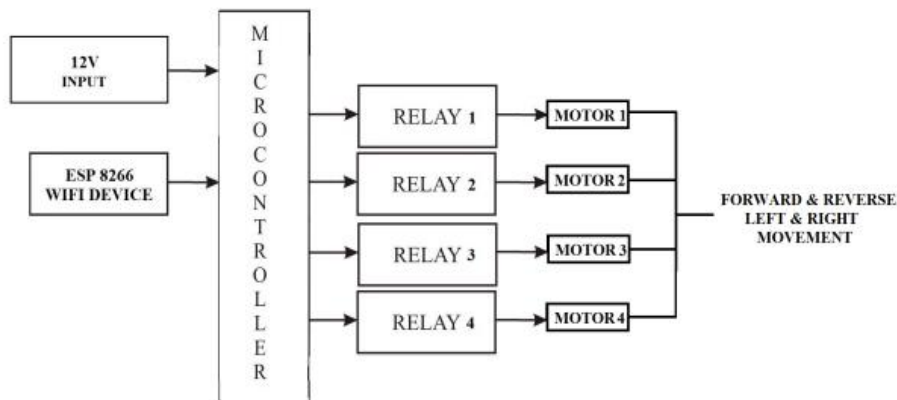
IX. MECHANICAL SETUP

X.   CODING

```
#include <ESP8266WiFi.h>
#include <BlynkSimpleEsp8266.h>

// Your WiFi credentials.
// Set password to "" for open networks.
char ssid[] = "IOT";
char pass[] = "123456789";

// Define the pins for the relays
const int relayPin1 = D1;
const int relayPin2 = D2;
const int relayPin3 = D3;
const int relayPin4 = D4;
// Function to initialize the relay pins
void setupRelays() {
  pinMode(relayPin1, OUTPUT);
  pinMode(relayPin2, OUTPUT);
  pinMode(relayPin3, OUTPUT);
  pinMode(relayPin4, OUTPUT);
}
// Function to turn on a specific relay
void turnOnRelay(int relayPin) {
  digitalWrite(relayPin, HIGH);
}
// Function to turn off a specific relay
void turnOffRelay(int relayPin) {
  digitalWrite(relayPin, LOW);
}
// Blynk app callback for when the virtual pin changes state
BLYNK_WRITE(V1) {
  int value = param.asInt();
  if (value == 1)
    turnOnRelay(relayPin1);
  else
    turnOffRelay(relayPin1);
}
BLYNK_WRITE(V2) {
  int value = param.asInt();
  if (value == 1)
    turnOnRelay(relayPin2);
  else
    turnOffRelay(relayPin2);
}
BLYNK_WRITE(V3) {
  int value = param.asInt();
  if (value == 1)
    turnOnRelay(relayPin3);
  else
    turnOffRelay(relayPin3);
}
BLYNK_WRITE(V4) {
  int value = param.asInt();
  if (value == 1)
    turnOnRelay(relayPin4);
  else
    turnOffRelay(relayPin4);
```

```
}
void setup() {
 // Debug console
 Serial.begin(9600);
```

XI.   CONCLUSION

This project is made with pre planning, that it provides flexibility in operation. This innovation has made the more desirable and economical. This project "IOT CONTROLLED SMART INDUSTRIAL TROLLEY" is designed with the hope that it is very much economical and help full to auto garages, constructional areas etc.This project helped us to know the periodic steps in completing a project work. Thus we have completed the project successfully.

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