Electric Transfer Car

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Abstract- *In today's world industries plays an important role in the society, the saving of cost in industry is necessary. In industries transfer car is designed to accommodate the needs of a wide range including steel, aluminum, automotive. These units are designed to operate on the floor and are used to transport heavy materials across bays or area not serviced by an overhead crane*

I. INTRODUCTION

A transfer car is like crane without a hoist operating on ground & is used for material handling of both light & heavy weight at ground level on rails. The battery is installed inside of trolley body. The battery supply power to the DC motor through the electrical control system. Use this principle to operate the Multi directional battery powered trolley start, stop, and go forward and backward, and so on....

The multi directional battery powered trolley can walk in the ground, turn to at will without being limited by the space and ground, and also can change the direction of walking and route at any time. It's very suitable for field use and the running routes which are not fixed. Transfer car applications & capacities vary from industry to industry Foundry Steel Plants Steel Service Centres General Engineering & Fabrication Automobile & Auto Ancillary Power Equipment Industry Standard Transfer cars are custom built or tailor made systems available with variety of possible options. The variations or options are possible in all parts or systems of transfer cars. Transfer car top Flat top for plate or similar components

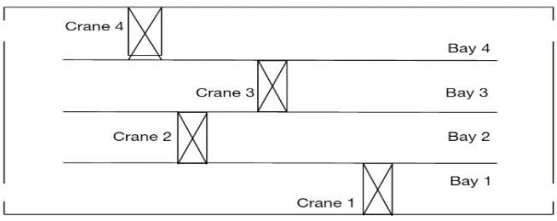
Typically transfer car consist of

- Wheel or Boogie system
- Drive (Geared motor)
- Control station
- Power supply system for drives

Industrial Transfer Cars are designed to accommodate the needs of a wide range of industries including Steel, Aluminium, Automotive, Stamping, Heavy Manufacturing and several others. These units are designed to operate on floor mounted rails and are used to transport heavy materials across crane bays or in areas not serviced by an overhead crane.

II.PROBLEM STATEMENT

Existing method used for the transfer of materials in industries from one section to other section is done by using trolleys or transfer car. It consists of motor, wheels, drive unit and tracks for the movement of car. This system as a disadvantage as the trolley moves in straight line (longitudinal direction). For cranes to have approach for the material transferred in the transfer car the tracks of the transfer car as to be placed horizontally below the last point of approach of crane hoist. hence more space is wasted in order to overcome this disadvantage we are going to design a car which moves in both longitudinal and transverse direction. By making the car move in both the directions we can save structural cost and also, we can use the space efficiently. Fig 2.1 shows the layout of the work shop.



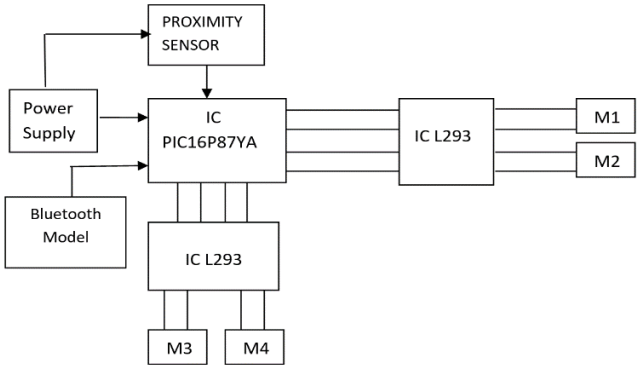
Layout of workshop

III.WORKING

The below fig shows the block diagram of electric transfer car, the trolley has to be moved in both transverse and longitudinal direction. So, we used 4 geared motors two motor to move car in longitudinal direction both forward and reverse another two motors to move car in transverse direction also in forward and reverse direction. There is one more motor to lift wheels up/down. The movements of the car will be controlling using Bluetooth model. At each junction we place a metal piece which will be sensed by the proximity sensors placed under the car. The proximity switch sends this signal to microcontroller. This is an indication that the junction is arrived now we can make wheel up/down. Proximity sensor is fixed in front of the transfer car for the purpose of safety measures. A variety of drive and control systems are available. Drive systems include gear reducer axle drives and individual wheel drives. All drive systems are powered by 230/460 Volt AC supply, 24 to 72 Volt DC power supply, self-contained

hydraulic power, propane, diesel or gasoline engines. A typical unit is equipped with a hand held pendant control that is used by the operator to control the transfer car movement along the track. With an average travel speed of 50 FPM a operator can walk alongside the car to operate the unit. The pendant can be provided to be mounted on any of the 4 corners of the vehicle to allow the operator to walk along the leading end of the vehicle during operation. Allegheny's transfer cars come available with semi-automatic and fully automatic control systems to meet the needs of specialized applications. All control systems feature Allen-Bradley, GE or Square "D" components.

IV.BLOCK DIAGRAM



HARDWARE REQUIREMENTS

- Power supply
- PIC16877A Microcontroller IC
- Motor driver IC L293D
- Proximity sensor
- DC Geared Motors
- Bluetooth model
- Battery supply

ADVANTAGES

- Cost reduction of structure
- Man power reduction
- Better Space utilization
- Transport time reduction

APPLICATIONS

1. Inter Bay Transfer of Finished/Unfinished
2. Goods Steel Plate Handling
3. Raw Material Handling
4. Steel Coil Handling
5. Paint Booth & Shot Blasting Trolleys

V.CONCLUSION

We conclude that the transfer car which moves in longitudinal direction can also move in transverse direction. By that we can save the cost. This transfer car can also used for different industries with automatic system by using hydraulic system

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