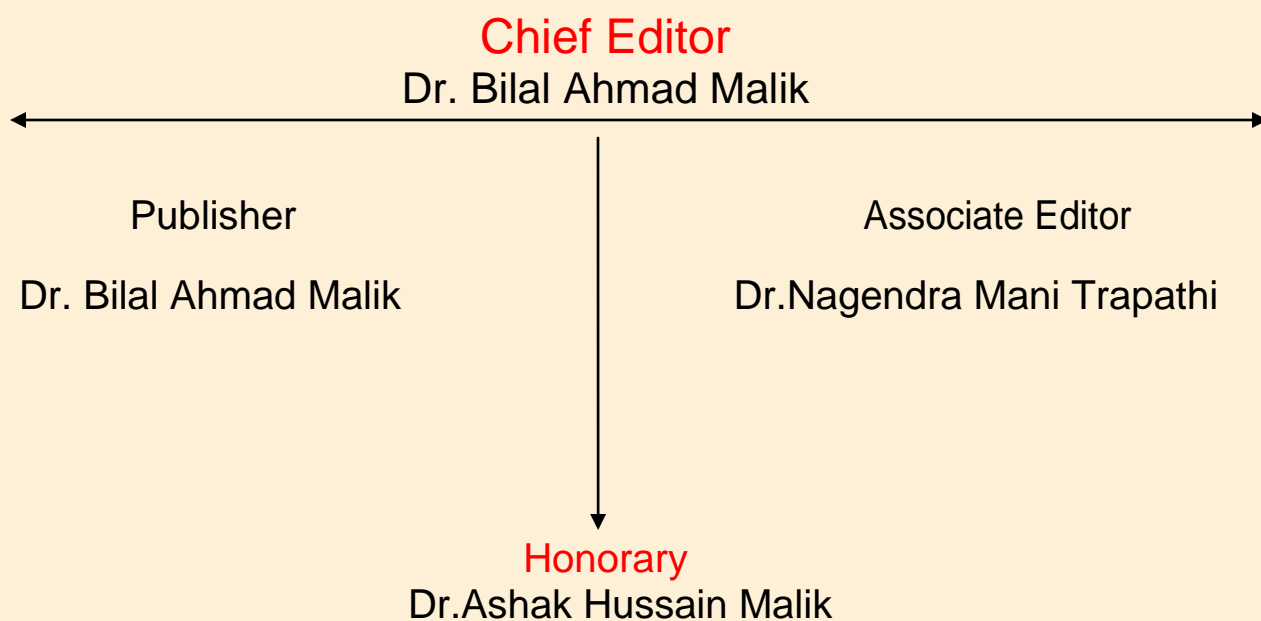# North Asian International Research Journal Consortium

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DUST PARTICLES REMOVER BY CONVEYOR SYSTEM USING PLC

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Abstract - Normally conveyor used for transporting the product for one end to another and we can used anywhere. But this conveyor project and their supportive assembly make special for particular action i.e. where need of fresh air in the presence of dirt particles. Here, this assembly is used in textile industry where lots of dust particles produced during the making of thread and textile product. It's creates inhaling problem in employees those who work near to this area. Normally Asthma, Skin problem & lots of disease happened here. That's why this project helps to reduce the inhaling problem.

Keyword- Delta PLC, Screen edit software, wplsoft, power supply (smps).

1. INTRODUCTION

The project mainly tells about the identification of possibility of run all conditions using minimum input output & conveyor faults can detect by monitoring device i.e. HMI. The automation will strongly enhance the safety, speed and control characteristics of conveyor in real time without requiring manpower. Due to the advent of PLC automation can be done efficiently to satisfy flexibility, reliability and efficiency of conveyor. A Delta's DVP series programmable logic controllers offer high-speed, stable and highly reliable applications in all kinds of industrial automation machines. the cost effective DVP-PLC also supports various communication protocols, connecting Delta's AC motor drive, servo, human machine interface, SCADA and temperature controller through the industrial network in to a complete "Delta Solution" for all users. In order to ensure the conveyor operation safe and reliable, centralised monitoring and control is very necessary. The main objective of this proposal is to monitor and detect the fault occurring in the conveyor using delta series PLC and their HMI. Faults such as conveyor are not run properly or any condition of the project have problem that can see on HMI. In order to avoid this type of serious conditions, PLC and HMI to provide proper protection for the conveyor in Textile Plant. Manual control at present is more disadvantageous and is being the major reasons for frequent accidents. In order to reduce these accidents and for increasing further enhancements, automation

is used. All parameters will be processed, controlled, and managed in the coal conveyor with help of sensors and plc.

2. BLOCK DIAGRAM
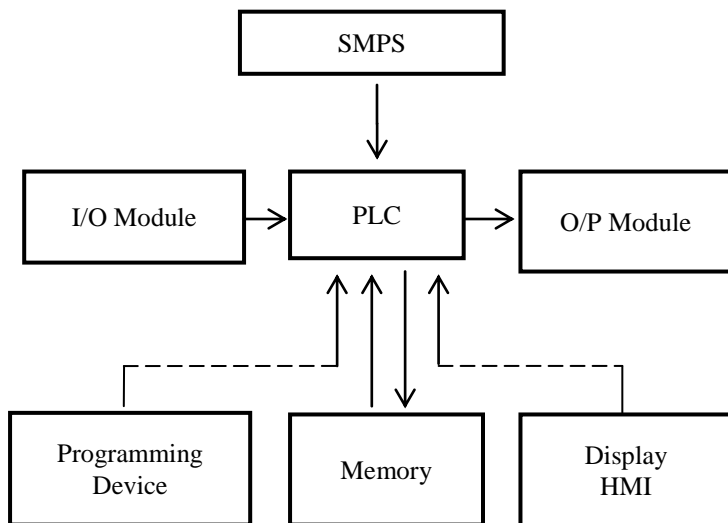
2.1 Mechanical block diagram
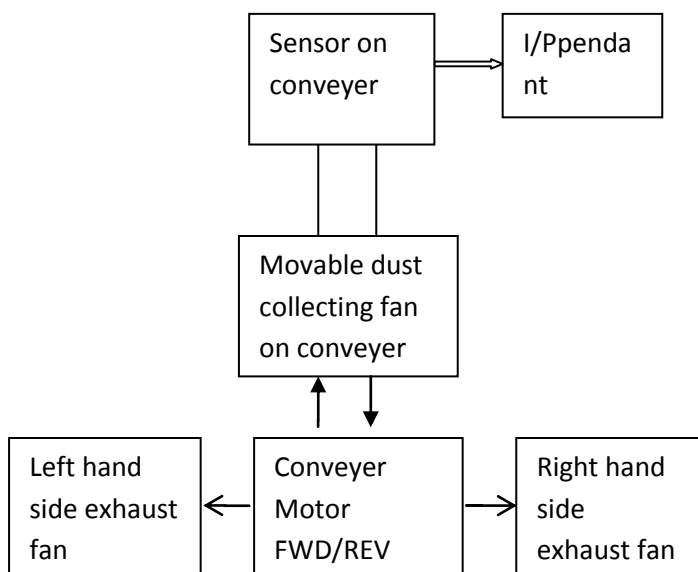
In this project, there is four inputs and five outputs By the help of these inputs and outputs command the mechanical assembly work according to the conditions and their application

INPUT	OUTPUT
1. START	1. FORWARD MOTOR
2. STOP	2. REVERSE MOTOR
3. FORWARD/REVERSE	3. DUST COLLECTOR FAN
4. POSITION SENSOR	4. EXAUST FAN 1
	5. EXAUST FAN 2

A) **Programmable Logic circuit**: A digital electronic device that uses programmable memory to store the instruction and to implement the function such as logic, sequencing, timing, counting, arithmetic. In order to control machine and process.

B) **Proximity sensor:** It plays a major role in segregating the products based on respective parameters. Here the sensor will sense the object when it comes in front of it. It will turn on the exhaust fans on detecting the object.

C) **Conveyer motor:** The motor is used to drive the conveyer belt in forward and reverse direction.

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IRJIF IMPACT FACTOR: 3.01

D) **Exhausting fans:** The exhaust fans are used to absorb the dust particles that are present in the object.

3. ALGORITHM

1. Start

2. When we press forward/reverse button the direction of motor will change after 2 sec

3. Conveyor system starts rotating forward with dust collecting fan

4. Dust collecting fan sensed by metal proximity sensor at exhaust fan 1

5. Start exhaust fan 1 and stop the conveyor with dust collecting fan at a time given by timer e.g. 10sec

6. After 10 sec stop exaust fan 1 and start conveyor with dust collecting fan in reverse Direction

7. Dust collecting fan sensed by metal proximity sensor at exaust fan 2

8. Start exaust fan 2 and stop the conveyor with dust collecting fanat a time given by timer e.g 10sec

9. After 10 sec stop exaust fan 2 and start conveyor with dust collecting fan in forward Direction

10. Continue this process

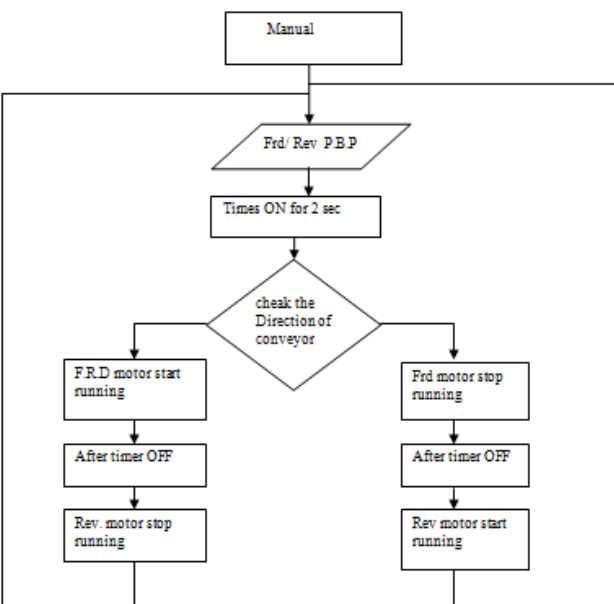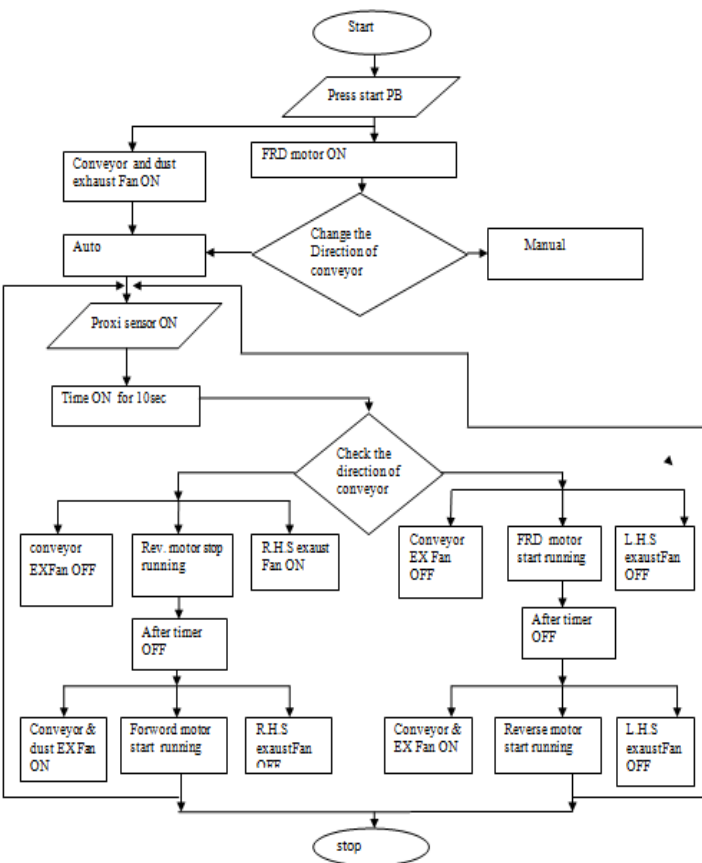11. Stop

4. FLOWCHART

Fig 5.2.1

5. ADVANTAGES

1. It is easy to design

2. Throws the dust particle out of the industry

3. Safe and useful for industry people

4. Avoids the skin and breathing issue of the people.

6. LIMITATION

1. It is not a 100% solution of dust removal from environment

2. Little difficult for software installation

## 7. FUTURE SCOPE

1] We can implement a system using PLC where the dust particles that are collected can be automatically disposed.

2] We can make a system to detect and separate the cloths as per their colours or if there is some other object present it can be detected

8. RESULT

In our project there near about 75% of dust particles are exaust. From area and object where need for fresh air in the presence of dust particles Which occurs in textile industry to avoid the problems like inhaling, skin problems and asthma.

9. IMAGE OF PROJECT
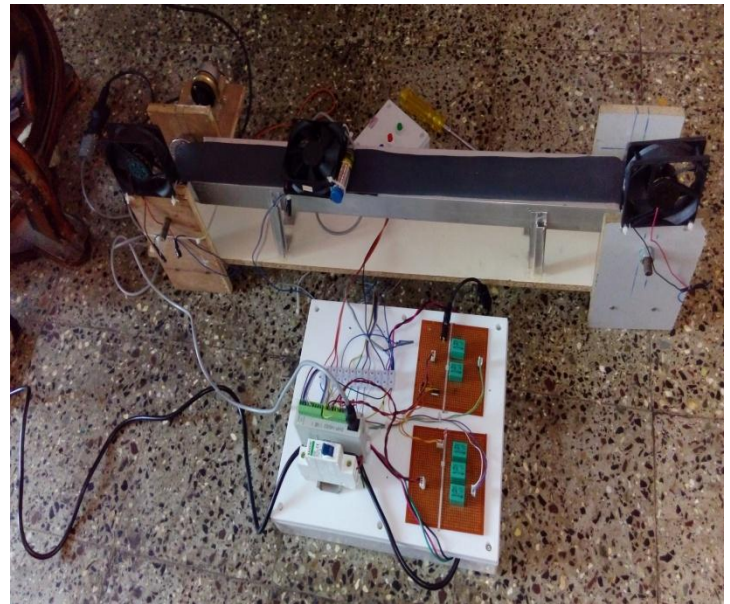
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