

Segregating plastic waste is the biggest problem in Mumbai unlike paper



- There is no uniformity in plastic with various shapes, sizes and density unlike books/newspaper
- It is voluminous, thus storage and disposal is a problem
- There is no standard form of storage thus resistance is very high
- Though it fetches good amount, storage dynamics causes the inertia
- Thus plastic waste mostly ends up choking landfills, drains and rivers ingesting itself in land and marine animals. It leaches into

SEGREGATING plastic is the biggest THREAT in Mumbai unlike paper



- Plastic disposal - an unorganised sector is a big threat to the **NATURAL ENVIRONMENT**
- India generates 25,940 tonnes of plastic waste every day, but 40% of it remains uncollected.



- About 94 per cent of this comprises thermoplastic, such as PET (polyethylene terephthalate) and PVC (polyvinyl chloride), which is **RECYCLABLE**
- Thus plastic waste mostly ends up choking landfills, drains and rivers ingesting itself in land and marine animals.
- It leaches into soil and water, contaminating the natural



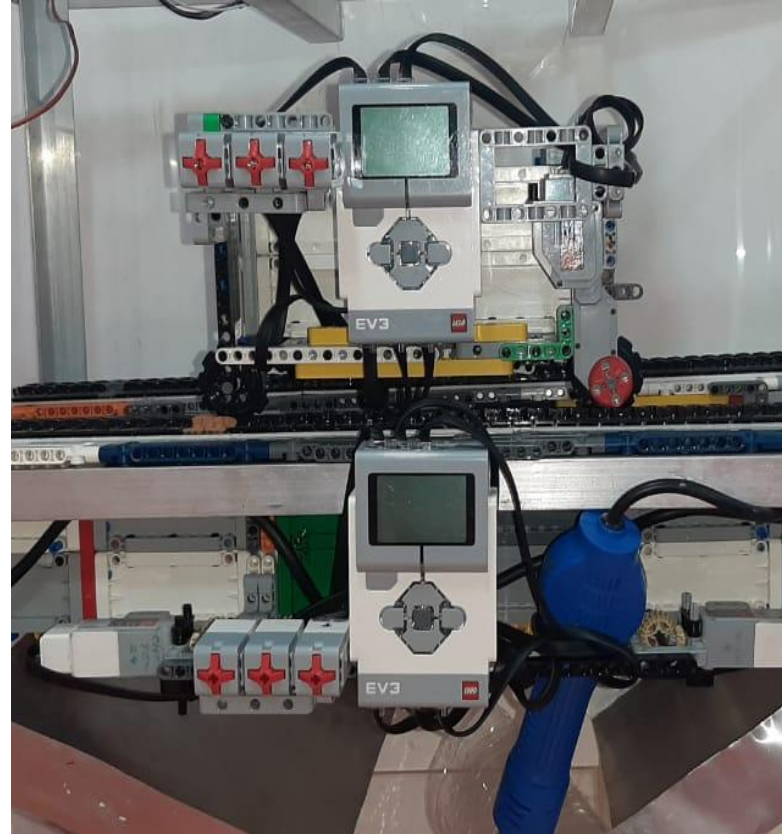
Home Plastic Shredder cum Compressor

- The main outer body of the machine is made from aluminium. We have used grinding blades of paper shredder made up of stainless steel which are operated by AC motor through gear box.
- The plastic components are crushed into chips which fall into one the three storing box made from Lego the plastic are sorted into three boxes as per their type.
- The shredded plastic from the storing boxes are sent to heat compression chamber where hot air is blown to raise the temperature of the chamber depending on the type of plastic which softens and shrinks the plastic chips.
- The shredder is turned ON by relay as the object is detected by ultrasonic sensor. After selection of type plastic to shrink the heat blower is turned ON.
- The electronics are controlled byLegoEV3 and Arduino uno

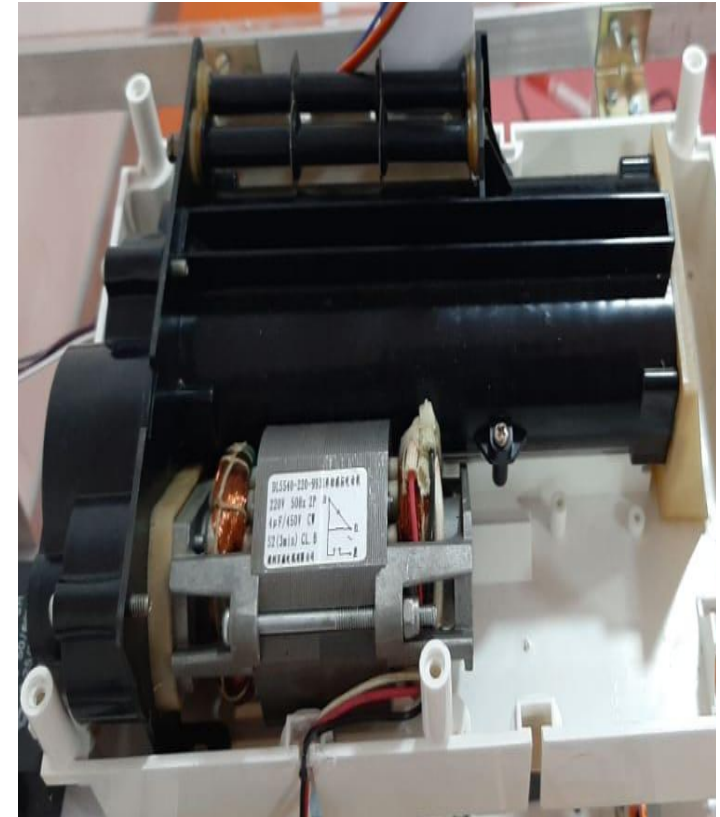
Mechanical components



Lego Conveyor system



Lego Construction



Plastic Shredder

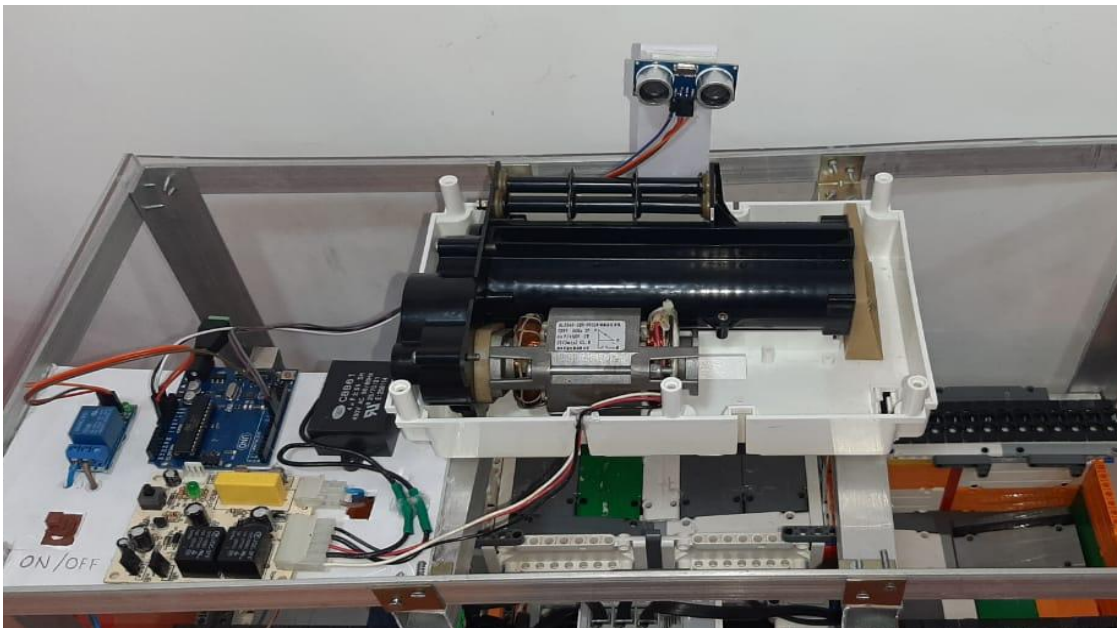
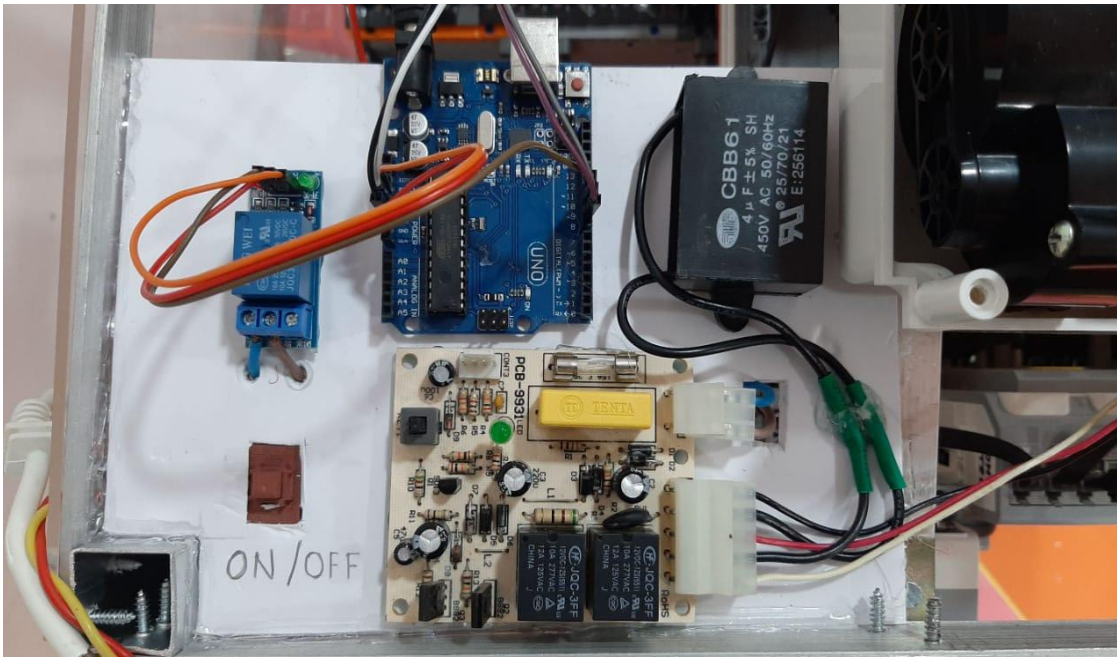


Advantages of Home Plastic Shredder cum Compressor

- House hold plastic is not stored as compared to newspapers
- Our Home Plastic Shredder cum Compressor enables SIZE REDUCTION allows an individual to dispose all plastic most conveniently.
- Volume Comparison: 100 bottles of 500ml weigh 1 Kg and need 2 gunny bags full to collect the same over a period of 2 months
- Shredded and compressed plastic reduces this to a 1 Kg block of 12inches x 12inches
- With resale value starting Rs. 16 to 40 per Kg, this shredded plastic can attract more value as it reduces labour by industry specialist
- It encourages shred and compose phenomenon at POINT OF USE

Electronics Components and Program

- Using Arduino Uno for Ultrasonic sensor in our Plastic Shredder.
- EV3 to control the Lego Construction



Ultrasonic_for_pc

```
const int trigPin = 9;
const int echoPin = 10;
int relay = 11;
// defines variables
long duration;
int distance;
void setup() {
  pinMode(trigPin, OUTPUT); // Sets the trigPin as an Output
  pinMode(echoPin, INPUT); // Sets the echoPin as an Input
  pinMode(relay, OUTPUT);
  Serial.begin(9600); // Starts the serial communication
}
void loop() {
  //digitalWrite(relay, LOW);
  // Clears the trigPin
  digitalWrite(trigPin, LOW);
  delayMicroseconds(2);
  // Sets the trigPin on HIGH state for 10 micro seconds
  digitalWrite(trigPin, HIGH);
  delayMicroseconds(10);
  digitalWrite(trigPin, LOW);
  // Reads the echoPin, returns the sound wave travel time in microseconds
  duration = pulseIn(echoPin, HIGH);
```