Bangladesh University of Engineering and Technology

Department of Electrical and Electronic Engineering

Course Number : EEE 318

Course Title : Control Systems I Laboratory

Title of the Project

AUTOMATED SMART MEDICAL WASTE SEGREGATION

Submitted by:

1906044: Tasnimun Razin

1906045: K.M. Azmain Rafin

1906054: Md. Fahadul Islam

1906055: Tasmin Khan

1906064: Ismam Nur Swapnil

1906065: A.K.M. Anindya Alam

Group: 06

Section: A2

Level: 3, Term: 2

Department: EEE

Presented to:

Dr. Celia Shahnaz

Professor

Department of EEE, BUET

Md. Jawad Ul Islam

Adjunct Lecturer

Department of EEE, BUET

ABSTRACT

Improper waste disposal poses significant challenges to human health and the environment worldwide, with the overproduction of toxic waste and outdated waste management practices. Our project introduces an innovative solution - an Automated Smart Medical Waste Segregation system, designed to revolutionize waste treatment processes while aligning with several Sustainable Development Goals (SDGs), including 'Good Health & Well-Being,' 'Industry, Innovation & Infrastructure,' 'Sustainable Cities & Communities,' and 'Climate Action'.

Our approach features capacitive, inductive, and ultrasonic sensors to identify three critical categories of waste materials: wet, plastic, and metallic waste. Through a V-gate mechanism, the system facilitated by TowerPro MG996R servo motors, swiftly and accurately segregates incoming waste, directing each material through a pipe to its designated bin. The system's microcontroller, an Arduino Uno, powers the sensors and manages the segregation process. As part of our sustainable vision, we are actively exploring the replacement of the Arduino Uno with rechargeable batteries or renewable energy sources, such as solar power. The choice of plywood for the structure of our prototype shows our commitment to fostering eco-friendly practices in waste management and minimizing environmental impact.

EQUIPMENT LIST WITH COST ANALYSIS

Equipment	Cost (BDT)
Inductive sensor	630
Capacitive Sensor	700
Ultrasonic Sensor	380
Arduino Uno	740
Battery	300
3D Printed Parts	800
TowerPro MG996R Servo Motors	950
Plywood Chassis	7,000
PVC Pipe	200
Pipe Elbow	570
Pipe Extension	200
Metal Shaft	1,000
Coupler	640
Screws & Bearings	230
HC05 Bluetooth Module	350
Miscellaneous	850
Total	**15,540**