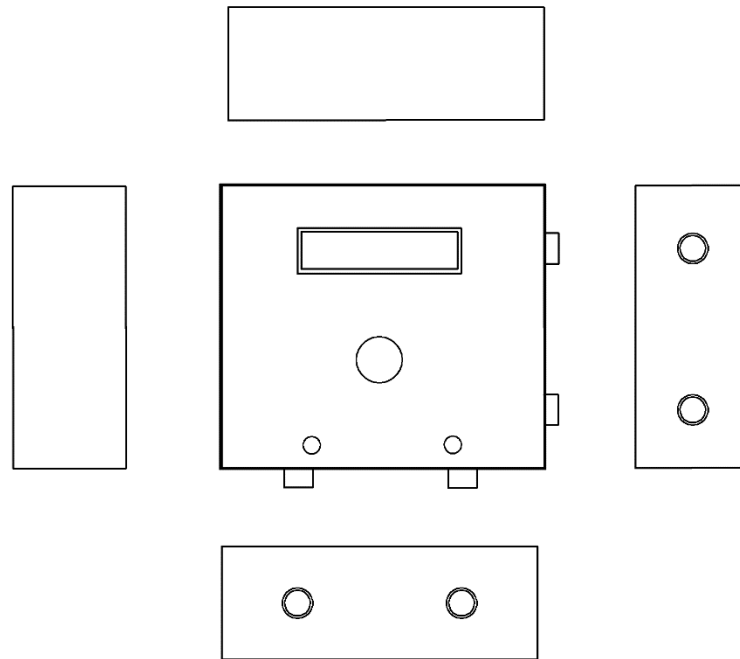
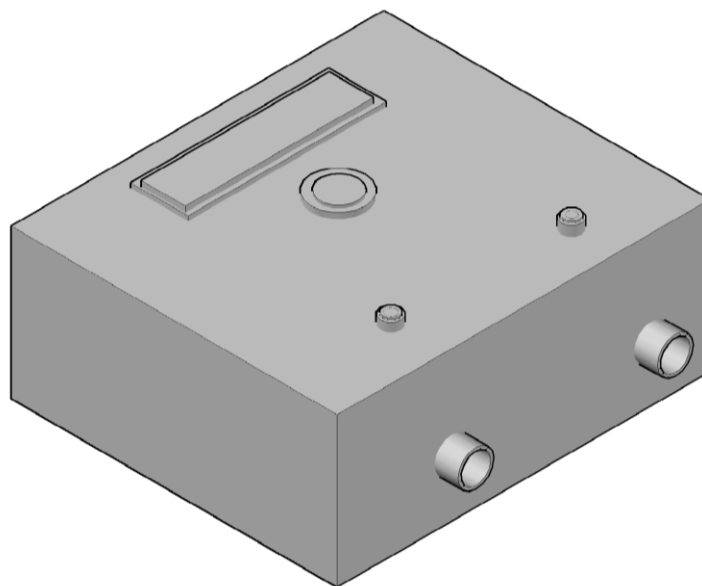


## LAMPIRAN

### Lampiran 1. Desain 2D Alat



### Lampiran 2. Desain 3D alat



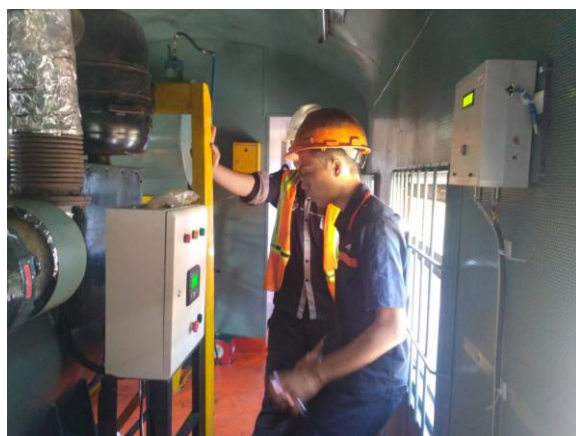
### Lampiran 3. Dokumentasi Pengujian Alat



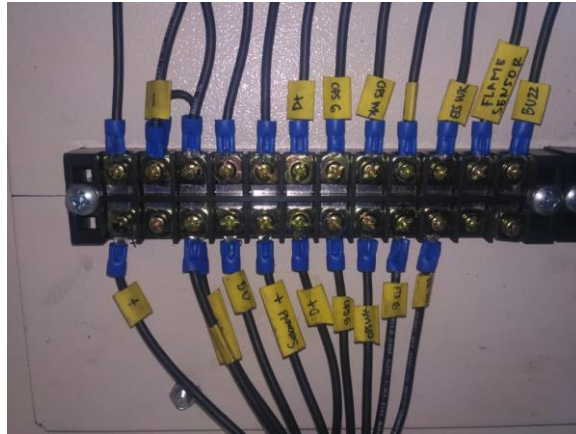
Pengujian Alat di Kereta P 01705



Kereta Makan dan Pembangkit MP3 01205



Pengujian Alat di Kereta P 01705 bersama karyawan Balai Yasa Yogyakarta



Terminal Panel Deepsea4520



Baterai yang digunakan untuk mencatu alat



Foto bersama karyawan Balai Yasa Yogyakarta saat pengujian alat

#### Lampiran 4. Kode Program

```
#include <Wire.h>
#include <LiquidCrystal_I2C.h>
#include "WiFiEsp.h"
#include "SoftwareSerial.h"
#include "ThingSpeak.h"
#include <DHT.h>

LiquidCrystal_I2C lcd(0x27, 16, 2);
SoftwareSerial Esp8266(2, 3); // RX, TX

int val = 15;
int Buzzer = 6;
int FlamePin = A1;
int Flame = LOW;
int Relay = 5;
const int AOUPin = A2;
const int DOUPin = 8;
int value;
int limit;
float suhu;
DHT dht (7, DHT22);

char ssid[] = "PANDA"; // your network SSID (name)
char pass[] = "21062018"; // your network password
const char *writeAPI = "OY6QIYO1XOB0Q2O9"; // replace with yours
const char *readAPI = "S1162KCVUCJYWGZQ"; // replace with yours
unsigned long int channelID=803295; // replace with your channel id
int status = WL_IDLE_STATUS; // the Wifi radio's status
char server[] = "api.thingspeak.com";
unsigned long waktuterakhir = 0; // last time you connected to the server, in
milliseconds
const unsigned long interval = 20000L; // delay between updates, in milliseconds
```

```

unsigned long waktuterakhirbaca = 0; // last time you connected to the server, in
milliseconds
const unsigned long intervalbaca = 5000L;
WiFiEspClient client;

void setup()
{
  pinMode (Buzzer, OUTPUT);
  pinMode (FlamePin, INPUT);
  pinMode (AOUTpin, INPUT);
  pinMode (DOUTpin, INPUT);
  pinMode (Relay, OUTPUT);
  dht.begin();
  lcd.begin();
  lcd.backlight();
  lcd.print("-- FAS BYYK 1 --");
  Serial.begin(9600);
  Esp8266.begin(9600); // initialize serial for ESP module
  WiFi.init(&Esp8266); // initialize ESP module
  if (WiFi.status() == WL_NO_SHIELD){
    Serial.println("WiFi shield not present");
    while (true); // don't continue
  }
  while ( status != WL_CONNECTED) // attempt to connect to WiFi network
  {
    Serial.print("Attempting to connect to WPA SSID: ");
    Serial.println(ssid); //status = WiFi.begin(ssid, pass); // Connect to WPA/WPA2
network
    status = WiFi.begin(ssid, pass);
    aksessensor();
  }
}

```

```

Serial.println("You're connected to the network");
// print the received signal strength
long rssi = WiFi.RSSI();
Serial.print("Signal strength (RSSI):");
Serial.print(rssi); Serial.println(" dBm");
delay(100);
ThingSpeak.begin(client); // inisialisasi ThingSpeak
}
void loop()
{
//==== start WRITING ....
aksessensor();
if (millis() - waktuterakhir > interval)
{
// === starting writing multiple data into multiple fields of thingspeak
aksessensor();
ThingSpeak.setField(1,Flame);
ThingSpeak.setField(2,suhu);
ThingSpeak.setField(3,limit);

int stat = ThingSpeak.writeFields (channelID, writeAPI);
Serial.println("Uploading/Writing 4 data to thingspeak.....");
Serial.print("status writing/sending data to thingspeak (200:success): ");
Serial.println(stat);
waktuterakhir = millis();
}
}

void aksessensor(){
    suhu = dht.readTemperature();
    Flame = digitalRead (FlamePin);

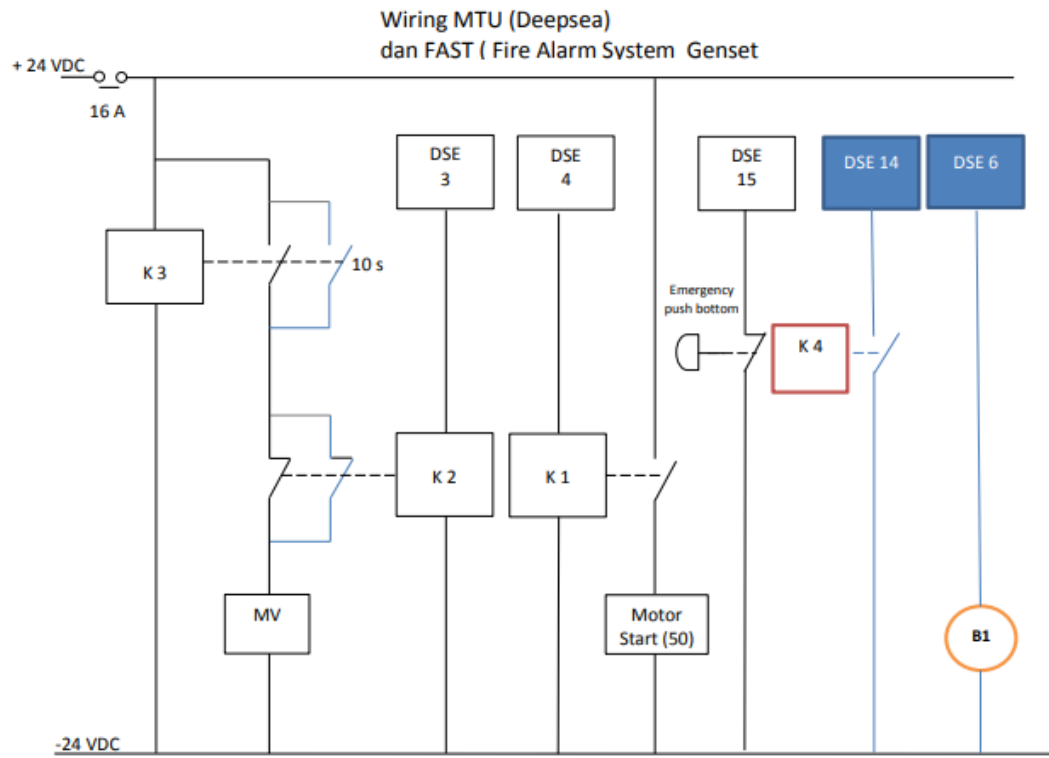
```

```

value = analogRead(AOUTpin);
limit= digitalRead(DOUTpin);
//Serial.println(Gas);
lcd.clear();
lcd.setCursor(0, 0);
lcd.print((int)suhu);
lcd.write((char)223);
lcd.print("C");
lcd.setCursor(0, 1);
if(Flame==LOW){lcd.print("Ada api");}
else {lcd.print("Tidak ada api");}
lcd.setCursor (5,0);
if ( limit == HIGH){lcd.print("CO Jenuh");lcd.setBacklight(HIGH);}
else {lcd.print("CO Normal");}
if(Flame==LOW || suhu>60 || limit == HIGH )
{
digitalWrite (Buzzer, HIGH);
digitalWrite (Relay, LOW);
}
else
{
digitalWrite (Buzzer, LOW);
digitalWrite (Relay, HIGH);
}
delay(10);
}

```

## Lampiran 5. Instalasi Deep Sea dan Alat



Keterangan :  
 K1 : Relay Start  
 K2 : Relay Stop  
 K3 : Timer  
 K4 : Relay 5v pada FAST  
 Mv: Magnet valve  
 B1 : Buzzer

## Lampiran 6. Instalasi Panel Deepsea 4520

