LAMPIRAN PERHITUNGAN

1.Perhitungan Regresi Linear

Data ke	x	y	xy	x^2	y^2
1	0	0	0	0	0
2	2	1	2	4	1
3	59	2	118	3481	4
4	132	3	396	17424	9
5	220	4	880	48400	16
6	285	5	1425	81225	25
7	370	6	2220	136900	36
Jumlah	**1068**	**21**	**5041**	**287434**	**91**

x : nilai pulsa yang keluar oleh sensor waterflow

y : nilai flowrate yang di atur pada regulator oksigen (L/menit)

n : jumlah data

$$b = \frac{n \sum xy - \sum x \sum y}{n \sum x^2 - (\sum x)^2}$$

$$b = \frac{(7.5041) - (1068 - 21)}{(7 \times 287434) - (1068^2)}$$

$$b = \frac{12859}{871414}$$

$$b = 0,0147$$

$$a = y - b\,x$$

$$a = 1 - (0,0147.2)$$

$a = 0{,}970$

$Y = a + b\,X$

$Y = 0{,}970 + 0{,}0147\,(59)$

$Y = 1{,}841$

Maka rumus fungsi regresi linear adalah y = 0,0148 (x) + 0,9704

a. Laju aliran 1 L/menit

y = 0,0148 (2) + 0,9704

= 1

b. Laju aliran 2 L/menit

y = 0,0148 (59) + 0,9704

= 1,841

c. Laju aliran 3 L/menit

y = 0,0148 (132) + 0,9704

= 2,918

d. Laju aliran 4 L/menit

y = 0,0148 (220) + 0,9704

= 4,216

e. Laju aliran 5 L/menit

y = 0,0148 (285) + 0,9704

= 5,176

f. Laju aliran 6 L/menit

y = 0,0148 (370) + 0,9704

= 6,430

Source code

```
#include <Wire.h>

#include
<LiquidCrystal_I2C.h>

LiquidCrystal_I2C lcd(0x27,
20, 4);


#include <Keypad.h>


const byte ROWS = 4;

const byte COLS = 4;


char hexaKeys[ROWS][COLS] =
{
{'1', '2', '3', 'A'},

{'4', '5', '6', 'B'},

{'7', '8', '9', 'C'},

{'*', '0', '#', 'D'}

};


byte rowPins[ROWS] = {3, 4,
5, 6};

byte colPins[COLS] = {7, 8,
9, 10};

Keypad customKeypad =
Keypad(
makeKeymap(hexaKeys),
rowPins, colPins, ROWS,
COLS);


char customKey;

float flowOksigen = 0.0;

int harga = 0, total_harga
= 0;

float mliter, liter;

boolean flag1 = 0;

byte flag2 = 0;

int detik, menit;


unsigned long i;


void(* resetFunc) (void) =
0;


ISR(TIMER1_OVF_vect)
// interrupt service
routine that wraps a user
defined function supplied
by attachInterrupt

{

TCNT1 = 3036;

if (flag2 == 1) {

detik++;

if (detik == 60) {

menit++;

detik = 0;

}

digitalWrite(12, 0);

flowOksigen = (i * 0.0162)
+ 0.00; // liter Per menit
```

```
mliter += flowOksigen *
16.7;

liter = mliter / 1000;

total_harga = harga *
liter;

Serial.print(detik);

Serial.print("\tFlow
Oksigen :");

Serial.print(flowOksigen);

Serial.print("\tNilai I
:");

Serial.print(i);

Serial.print("\tHarga :");

Serial.print(harga);

Serial.print("\tTotal Harga
:");

Serial.print(total_harga);

Serial.print("\tmLiter :");

Serial.print(mliter);

Serial.print("\tLiter :");

Serial.println(liter);

i = 0;

}


else if (flag2 == 2) {

digitalWrite(12, 1);

}


}
void setup() {

// put your setup code
here, to run once:

cli();

Serial.begin(9600);

pinMode(A2, OUTPUT);

pinMode(A3, OUTPUT);

digitalWrite(A2, 0); // GND
lcd

digitalWrite(A3, 1); // VCC
lcd


pinMode(11, OUTPUT);

digitalWrite(11, 1); //VCC
relay


pinMode(12, OUTPUT);

digitalWrite(12, 1);


pinMode(2, INPUT_PULLUP);
// sensor flow


pinMode(A0, OUTPUT);

digitalWrite(A0, 0);


attachInterrupt(digitalPinT
oInterrupt(2), pulsa,
CHANGE); // interrupt

TCCR1A = 0;

TCCR1B = 0;

TCNT1 = 3036;            //
preload timer 65536-
16MHz/256/1Hz

TCCR1B |= (1 << CS12); // |
(1 << CS10);    // 256
prescaler
```

```
TIMSK1 |= (1 << TOIE1);
// enable timer overflow
interrupt

sei();

lcd.begin();

lcd.setCursor(0, 0);

lcd.print ("System Ready");

Serial.println("Masukan
Harga Oksigen !");

delay(3000);

}


unsigned long waktulama =
0;


void loop() {

// put your main code here,
to run repeatedly:

harga = getVal(); // harga
ngambil nilai dari keypad

if (harga) {

Serial.println(harga);

}

}


void pulsa() {

i++;

}


void tampil_lcd() {

if (millis() - waktulama >=
1000) {

waktulama = millis();
```

```
if (flag2 == 1) {

lcd.clear();

lcd.setCursor(0, 0);

lcd.print("FlowRate(L/m
:");

lcd.print(flowOksigen);

lcd.setCursor(0, 1);

lcd.print("Volume (L):");

lcd.print(liter);

lcd.setCursor(0, 2);

lcd.print("Waktu :");

lcd.print(menit);

lcd.print(" M");

lcd.setCursor(0, 3);

lcd.print("Harga : Rp. ");

lcd.print(total_harga);

}

if (flag2 == 0) {

lcd.clear();

lcd.setCursor(0, 0);

lcd.print ("Masukan Harga
O2 :");

lcd.setCursor(0, 1);

lcd.print("Rp. ");

lcd.print(harga);

lcd.print("/L");

}

}

}


long getVal() {
```

```
long value = 0;

customKey =
customKeypad.getKey();


while (customKey != '#') {

tampil_lcd();

switch (customKey)

{

case '0' : case '1': case
'2' : case '3': case '4':

case '5' : case '6': case
'7' : case '8': case '9':

value = value * 10 +
(customKey - '0');

break;


case '#':

return value;

break;


case 'D':

break;


case 'A':

flag2 = 1; //aktifkan relay
dan sensor

break;

case 'B':

flag2 = 2; // stop

digitalWrite(A0, 1); //
buzzer on

delay(2000);

digitalWrite(A0, 0); //
buzzer off

break;

case 'C':

resetFunc(); // buat reset
arduino

break;


case '*':

break;

}

customKey =
customKeypad.getKey();

}


return value;

}
```