**MODUL MATLAB**

**A blue and white logo with a book and a flame

AI-generated content may be incorrect.**

**TRANSFORMATOR**

**MATA KULIAH FISIKA LISTRIK DAN MAGNET**

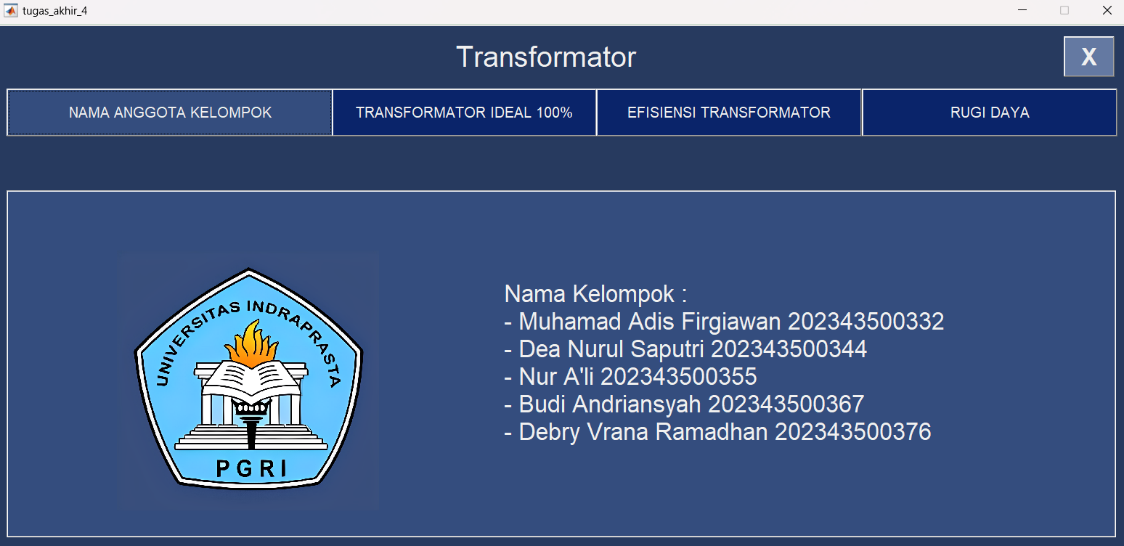
**DISUSUN OLEH KELOMPOK 4**

|  |  |
| --- | --- |
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**TRANSFORMATOR PADA MATLAB**

**( PushButton )**

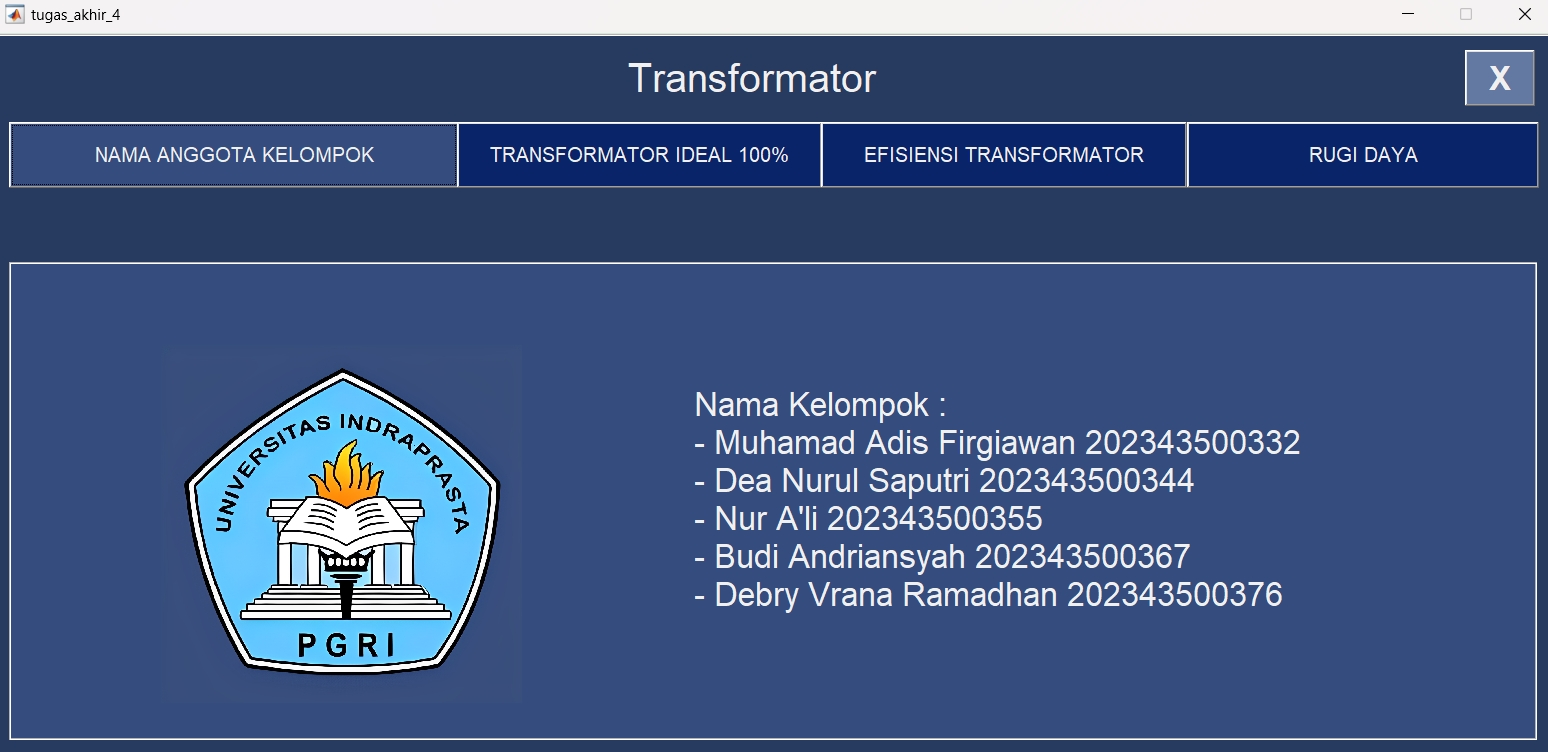
1. **Tampilan GUI**
2. Menu Utama



Pada Menu Utama ini ada beberapa handles bernama PushButton, antara lain :

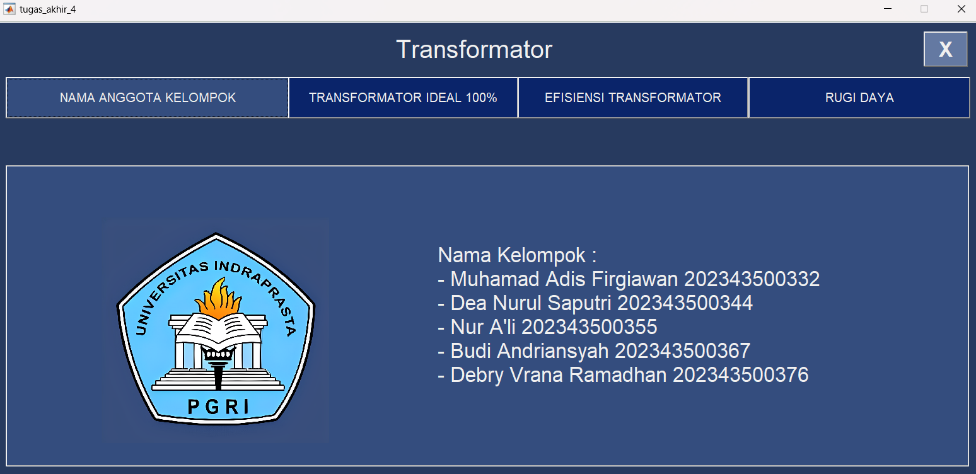
1. Nama Anggota Kelompok
2. Transformator Ideal 100%
3. Efisiensi Transformator
4. Rugi Daya
5. X (exit)

Saat menekan PushButton tersebut maka GUI akan menampilkan perintah dari user yaitu :

* 1. Nama Anggota Kelompok 

Maka akan keluar tampilan GUI seperti berikut :

Nama-nama anggota kelompok 4



* 1. Transformator Ideal 100% 

Maka akan keluar tampilan GUI seperti berikut :

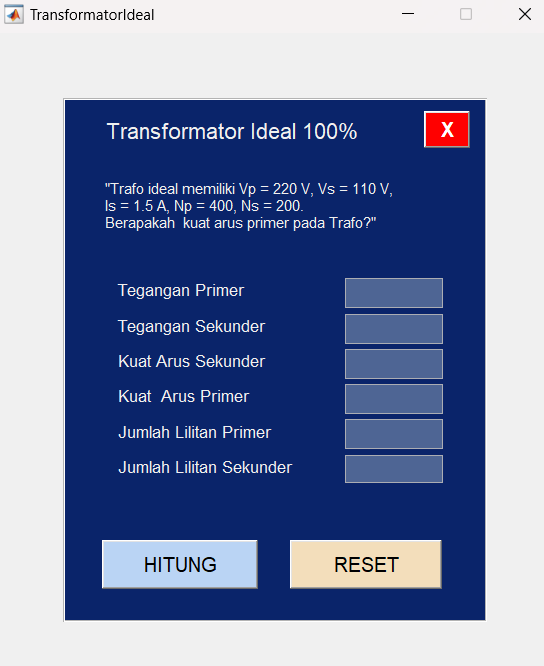
Pengertian Tranformator Ideal



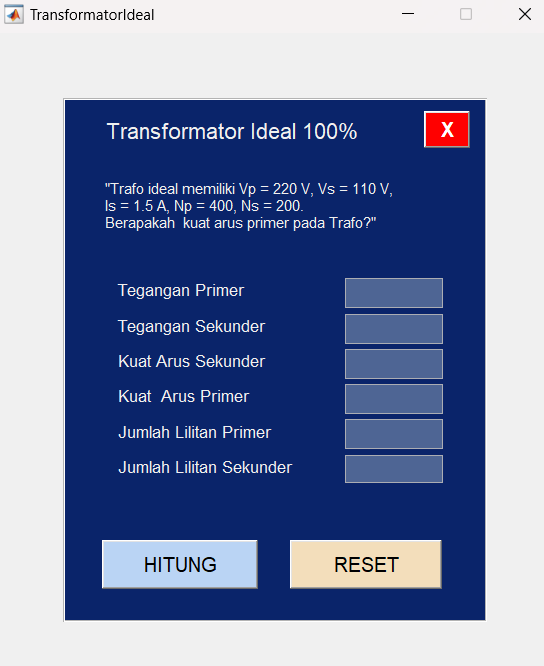
Kita lihat ada PushButton, seperti gambar :



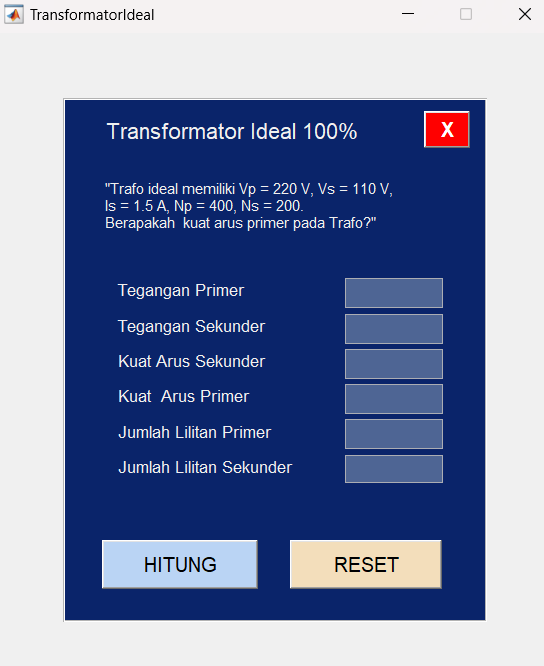
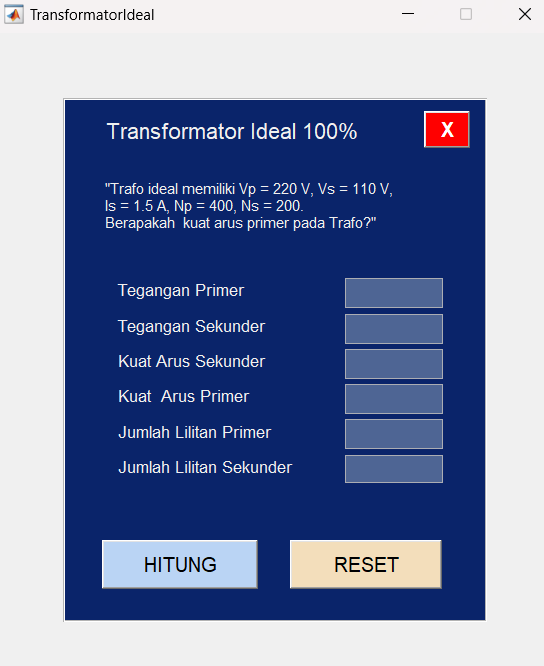
Ketika tekan tombol KALKULATOR, maka akan keluar tampilan seperti berikut :



Pada tampilan gambar diatas, ada beberapa handles dan mempunyai fungsi masing-masing, seperti :



Input ( edit text ), ditempat ini lah kita memasukkan angka yang akan di proses.

Lalu ada PushButton yang berguna untuk melakukan perhitungan dengan tombol HITUNG, tombol RESET berguna untuk mengulang dan tombol X untuk close (keluar) program.

Kita masuk ke dalam contoh perhitungan menggunakan program ini dengan memasukkan angka dan menekan tombol HITUNG, seperti gambar berikut ini :

Contoh :

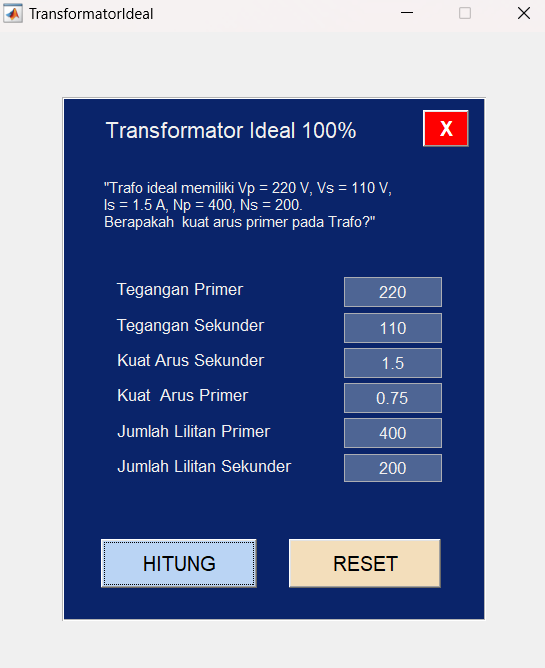
Dik : Vp = 220 V Np = 400 lilitan

Vs = 110 V Ns = 200 lilitan

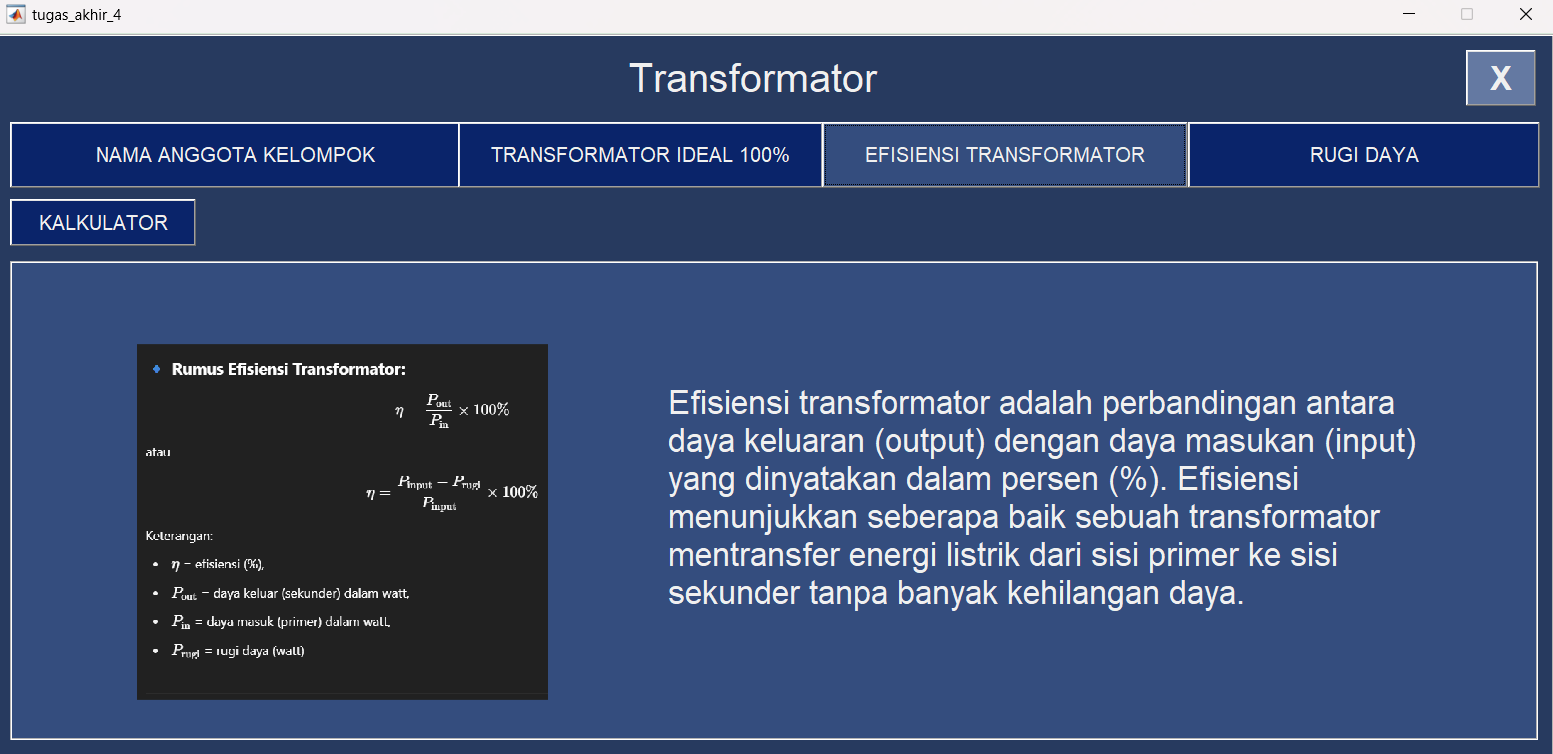
Is = 1.5 A

Dit : Kuat arus primer pada Trafo?

Jawab :

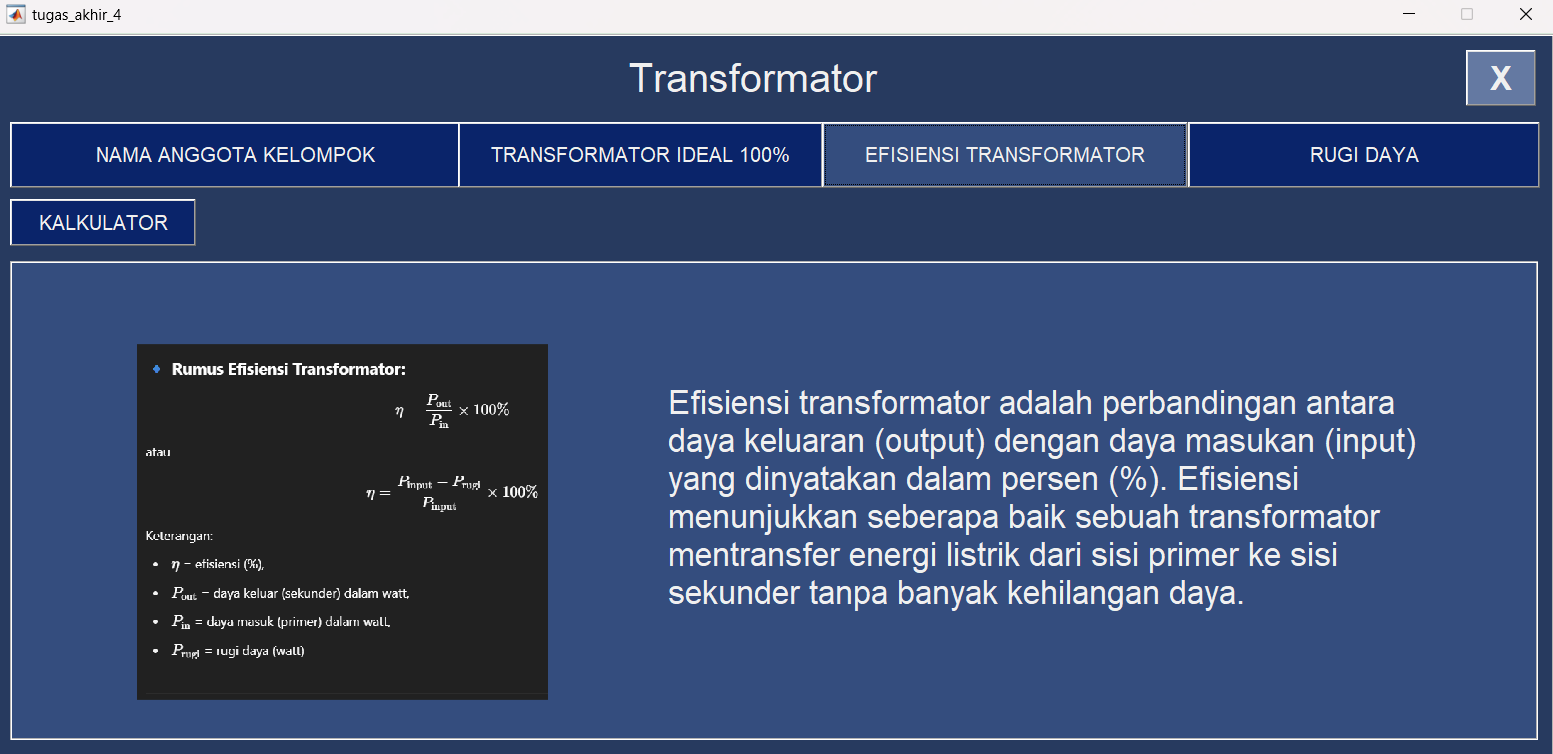


Karna yang ditanya kuat arus primer makan hasilnya keluar pada kolom edit text kuat arus primer dengan hasil 0.75 .

* 1. Efisiensi Transformator 

Maka akan keluar tampilan GUI seperti berikut :

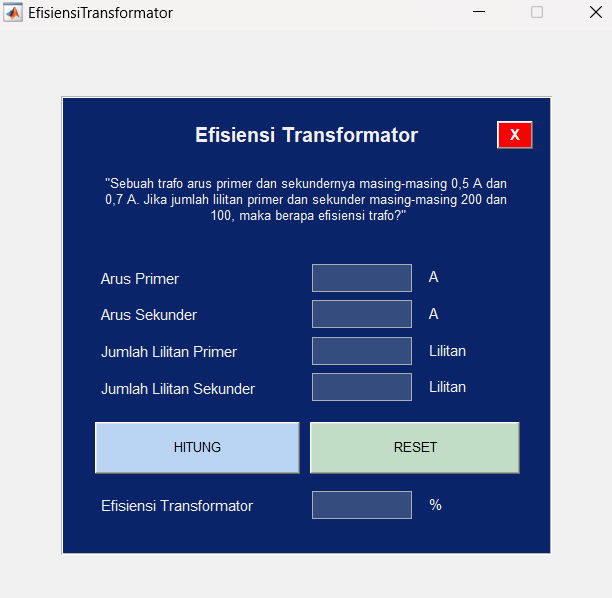
Pengertian Efisiensi Transformator



Kita lihat ada PushButton, seperti gambar :



Sama seperti sebelumnya ketika tekan tombol KALKULATOR, maka akan keluar tampilan seperti berikut:



Kita masuk ke dalam contoh perhitungan menggunakan program ini dengan memasukkan angka dan menekan tombol HITUNG, seperti gambar berikut ini:

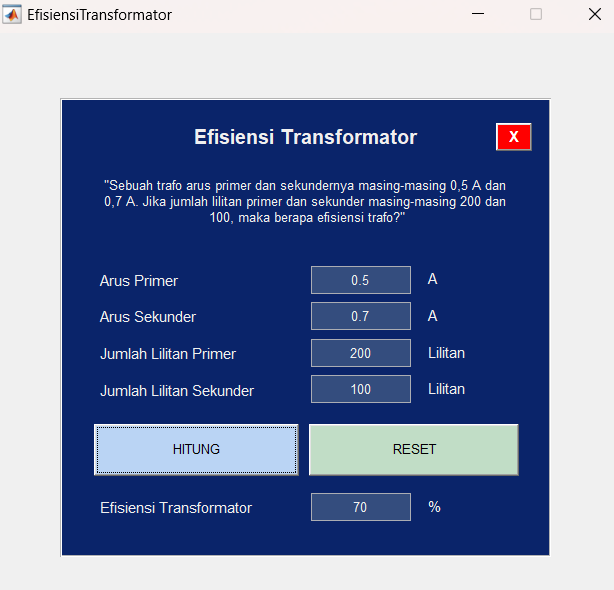
Contoh :

Dik : Ip = 0.5 A Np = 200 lilitan

Is = 0.7 A Ns = 100 lilitan

Dit : Efisiensi trafo?

Jawab :



* 1. Rugi Daya 

Maka akan keluar tampilan GUI seperti berikut :

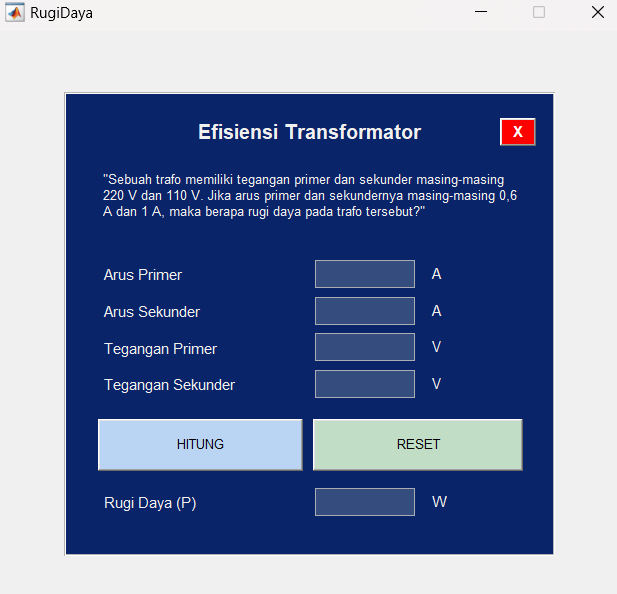
Pengertian Rugi Daya



Kita lihat ada PushButton, seperti gambar :



Sama seperti sebelumnya ketika tekan tombol KALKULATOR, maka akan keluar tampilan seperti berikut:



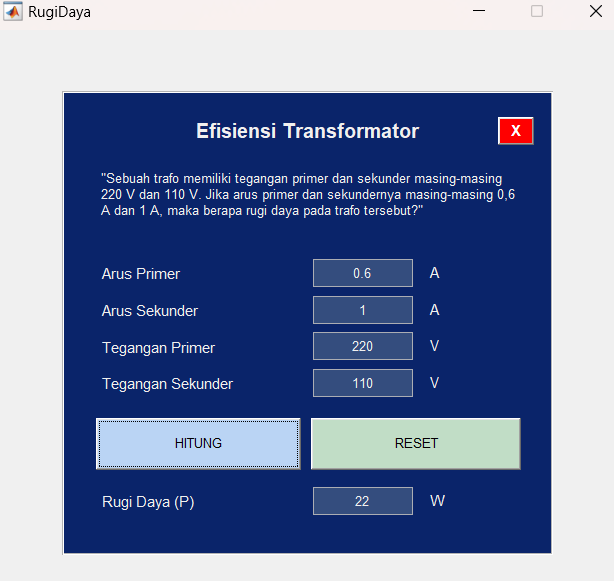
Masuk ke contoh soal Rugi Daya, contoh:

Dik : Ip = 0.6 A Vp = 220 V

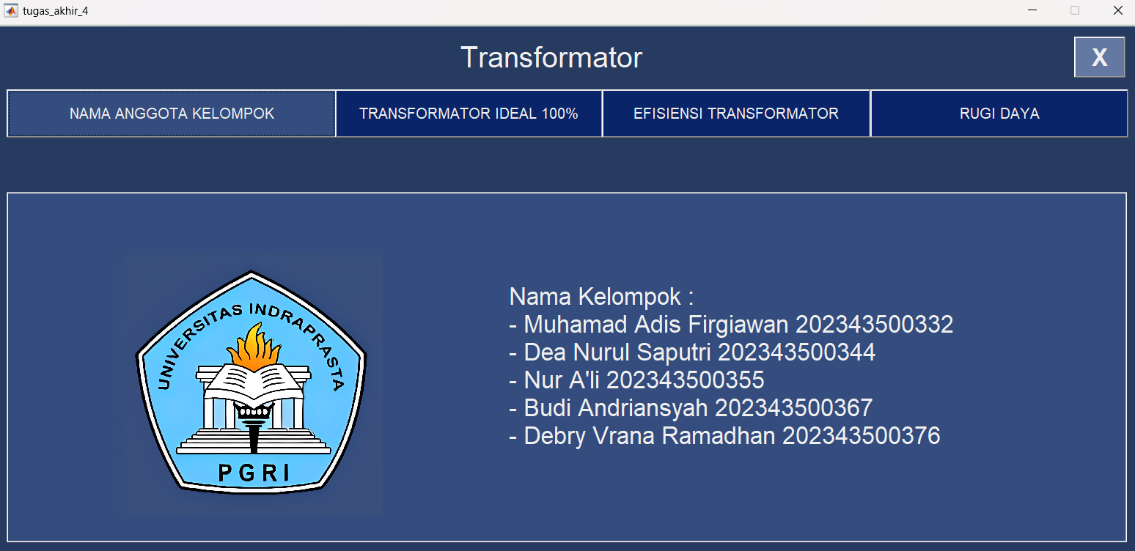
Is = 1 A Vs = 110 V

Dit : Rugi daya pada trafo?

Jawab :



1. **Kodingan Program**
2. Nama Anggota Kelompok



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1. Nama Anggota Kelompok

function navbar1\_Callback(hObject, eventdata, handles)

set(handles.navbar1,'BackgroundColor',[52 77 126] /255);

set(handles.navbar2,'BackgroundColor',[10 36 106] /255);

set(handles.navbar3,'BackgroundColor',[10 36 106] /255);

set(handles.navbar4,'BackgroundColor',[10 36 106] /255);

set(handles.content1,'Visible','on');

set(handles.content2,'Visible','off');

set(handles.content3,'Visible','off');

set(handles.content4,'Visible','off');

1. Gambar

if strcmp(get(handles.content1, 'Visible'), 'on')

axes(handles.content1\_1);

imshow('content1\_1.png');

axis off;

set(handles.kalkulator,'Visible','off');

end

1. X (exit)

function close\_Callback(hObject, eventdata, handles)

close;

1. Transformator Ideal



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1. Transformator Ideal

function navbar2\_Callback(hObject, eventdata, handles)

set(handles.navbar1,'BackgroundColor',[10 36 106] /255);

set(handles.navbar2,'BackgroundColor',[52 77 126] /255);

set(handles.navbar3,'BackgroundColor',[10 36 106] /255);

set(handles.navbar4,'BackgroundColor',[10 36 106] /255);

set(handles.content1,'Visible','off');

set(handles.content2,'Visible','on');

set(handles.content3,'Visible','off');

set(handles.content4,'Visible','off');

1. Gambar

if strcmp(get(handles.content2, 'Visible'), 'on')

axes(handles.content2\_1);

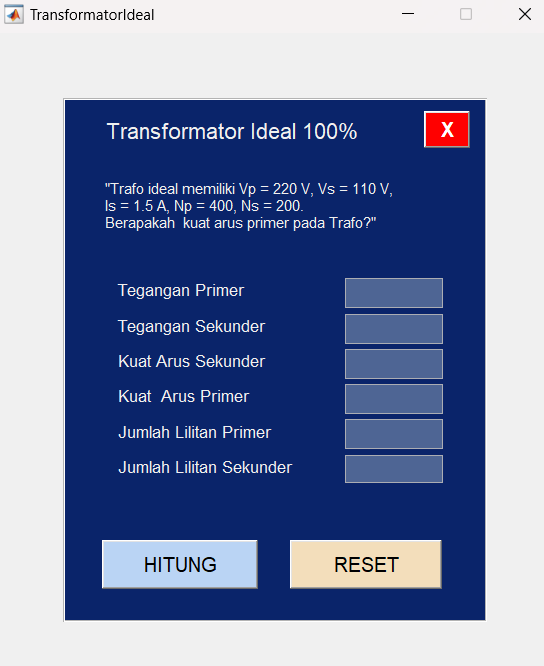
imshow('content2\_1.png');

axis off;

1. Kalkulator

set(handles.kalkulator,'Visible','on');

end



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1. HITUNG

function hitung\_Callback(hObject, eventdata, handles)

% Ambil nilai dari edit text

Vp = str2double(get(handles.vp, 'String'));

Vs = str2double(get(handles.vs, 'String'));

Ip = str2double(get(handles.ip, 'String'));

Is = str2double(get(handles.is, 'String'));

Np = str2double(get(handles.np, 'String'));

Ns = str2double(get(handles.ns, 'String'));

inputs = [~isnan(Vp), ~isnan(Vs), ~isnan(Ip), ~isnan(Is), ~isnan(Np), ~isnan(Ns)];

valid\_count = sum(inputs);

v\_valid = (~isnan(Vp) && ~isnan(Vs));

i\_valid = (~isnan(Ip) && ~isnan(Is));

n\_valid = (~isnan(Np) && ~isnan(Ns));

% jika ada lebih dari 3 input dan jumlah pecahan kurang dari atau sama dengan 2

if (v\_valid + i\_valid + n\_valid <= 2)

% Cek pecahan mana yang valid

if v\_valid

k = Vp / Vs;

if(isnan(Ip) && ~isnan(Is))

Ip\_hasil = Is/k;

set(handles.ip, 'String', num2str(Ip\_hasil));

elseif(isnan(Is) && ~isnan(Ip))

Is\_hasil = Ip\*k;

set(handles.is, 'String', num2str(Is\_hasil));

elseif(isnan(Ip) && isnan(Is))

set(handles.ip, 'String','');

set(handles.is, 'String','');

end

if(isnan(Np) && ~isnan(Ns))

Np\_hasil = Ns\*k;

set(handles.np, 'String', num2str(Np\_hasil));

elseif(isnan(Ns) && ~isnan(Np))

Ns\_hasil = Np/k;

set(handles.ns, 'String', num2str(Ns\_hasil));

elseif(isnan(Np) && isnan(Ns))

set(handles.np, 'String','');

set(handles.ns, 'String','');

end

elseif i\_valid

k = Is / Ip;

if(isnan(Vp) && ~isnan(Vs))

Vp\_hasil = Vs\*k;

set(handles.vp, 'String', num2str(Vp\_hasil));

elseif(isnan(Vs) && ~isnan(Vp))

Vs\_hasil = Vp/k;

set(handles.vs, 'String', num2str(Vs\_hasil));

elseif(isnan(Vp) && isnan(Vs))

set(handles.vp, 'String','');

set(handles.vs, 'String','');

end

if(isnan(Np) && ~isnan(Ns))

Np\_hasil = Ns\*k;

set(handles.np, 'String', num2str(Np\_hasil));

elseif(isnan(Ns) && ~isnan(Np))

Ns\_hasil = Np/k;

set(handles.ns, 'String', num2str(Ns\_hasil));

elseif(isnan(Np) && isnan(Ns))

set(handles.np, 'String','');

set(handles.ns, 'String','');

end

elseif n\_valid

k = Np / Ns;

if(isnan(Vp) && ~isnan(Vs))

Vp\_hasil = Vs\*k;

set(handles.vp, 'String', num2str(Vp\_hasil));

elseif(isnan(Vs) && ~isnan(Vp))

Vs\_hasil = Vp/k;

set(handles.vs, 'String', num2str(Vs\_hasil));

elseif(isnan(Vp) && isnan(Vs))

set(handles.vp, 'String','');

set(handles.vs, 'String','');

end

if(isnan(Ip) && ~isnan(Is))

Ip\_hasil = Is/k;

set(handles.ip, 'String', num2str(Ip\_hasil));

elseif(isnan(Is) && ~isnan(Ip))

Is\_hasil = Ip\*k;

set(handles.ip, 'String', num2str(Is\_hasil));

elseif(isnan(Ip) && isnan(Is))

set(handles.ip, 'String','');

set(handles.is, 'String','');

end

end

end

if (v\_valid + i\_valid + n\_valid > 2) % lebih dari 2 pecahan

if((Vp/Vs == Is/Ip) && (Is/Ip == Np/Ns))

set(handles.alert,'Visible','On');

set(handles.alert, 'BackgroundColor', [193 221 198] / 255);

set(handles.alert, 'ForegroundColor', [0 0 0]);

set(handles.alert, 'String', 'Kondisi Transformator Ideal');

else

set(handles.alert,'Visible','On');

set(handles.alert, 'BackgroundColor', [1 0 0]);

set(handles.alert, 'ForegroundColor', [1 1 1]);

set(handles.alert, 'String', 'Input penuh / Transformator tidak ideal');

end

end

if (valid\_count < 3)

set(handles.alert,'Visible','On');

set(handles.alert, 'BackgroundColor', [1 0 0]);

set(handles.alert, 'ForegroundColor', [1 1 1]);

set(handles.alert, 'String', 'Masukkan minimal 3 nilai!');

end

1. RESET

function reset\_Callback(hObject, eventdata, handles)

set(handles.alert,'Visible','Off');

set(handles.vp,'String','');

set(handles.vs,'String','');

set(handles.ip,'String','');

set(handles.is,'String','');

set(handles.np,'String','');

set(handles.ns,'String','');

1. X (EXIT)

function close\_Callback(hObject, eventdata, handles)

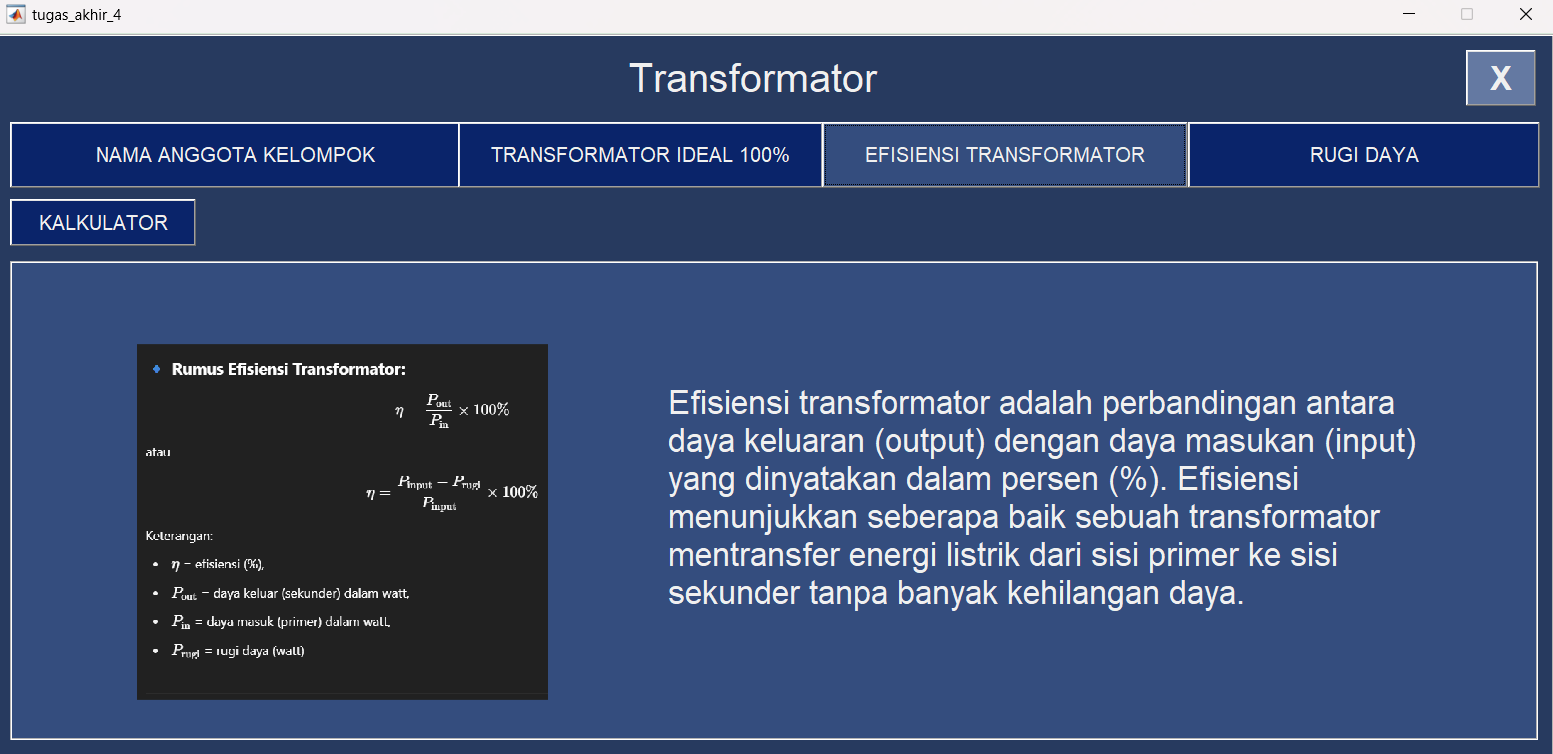
close;

1. X(EXIT)

function close\_Callback(hObject, eventdata, handles)

close;

1. Efesiensi Transformator



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1. Efesiensi Transformator

function navbar3\_Callback(hObject, eventdata, handles)

set(handles.navbar1,'BackgroundColor',[10 36 106] /255);

set(handles.navbar2,'BackgroundColor',[10 36 106] /255);

set(handles.navbar3,'BackgroundColor',[52 77 126] /255);

set(handles.navbar4,'BackgroundColor',[10 36 106] /255);

set(handles.content1,'Visible','off');

set(handles.content2,'Visible','off');

set(handles.content3,'Visible','on');

set(handles.content4,'Visible','off');

1. Gambar

if strcmp(get(handles.content3, 'Visible'), 'on')

axes(handles.content3\_1);

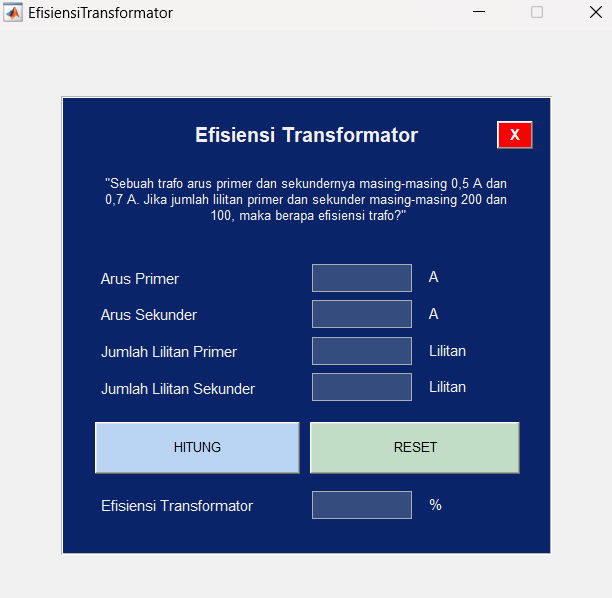
imshow('content3\_1.png');

axis off;

1. Kalkulator

set(handles.kalkulator,'Visible','on');

end



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1. HITUNG

function hitung2\_Callback(hObject, eventdata, handles)

Ip2 = str2double(get(handles.ip2,'string'));

Is2 = str2double(get(handles.is2,'string'));

Np2 = str2double(get(handles.np2,'string'));

Ns2 = str2double(get(handles.ns2,'string'));

n = ((Is2\*Ns2)/(Ip2\*Np2))\*100%;

set(handles.output2,'string',n);

1. RESET

function reset2\_Callback(hObject, eventdata, handles)

set(handles.ip2,'string','');

set(handles.is2,'string','');

set(handles.np2,'string','');

set(handles.ns2,'string','');

set(handles.output2,'string','');

1. X (EXIT)

function close2\_Callback(hObject, eventdata, handles)

close;

1. X (EXIT)

function close\_Callback(hObject, eventdata, handles)

close;

1. Rugi Daya



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1. Rugi Daya

function navbar4\_Callback(hObject, eventdata, handles)

set(handles.navbar1,'BackgroundColor',[10 36 106]/255);

set(handles.navbar2,'BackgroundColor',[10 36 106]/255);

set(handles.navbar3,'BackgroundColor',[10 36 106]/255);

set(handles.navbar4,'BackgroundColor',[52 77 126]/255);

set(handles.content1,'Visible','off');

set(handles.content2,'Visible','off');

set(handles.content3,'Visible','off');

set(handles.content4,'Visible','on');

1. Gambar

if strcmp(get(handles.content4, 'Visible'), 'on')

axes(handles.content4\_1);

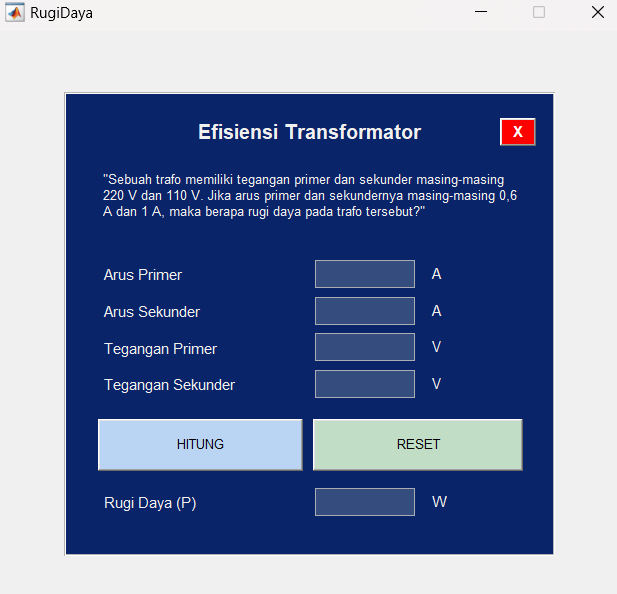
imshow('content4\_1.png');

axis off;

1. Kalkulator

set(handles.kalkulator,'Visible','on');

end



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1. HITUNG

function hitung3\_Callback(hObject, eventdata, handles)

Ip3 = str2double(get(handles.ip3,'string'));

Is3 = str2double(get(handles.is3,'string'));

Vp3 = str2double(get(handles.vp3,'string'));

Vs3 = str2double(get(handles.vs3,'string'));

Prugi = (Vp3\*Ip3)-(Vs3\*Is3);

set(handles.output3,'string',Prugi);

1. RESET

function reset3\_Callback(hObject, eventdata, handles)

set(handles.ip3,'string','');

set(handles.is3,'string','');

set(handles.vp3,'string','');

set(handles.vs3,'string','');

set(handles.output3,'string','');

1. X (EXIT)

function close3\_Callback(hObject, eventdata, handles)

close;

4) X( EXIT)

function close\_Callback(hObject, eventdata, handles)

close;

1. Kalkulator

function kalkulator\_Callback(hObject, eventdata, handles)

if strcmp(get(handles.content2, 'Visible'), 'on')

TransformatorIdeal;

elseif strcmp(get(handles.content3, 'Visible'), 'on')

EfisiensiTransformator;

elseif strcmp(get(handles.content4, 'Visible'), 'on')

RugiDaya;

end