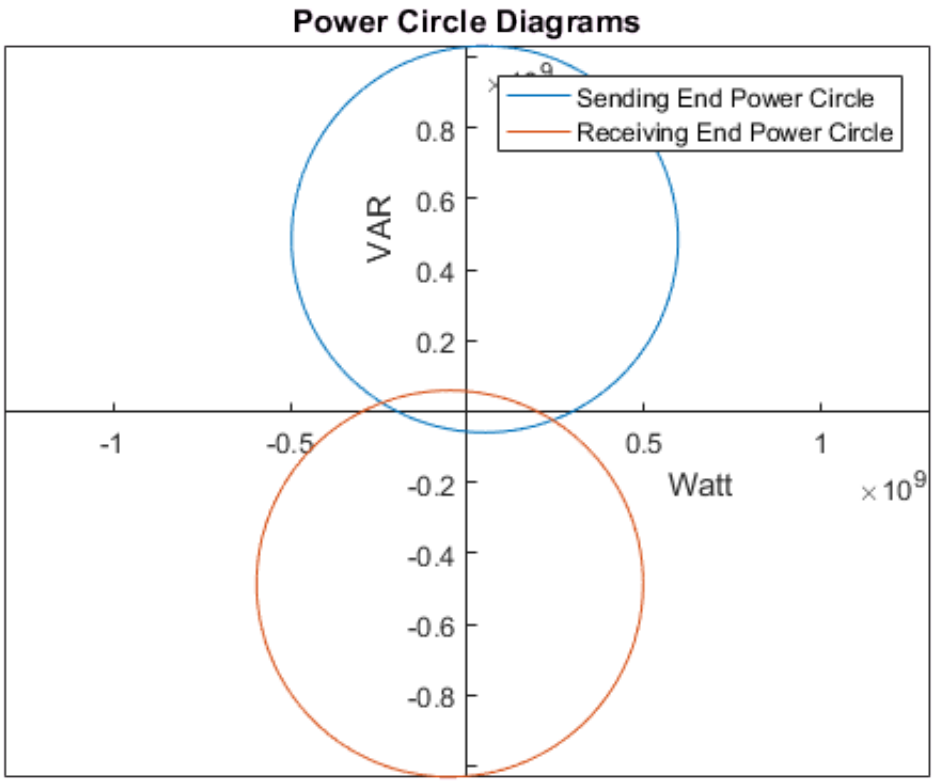
Power Circle Diagram

This program allows plots a power circle diagram using given Values of *Vs, Vr, A and B* and plots the sending end and receiving end graphs on a single figure.

Way of giving input

All the Values are Comples, so the Sending End and Receiving End Volages should be pre adjusted before giving any input to eliminate the error in the circle diagram location in the **a + bi** format. The Values of the A and B parameter is to be given in the **a + bi** format

```
%------------------------Input Section-------------------------------------
Vs = input('Enter Vs in (a + bi) form : ');
%Taking Inputs for the Sending end voltage vector
Vr = input('Enter Vr in (a + bi) form : ');
%taking input for the Receiving end voltage Vector
A = input('Enter the A Parameter in (a + bi) form : ');
%Takng input for the A parameter of the line
B = input('Enter the B Parameter in (a + bi) form : ');
%Taking input for the B parameter of the line

%--------------Processing section--------------------

R = (abs(Vs)*abs(Vr))/abs(B);
%Calculation of radius of the Power Circle
CntrR = (abs(A)*abs(Vr)*abs(Vr))/abs(B);
%Calculation of the Centre of the power circle

%-----------------Plotting Section-------------------

th = linspace( 0, 2*pi , 3600);
%Threshold of the receiving end power Circle
x = R*cos(th) + CntrR*cos(angle(B));
y = R*sin(th) + CntrR*sin(angle(B));
plot(x,y,'DisplayName','Sending End Power Circle')

hold on
x1 = R*cos(th) - CntrR*cos(angle(B));

y1 = R*sin(th) - CntrR*sin(angle(B));
%Equation of the circle in cartesian form
plot(x1,y1,'DisplayName','Receiving End Power Circle')

%-----------Plot Formatting Section-----------------

legend('show')
axis equal   %plotting the x,y plot with equal axis ratios
ax = gca;   %creating the axes
ax.XAxisLocation = 'origin';
ax.YAxisLocation = 'origin';
title('Power Circle Diagrams');
xlabel('Watt');
ylabel('VAR');
```



Inputs given for the plot are:

1. Vs = 275000
2. Vr = 275000
3. A = 0.896+0.0106i
4. B = 14+138i