ISSN 2278-7763

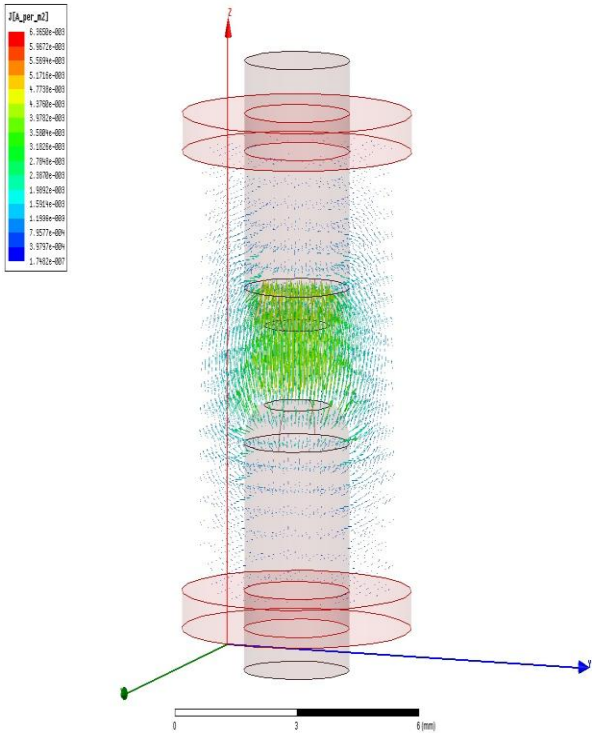
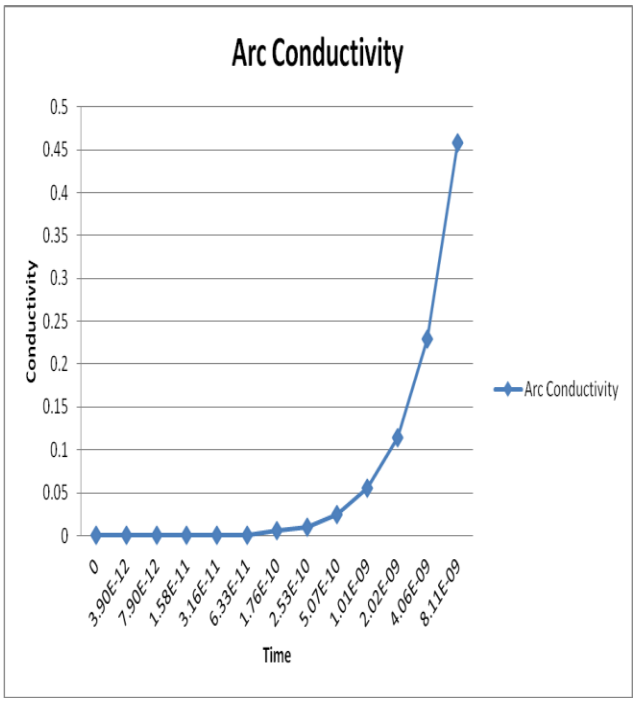


Figure 3.3 Current Density j at 1ns.



Graph 4.1 conductivity of Arc vs. time

2) Transient behavior:

The electric field and magnetic field values from the t=0 to t=1ns has been observed by model .The heat losses is rapidly increases during the t = 0+.As current zero achieved the direction of the j and E reversed as sinusoidal voltage and current has been applied and so at current zero heat looses is low and that is the time to open the contact so as much as safe operation has been followed and finally arc will extinguished.

4 ANALYSES OF THE SIMULATION

To find the characteristically behavior of the intercontact gap.

Using E and j values,

$$j = \sigma E \quad \ldots\ldots\ldots (8)$$

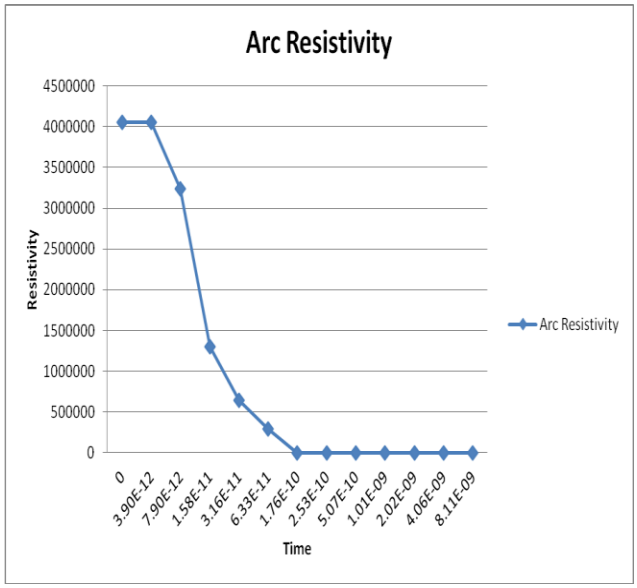
$$\sigma = j/E \quad \ldots\ldots\ldots (9)$$

$$R = 1/\sigma \quad \ldots\ldots\ldots (10)$$

Where,
j=Current density in the air, (A/m^2);
E=Electric field intensity in air, (V/m)
R=resistance of an arc, (Ω)
σ = Conductivity of an Arc, (℧)

Using above Equation (8) and (9),

The behavior of the arc is shown in graphs,



Graph 4.2 Resistivity of Arc vs. Time

5 CONCLUSION

The arc resistivity clearly shows that in the beginning at t=0 arc resistance in $10^6\Omega$ than rapidly decreased in the few ns. It is zero at 1.76×10^{-10} sec. Arc is taken place with thermal break down of the air. The current density rapidly starts increases as shown in the model, as this model shows the dynamic behavior of an arc.

5 ACKNOWLEDGMENTS

We would like to thanks Dr.M.K.Shah for his Support throughout the work. We would also like to thanks Dr.V.Shrinet for giving me lots of space to work in the technical environments.

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7. BIOGRAPHIES

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