



## **Power System Stability Analysis of Single Machine Infinite Bus System using Firefly Algorithm**

Shreya Namdev  
M. Tech. Scholar  
Electrical & Electronics Dept.  
Swami Vivekanand College of  
Engineering, Indore (India)  
[namdevshreya@gmail.com](mailto:namdevshreya@gmail.com)

Nidhi Khurpiya  
Assistant Professor  
Electrical & Electronics Dept.  
Swami Vivekanand College of  
Engineering, Indore (India)  
[nidhikhurpiya@svceindore.ac.in](mailto:nidhikhurpiya@svceindore.ac.in)

Dr. Dev Kumar Rai  
HOD, Electrical & Electronics  
Dept., Swami Vivekanand  
College of Engineering, Indore  
(India)  
[dev47076@gmail.com](mailto:dev47076@gmail.com)

*Abstract* – With the growth of interconnected power systems and particularly the deregulation of the industry, difficulties related to low frequency oscillation have been widely reported, together with major incidents. As the most economical damping controller, power system stabilizer (PSS) has been widely used to suppress the low frequency oscillation and enhance the system dynamic stability. Traditional methods for determining PSS placements are based on the analysis of the interconnected system. Though, the design of the PSS is based on a simplified single machine infinite bus (SMIB) model. Traditional methods for determining PSS placements are based on the analysis of the interconnected system. In this paper, the design of the PSS is based on a simplified single machine infinite bus (SMIB) model using Firefly Algorithm. SMIB with PID controller is also implemented.

*Keywords* –FACTS, Firefly, PID, PSS, PSO, SMIB, TCSC, SVC.