

# Mitigation of Inrush Current in Transformer

**Anil K. Pathak<sup>1</sup>, Warghude Bipin Sanjay<sup>2</sup>, Lahare Vaishnavi Vijay<sup>3</sup>,**

**Sanap Sanket Balasaheb<sup>4</sup>, Borude Apurva Rushikesh<sup>5</sup>**

Assistant Professor, Department of Electrical Engineering<sup>1</sup>

Students, Department of Electrical Engineering<sup>2,3,4,5</sup>

Amrutvahini College of Engineering, Sangamner, A.Nagar, MH

**Abstract:** *This project focuses on addressing power quality issues, specifically the problem of inrush current and voltage sags that occur in electrical distribution systems during the energization of transformers or large inductive loads. These disturbances can severely affect the performance of sensitive equipment and disrupt industrial and commercial operations. To mitigate these issues, the study proposes the use of a Series Voltage Sag Compensator (SVSC), a custom power device that injects a compensating voltage in series with the line to stabilize voltage levels during disturbances. The SVSC system is modeled and simulated using MATLAB/Simulink to analyze its effectiveness under various operating conditions. The simulation results clearly demonstrate that the compensator significantly reduces voltage sags and inrush currents, thereby enhancing power quality, improving system stability, and ensuring the reliable operation of connected equipment. This research provides a practical solution for modern power systems facing increasing demands for consistent and high-quality electrical power.*

**Keywords:** Inrush Current, Voltage Sag, Power Quality, Series Voltage Sag Compensator, MATLAB Simulation

