

## **ABSTRACT**

The comprehensive simulation and analysis of transmission and distribution networks for the Mahad Industrial Areas, with a particular emphasis on the Maharashtra Industrial Development Corporation (MIDC), is critical for detecting issues and suggesting solutions. This study dives into the complex dynamics of the pipeline network, house connection representation, and the main pipeline's L-section to completely measure pressure gradients. The research uses advanced simulation approaches to untangle the intricacies inherent in these systems, allowing for a more nuanced understanding of their operation and interdependence. Pressure differentials, flow abnormalities, and network inefficiencies are analyzed to identify locations that require action. Proposing corrective actions include developing methods to improve network performance, increase dependability, and prevent possible interruptions. This comprehensive strategy allows stakeholders to address concerns proactively, enhancing the resilience and sustainability of the Mahad region's industrial infrastructure. Finally, the findings of this study may be used to influence policy choices, direct infrastructure expenditures, and promote innovation in network management methods, creating a favorable climate for industrial growth and prosperity in MIDC-managed areas.