



TNChE Asia 2024 Conference
" Decarbonization, AI and Digital Transformation
for Sustainability in Process Industries "
Presenter's Biodata & Abstract



Full Name : MAYURESH MOKAL

Company/ Organization: INGENERO INC

Current Position : DIGITAL SOLUTIONS CLIENT ENGAGEMENT



Title of Presentation : "Generative AI" assists Process Manufacturers in achieving sustainability and meeting reliability goals within a condensed timeframe

Presentation Abstract :

The advent of generative artificial intelligence (AI) presents a promising avenue for process manufacturers to realize sustainability objectives and meet reliability goals within accelerated timelines. This abstract delves into the pivotal role of generative AI in asset sustainability and reliability, with a particular emphasis on energy monitoring, management, and optimization, culminating in the attainment of 2030 and 2050 targets.

Generative AI technologies, harnessing advanced machine learning algorithms, empower process manufacturers to revolutionize energy monitoring and management practices. By ingesting vast streams of real-time data from systems and soft-sensors, AI-driven solutions provide actionable insights into energy consumption patterns, identifying anomalies, inefficiencies and opportunities for optimization.

Furthermore, generative AI facilitates the development of predictive maintenance models that enhance asset reliability and longevity. By analyzing historical performance data and detecting anomalies indicative of potential failures, AI algorithms enable preemptive interventions, minimizing downtime and mitigating risks to operations.

The convergence of generative AI with energy optimization strategies holds immense potential for driving sustainability initiatives forward. Through scenario simulations and



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optimization algorithms, AI systems optimize energy utilization across manufacturing processes, reducing carbon emissions, and minimizing environmental impact.

Use cases spotlight the transformative impact of generative AI in achieving long-term sustainability and reliability objectives. From predictive maintenance interventions that prevent costly breakdowns to energy optimization strategies that align with 2030 and 2050 sustainability targets, process manufacturers are empowered to navigate towards a more sustainable future.

In conclusion, the integration of generative AI in energy monitoring, management, and optimization is instrumental in propelling process manufacturers towards the attainment of their 2030 and 2050 sustainability and reliability goals. Through continual innovation and collaboration, the industry can harness the full potential of AI to drive meaningful change, foster sustainability, and ensure operational resilience in the face of evolving challenges.