



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



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Title of Presentation : "AI and Decarbonization Technologies for a Sustainable World"

Presentation Abstract: Decarbonization refers to the reduction or/and elimination of carbon dioxide (CO₂) emissions from a variety of carbon fossil sources employed in energy generation, transportation, and industrial processes. It requires the utilization and development of clean, renewable energy (i.e., solar, wind power, geothermal, hydroelectric, etc.) and materials sources, having a significantly smaller carbon footprint than the presently used fossil fuels. By switching to cleaner energy and renewable materials sources we can ensure our energy security and sustainability in addition to aiding our fight against climate change.

Lowering carbon emissions is a major problem for the world, and AI and ML can be useful instruments in this endeavor. More sustainable and effective energy systems may be achieved by optimizing energy use, transportation, renewable energy, and carbon capture technologies.

According to a recent report by Datategy "Artificial intelligence (AI) has the potential to play a transformative role in renewable energy generation and decarbonization technologies, helping to reduce greenhouse gas emissions and transition to a low-carbon economy". Since 75% of all global greenhouse gas (GHG) emissions are caused by producing and consuming energy, more AI for energy needs to be developed, if decarbonization is one of the goals. Present research studies show that AI can be applied to a wide range of decarbonization challenges. In particular, AI technologies can reduce GHG emissions by 4% to 16% until 2030.

To address the above challenges in renewable energy-materials sources and decarbonization technologies we need to provide answers to some key questions: *How can AI be used to solve the most pressing issues around energy decarbonization? How can AI accelerate energy decarbonization? How to enable 'AI-readiness' in energy? How to reduce the 'time to AI' in energy?*

In this presentation, we will see that exploiting the benefits of AI in renewable energy sources and decarbonization technologies is not just an ambition, but a verifiable and dynamic reality.