

## **878 – Decarbonization of refining & petrochemical through electrification and digital**

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Abstract: Oil & gas industry accounts for 9% of the total man-made GHG emissions. Owner-operators are accelerating decarbonization strategies that are pillared around energy efficiency, electrification and carbon management. Electricity accounts for less than 5% of the total energy consumption in O&G downstream. Hence process electrification plays a critical role in downstream decarbonization. Electrification replaces the largest of fossil fuel consumers in the plant with electricity driven processes- process heating and process motion being the biggest end use with high potential. Process changes powered by electrical energy is just one part of the journey. Process electrification will multiply the size of a plant's powers system by 10 to 20 times. Demand optimization – changing the consumption pattern in continuous processes – poses another big challenge. Optimized power system design, clean power procurement, demand side flexibility etc are critical factors contributing to the viability of heavy process electrification. This paper discusses the critical role of digital and modelling technologies to make electrification viable and profitable.