

The Prospect of Utilities Hubs in the Kingdom's Nuclear Power Plants

It is no secret that Industries play a substantial role to pollution. In 2010, the industrial sector was responsible for approximately 28% of total GHG emissions as well as total energy consumption. While, nuclear power plants are one of the well-known answers to this serious concern, their current implementation & optimization leave a lot to be desired.

NPP Utilities Hub is the fundamental change that represents a pivotal transformation, offering a revolutionary approach to mitigate such emergent crises. It boosts the capacity to elevate NPP utilization & effectiveness to an unprecedented level.

Nuclear utilities hubs are reliable unlike solar and wind energy solutions. Carbon emissions are not present and they have superior energy density which is the best recipe for power-hungry industrial cities.

A utilities hub is a versatile & flexible plant that can be integrated & coupled with any NPP & industrial city, ensuring consistent and reliable supply of essential utilities. Electricity can be generated while eliminating emissions from conventional power solutions. Additionally, instead of diverting the indispensable excess steam to the environment, it can be transferred for the industries & the residential. Finally, valuable hydrogen will be a potential stream instead of the energy intensive process (Steam Methane Reforming).

In conclusion, it is recommended to consider all measures in the kingdom's NPPs to enable for future complete low emissions' industrial cities. Such optimization can be furtherly explored in the current & future country's industrial cities. This capitalization & deployment is projected to have a tremendous economical outcome as well as environmental benefits that are aligned with the kingdom's 2030 vision & 2060 targets.

Speaker Bio

Primary author: ALGHAMDI, MAJDI (Mechanical Engineering)

Co-author: SHAMS, Afaque (Mechanical Engineering)

Session Classification: Day 2- Poster Competition

Track Classification: Student competition