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TOWARDS A SUSTAINABLE FUTURE : SMR SMART NET-ZERO CITY

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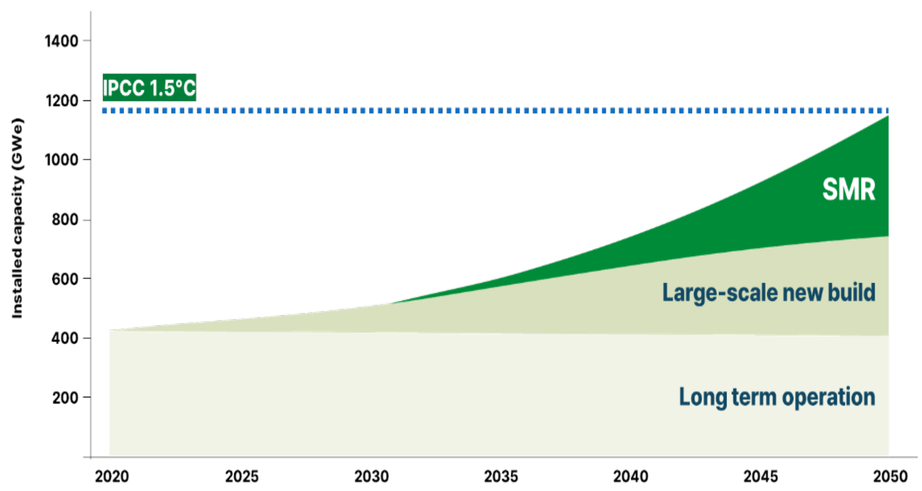
Introduction

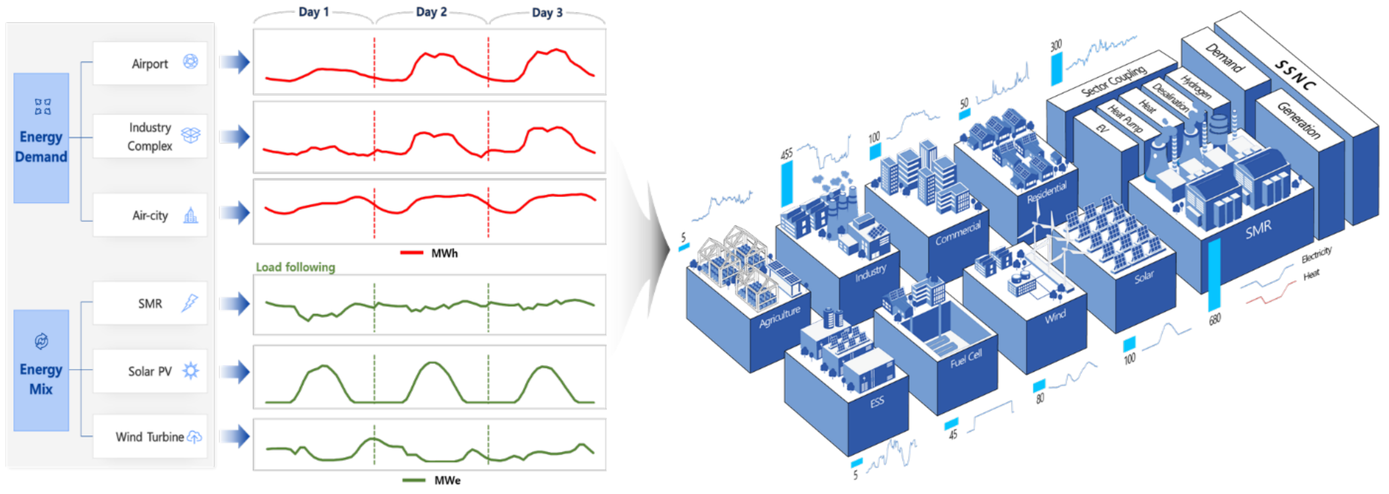
- The 90 pathways for the 1.5℃ scenario considered by the Intergovernmental Panel on Climate Change(IPCC)
- NEA(Nuclear Energy Agency): Require nuclear energy to triple and to reach 1,160 gigawatts of electricity by 2050
- Reaching the electrical capacity(1,160 gigawatts) would avoid 87 gigatonnes of cumulative emissions between 2020 and 2050
- KHNP SMR Smart Net-zero City(SSNC) designs a feasible carbon-neutral city by combining SMRs and smart cities
- SMR is able to supply not only electricity but also process heat, it can be used simultaneously in various demand areas in the city

Schematic Diagram

- The SSNC is a simulation that estimates energy demand by analyzing various information of a smart city
- Shows the optimal energy mix scenario based on the amount of renewable energy generation in the region
- the load following of SMR overcomes the intermittency of renewable energy & provides energy operation scenario to the city



Potential of nuclear contributions to net zero

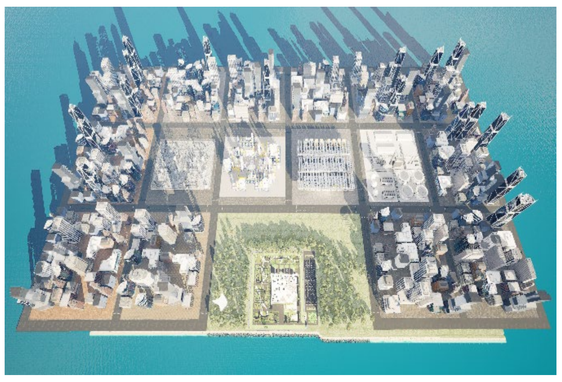


Schematic diagram of SSNC

SMR Energy Complex Simulation

Show a multi-purpose utilization process for urban industries, regional heating, hydrogen production, desalination

A web controller manipulates the production ratio and changed results appear in the 3D engine virtual mode



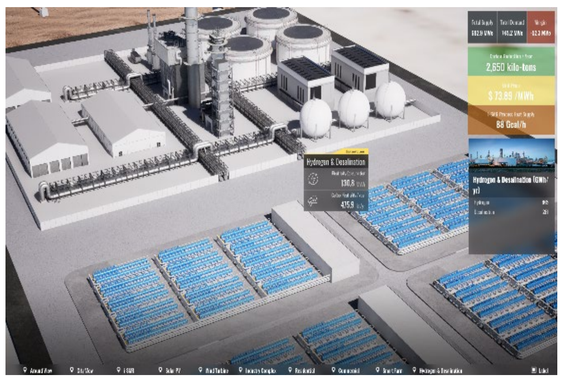
3D model of SMR Energy Complex

Controller of SMR Energy Complex

SSNC Simulation

SSNC Around view

SMR Complex & Data Center



Hydrogen & Desalination Facilities

SSNC Energy Dashboard

Conclusions

- SSNC is a carbon-neutral energy source to respond to the climate crisis & the optimal solution to the rapidly increasing energy
- It is important to reflect in detail the requirements of various countries and companies to be used universally
- To realize commercialization, expansion is required to a stage energy policies and carbon tracks according to urban growth
- Detailed information such as construction cost, tax policy, plant operation period must be reflected simultaneously