Bollettino Settimanale

Lunedì 22 gennaio 2024	Martedì 23 gennaio 2024	Mercoledì 24 gennaio 2024	Giovedì 25 gennaio 2024	Venerdì 26 gennaio 2024
AULA CONVERSI ore 14.30 **SEMINARIO INFN** **Scalable Load-follow Nuclear Generators in Shipping Containers** *Claudio Filippone (HolosGen)* Holos is a distributable modular nuclear power generator with enhanced safety features developed by HolosGen LLC. Holos is optimized to produce affordable pollutant-free electricity and high-temperature process-heat to support industrial processes (e.g., non GHG fuels production), with the safest melt-tolerant and proliferation resistant TRISO fuel. Holos nuclear fuel is segregated within replaceable reinforced fuel cartridges sealed at all times from factory to repository. This type of fuel, successfully tested for decades and qualified for commercial production, traps the fission products (solid and gaseous) within Silicon Carbide spheres with approximately 1 mm in diameter. Holos designs utilize this qualified nuclear fuel as it does not let radionuclides migrate outside of the microspheres even under severe design basis and beyond design basis accident scenarios including loss of coolant. At the end of the fuel cycle, the fuel cartridges fit within licensed transport containers for interim and long-term storage with reduced deactivation and decommissioning costs. Holos power conversion system features application-specific configurations achieving high-efficiency thermal-to-electric conversion through an integral closed-loop Brayton power cycle that eliminates the balance of plant. Other configurations utilize an open-loop Brayton cycle with minimal balance of plant and very small footprint for stationary installations. Holos closed-loop and open-loop Brayton cycle configurations utilize components derived from commercial turbo-jet engines and gas turbines. Each Holos generator can operate as a stand-alone electric island at sites with no or weak power grid infrastructure and offer scalable 3-10 MWe with high-rate load follow capabilities. Holos configurations for special applications integrate the systems, structures and components forming an operational power generator fully comprised within the dimensional constraints of standard shipping containers. For applications that do not require mobility and dimensions within the constraints of shipping containers, the power rating can be increased beyond 10MWe to match the deployment site and/or application-specific power requirements. Specialized Holos generator configurations can be airlifted for timely deployment to supply emergency electricity and process-heat to remote locations affected by natural disasters and at locations characterized by environmental extremes. Holos generators with scalable power ratings may be optimized to supply load follow power to satisfy watercrafts and space applications. Holos innovative design safety, technical and economic performance has been verified under the Department of Energy sponsorships and scrutiny from the U.S. National Laboratories and academic institutions. Holos provides a distributable power source with a design maturity validated at TRL6 (Technology Readiness Level), satisfying various applications' requirements with the safest modern nuclear fuels, sustainably, competitively, and synergistically with technologies sourced on renewable energy.				