



**POLITECNICO
MILANO 1863**

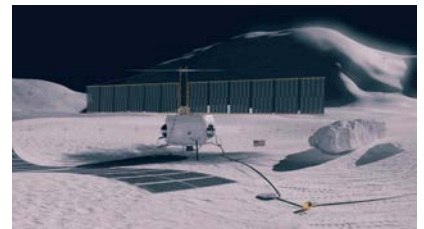
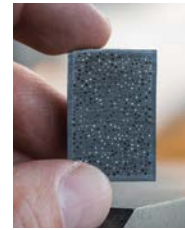
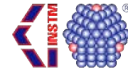
DEPARTMENT OF ENERGY

MSc in Nuclear Engineering

in collaboration with



CIRTEEN
Consorzio Interuniversitario per la Ricerca Tecnologica Nucleare
INTER-UNIVERSITY CONSORTIUM FOR NUCLEAR TECHNOLOGICAL RESEARCH



THU, JUNE 1ST, 2023

@11:00, COUNCIL ROOM

BUILDING BL25, DEPT. OF ENERGY, BOVISA CAMPUS

Ultra Safe Nuclear: new nuclear technologies for Earth and Space

Ultra Safe Nuclear's Modular Micro Reactors are all-ceramic batteries, stable up to 2300 degC. Each one contains 3TWh of energy and is designed to deliver 30MW of power at 600 or 900 degC for at least 10 years without refuelling. The self-shutdown of the fission chain reaction (due to the increase in neutron absorption of ^{238}U caused by the Doppler effect with increasing fuel temperature) occurs just 300 degC above the designed temperature and makes them completely incapable of meltdown. The heat is extracted with a closed circuit Helium flow; the elimination of water excludes the possibility of explosions from steam and accidental production of hydrogen. Hence the name ULTRA SAFE. They occupy a few square meters and can supply power directly into industrial plants without transmission losses. Space-based versions with high-temperature ceramics (3000 degC) allow propulsion with specific impulse twice that of combustion rockets.

DR. RICCARDO DESALVO

After completing his studies in Pisa he worked for 15 years at CERN in Geneva and at the laboratory of Nuclear Studies at the Cornell University where he designed and built a variety of advanced particle detectors. He then turned to the field of detection of gravitational waves in INFN, Caltech, Universities of Tokyo, Benevento, California State Los Angeles designing the mechanics of the Virgo, TAMA and KAGRA observatories, as well as developing new dielectric mirrors. He also directed a Meta lab designing hand sensing and actuation for haptic augmented reality. While continuing his interests in gravitational waves with design for the Einstein Telescope, he is presently working on nuclear power. He has been mentor for more than 200 young scientists and engineers.

