

## DEDICATED KEYNOTES SYMPOSIUM (K)

*(session is not specified)*

Author: Dr. Leon Alkalai

National Aeronautics and Space Administration (NASA), Jet Propulsion Laboratory, United States,  
leon.alkalai@jpl.nasa.govKEYNOTE: NASA'S JET PROPULSION LABORATORY (JPL) RESPONSE TO THE COVID  
PANDEMIC: VENTILATORS, RESPIRATORS AND MORE.**Abstract**

PL is well known for its daring and inspiring robotic missions to Mars, Jupiter, Saturn and other planetary destinations in our Solar System in the service of space science. Whereas it is well recognized that there is a lot of synergy between space technology and applications to solving problems in healthcare and medical engineering, JPL is not well known for developing or fielding medical devices. During the COVID-19 pandemic, a number of JPL engineers, as well as engineers across the NASA family of field centers, were moved to apply their engineering talent to solving immediate problems created by the shortage of Personal Protection Equipment (PPE), respirators and ventilators. In this presentation I will give an overview of such projects and focus specifically on the development of the low-cost, COVID-specific, VITAL ventilator developed by JPL engineers. Within only 2 weeks from initiation, and with guidance from medical experts, JPL prototyped two different ventilator designs: a pneumatic ventilator and a compressor ventilator. Both prototypes were granted Emergency Use Authorization (EUA) from the FDA in record time. The ventilator technology has subsequently been licensed to 29 licensees across the world on a no-fee basis during the duration of the COVID-19 pandemic. Eight of these licensees are in the US and 21 are international companies selected to receive the VITAL technology and to manufacture the equipment for both local and global use. Overall, the VITAL rapid technology development and global licensing is an example of how space technology can benefit of immediate benefit to society, and help save lives. Countries who have licensed VITAL include: Brazil (2), India (5), Japan, Australia, Indonesia, Malaysia, Egypt, UAE, Mexico, Canada, Portugal, Armenia, Taiwan, Turkey, South Korea, Nigeria and of course the USA (8).